Scarborough Drilling and Completions 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, 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 within Permit Area WA-61-L:

- drilling and development of eight to ten production wells
- Inspection, Monitoring, Maintenance and Repair (IMMR) activities for installed infrastructure.

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

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

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

1.2 Defining the Petroleum Activity

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

1.3 Purpose of the Environment Plan

In accordance with the objectives of the Environment Regulations, the purpose of this EP is to demonstrate that:

- the potential environmental impacts and risks (planned (routine and non-routine) and unplanned) that may result from the Petroleum Activities Program are identified;
- appropriate management controls are implemented to reduce impacts and risks to a level that is 'as low as reasonably practicable' (ALARP) and acceptable; and
- the Petroleum Activities Program is performed in a manner consistent with the principles of ecologically sustainable development (as defined in Section 3A of the *Environment Protection and Biodiversity Conservation Act, 1999* (Cth) (EPBC Act)).

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

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 Operational Area and the Permit Area. The combination of the Operational Area and Permit Area defines the spatial boundary of the Petroleum Activities Program, as described, risk-assessed and managed by this EP.

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

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

1.5 Environment Plan Summary

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

Table 1-1: EP Summary

EP Summary material requirement	Relevant section of EP containing EP Summary material
The location of the activity	**Section 3.4**
A description of the receiving environment	**Section 4**
A description of the activity	**Section 3**
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 6**
Response arrangements in the oil pollution emergency plan	**Section 7.10**
Consultation already undertaken and plans for ongoing consultation	**Section 5**
Details of the titleholders nominated liaison person for the activity	**Section 1.8**

1.6 Structure of the Environment Plan

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

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

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
Regulation 10A(a): *Is appropriate for the nature and scale of the activity*	Regulation 13: *Environmental assessment* Regulation 14: *Implementation strategy for the environment plan* Regulation 16: *Other information in the environment plan*	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): *Demonstrates that the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable* Regulation 10A(c): *Demonstrates that the environmental impacts and risks of the activity will be of an acceptable level*	Regulation 13(1)–13(7): *13(1) Description of the activity* *13(2)(3) Description of the environment* *13(4) Requirements* *13(5)(6) Evaluation of environmental impacts and risks* *13(7) Environmental Performance Outcomes and standards* *Regulation 16(a) to 16(c):* *A statement of the titleholder's corporate environmental policy* *A report on all consultations between the titleholder and any relevant person*	Set the context (activity and existing environment). Define 'acceptable' (the requirements, the corporate policy, relevant persons). Detail the impacts and risks. Evaluate the nature and scale. Detail the control measures – ALARP and acceptable.	**Section 1** **Section 2** **Section 3** **Section 4** **Section 5** **Section 6** **Section 7**
Regulation 10A(d): *Provides for appropriate Environmental Performance Outcomes, environmental performance standards and measurement criteria*	Regulation 13(7): *Environmental Performance Outcomes and standards*	Environmental Performance Outcomes (EPO). Environmental performance standards (EPS). Measurement criteria (MC).	**Section 6**
Regulation 10A(e): *Includes an appropriate implementation strategy and monitoring, recording and reporting arrangements*	Regulation 14: *Implementation strategy for the environment plan*	Implementation strategy, including: • Environmental Management System (EMS) • Performance monitoring • Oil Pollution Emergency Plan (OPEP – per **Table 7-8**) and scientific monitoring • Ongoing consultation	**Section 7** **Appendix D**
Regulation 10A(f): *Does not involve the activity or part of the activity, other than arrangements for environmental monitoring or for responding to an emergency, being undertaken in any part of a declared World Heritage property within the meaning of the Environment Protection and Biodiversity*	Regulation 13(1)–13(3): *13(1) Description of the activity* *13(2) Description of the environment* *13(3) Without limiting [Regulation 13(2)(b)], relevant values and sensitivities may include any of the following:* *(a) the world heritage values of a declared World Heritage property within the meaning of the EPBC Act;*	No activity, or part of the activity, undertaken in any part of a declared World Heritage property.	**Section 3** **Section 4** **Section 6**

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
Conservation Act 1999 (EPBC Act)	*(b) the national heritage values of a National Heritage place within the meaning of that Act;* *(c) the ecological character of a declared Ramsar wetland within the meaning of that Act;* *(d) the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act;* *(e) the presence of a listed migratory species within the meaning of that Act;* *(f) any values and sensitivities that exist in, or in relation to, part or all of:* *(i) a Commonwealth marine area within the meaning of that Act; or* *(ii) Commonwealth land within the meaning of that Act.*		
Regulation 10A(g): *(i) the titleholder has carried out the consultations required by Division 2.2A* *(ii) the measures (if any) that the titleholder has adopted, or proposes to adopt, because of the consultations are appropriate*	Regulation 11A: *Consultation with relevant authorities, persons and organisations, etc.* *Regulation 16(b):* *A report on all consultations between the titleholder and any relevant person*	Consultation undertaken in the preparation of this EP.	**Section 5**
Regulation 10A(h): *Complies with the Act and the regulations*	Regulation 13(4)a: *Describe the requirements, including legislative requirements, that apply to activity and are relevant to the environmental management of the activity* *Regulation 15:* *Details of the Titleholder and liaison person* *Regulation 16(a):* *A statement of the titleholder's corporate environmental policy* *Regulation 16(c):* *Details of all reportable incidents in relation to the proposed activity*	All contents of the EP must comply with the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* and the Environment Regulations	**Section 1.6** **Section 1.7** **Section 1.8** **Section 6.8**

1.7 Description of the Titleholder

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

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

The Woodside-operated producing LNG assets in the north-west of Australia are among the world's best facilities. The NWS Project has been operating for 35 years delivering one-third of Australia's

oil and gas production from one of the world's largest LNG facilities. Pluto LNG also forms part of Woodside's outstanding base business, and since commissioning in 2012, has delivered over 500 LNG cargoes.

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

1.8 Details of Titleholder, Liaison Person and Public Affairs Contact

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

1.8.1 Titleholders

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

1.8.3 Arrangements for Notifying of Change

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

1.9 Woodside Management System

The Woodside Management System (WMS) provides a structured framework of documentation to set common expectations governing how all employees and contractors at Woodside will work. Many of the standards presented in **Section 6** are drawn from the WMS documentation, which comprises of four elements: Compass and Policies, Expectations, Processes and Procedures, and Guidelines, outlined below (and illustrated in **Figure 1-1**):

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

- **Guidelines:** Provide recommended practice and advice on how to perform the steps defined in Procedures, together with supporting information and associated tools. Guidelines provide advice on: how activities or tasks may be performed; information that may be taken into consideration; or, how to use tools and systems.

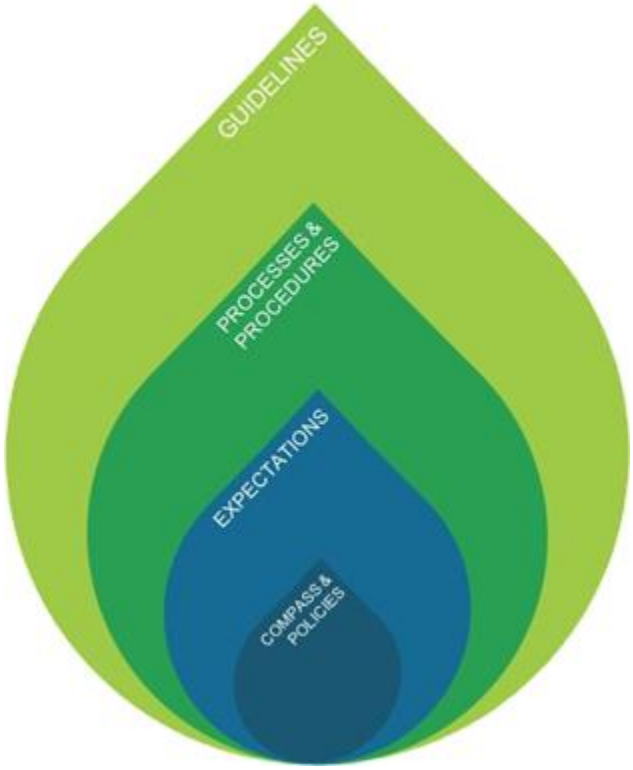


Figure 1-1:The four major elements of the WMS framework

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

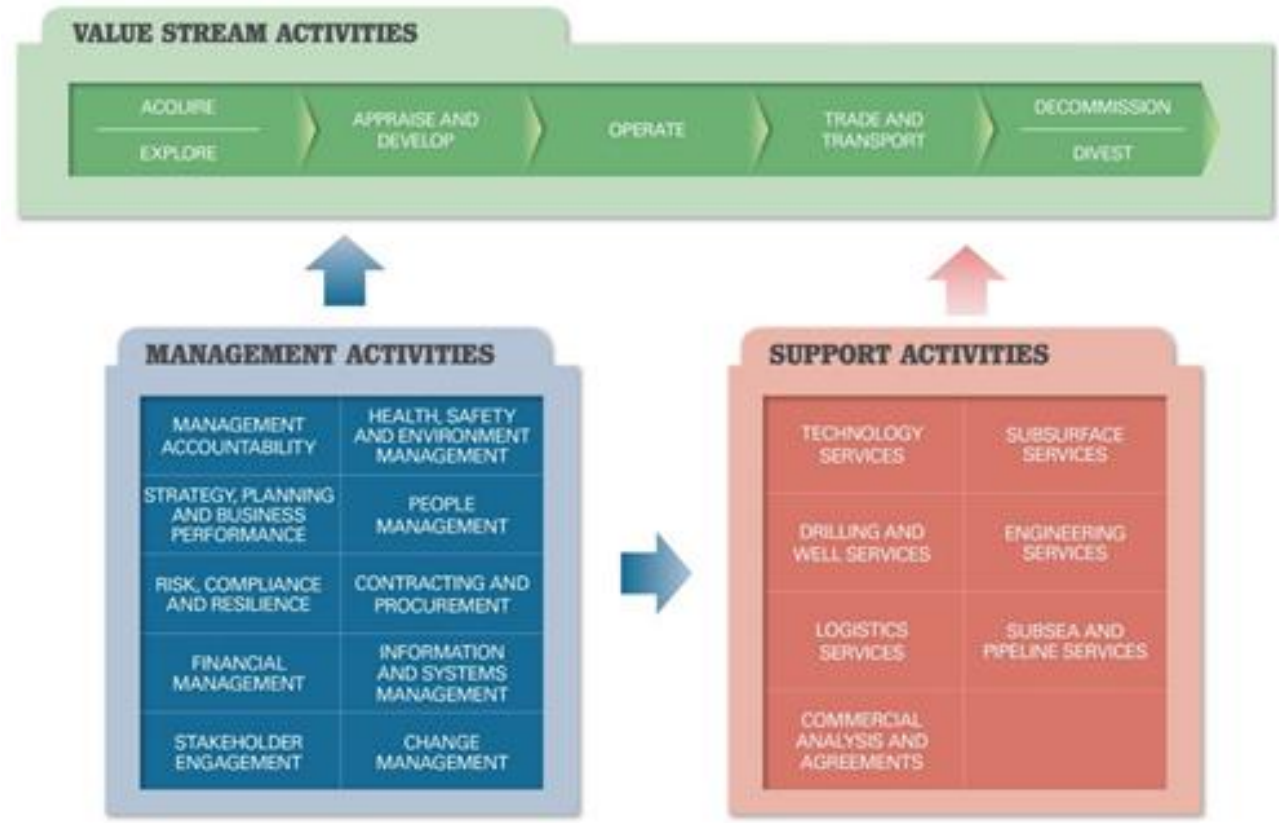


Figure 1-2: The WMS business process hierarchy

1.9.1 Environment and Biodiversity Policy

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

1.10 Description of Relevant Requirements

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

1.10.1 Offshore Petroleum and Greenhouse Gas Storage Act 2006

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

The Act manages all offshore petroleum activities, including decommissioning, under Section 572 and 270. While there are no immediate plans for decommissioning (the scope of this EP is for drilling production wells for future operations) all equipment being installed above the mudline has been designed to allow removal. Subsection 572(2) provides that while structures, equipment and other property remain in the title area, they must be maintained in good condition and repair. Inspection, maintenance and repair of the infrastructure installed for future production, under this Environment Plan, will be managed as described in **Section 3.7**.

The regulatory framework establishes the National Offshore Petroleum Safety and Environment Management Authority as the regulator. Under the OPGGS Act, the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations* 2009 (the Environment Regulations), apply to

petroleum activities in Commonwealth waters and are administered by NOPSEMA. The objective of the Environment Regulations is to ensure petroleum activities are:

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

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

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

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

1.10.2.1 Offshore Project Proposal

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

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

In accordance with Regulation 9 and 6 a titleholder must have submitted and have an accepted EP in place before commencing an activity. Therefore, a number of EPs will be developed and submitted to NOPSEMA over the next 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

petroleum activity program. The Scarborough OPP sets out the environmental performance outcomes (EPOs) for the project and the level of performance to be achieved, to ensure that environmental impacts and risks will be of an acceptable level and the project is consistent with the principles of ecologically sustainable development. These EPOs will be adopted into each EP, where relevant to the particular scope of the EP.

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

1.10.2.2 Recovery Plans and Threat Abatement Plans

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

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

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

1.10.2.3 Australian Marine Parks

Under the EPBC Act, Australian Marine Parks (AMPs), formally known as Commonwealth Marine Reserves, are recognised for conserving marine habitats and the species that live and rely on these habitats. The Director of Marine Parks (DNP) is responsible for managing AMP's (supported by Parks Australia), and is required to publish management plans for them. Other parts of the Australian Government must not perform functions or exercise powers in relation to these parks that are inconsistent with management plans (s.362 of the EPBC Act). Relevant AMPs are identified in **Section 4.8** and described in **Appendix I.** The North-west Marine Parks Network Management Plan (DNP, 2018a) describe the requirements for managing the marine parks that are relevant to this EP.

Specific zones within the AMPs have been allocated conservation objectives as stated below (International Union for Conservation of Nature (IUCN) Protected Area Category) based on the Australian IUCN reserve management principles outlined in Schedule 8 of the 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.
- Sanctuary Zone (IUCN category Ia)—managed to conserve ecosystems, habitats and native species in as natural and undisturbed a state as possible. The zone allows only authorized scientific research and monitoring.
- National Park Zone (IUCN category II)—managed to protect and conserve ecosystems, habitats and native species in as natural a state as possible. The zone only allows nonextractive activities unless authorised for research and monitoring.
- Recreational Use Zone (IUCN category IV)—managed to allow recreational use, while conserving ecosystems, habitats and native species in as natural a state as possible. The zone allows for recreational fishing, but not commercial fishing.
- Habitat Protection Zone (IUCN category IV)—managed to allow activities that do not harm or cause destruction to seafloor habitats, while conserving ecosystems, habitats and native species in as natural a state as possible.

- Multiple Use Zone (IUCN category VI)—managed to allow ecologically sustainable use while conserving ecosystems, habitats and native species. The zone allows for a range of sustainable uses, including commercial fishing and mining where they are consistent with park values.

2 ENVIRONMENT PLAN PROCESS

2.1 Overview

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

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

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

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

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

2.2 Environmental Risk Management Methodology

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

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

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

2.2.1 Establish the Context

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

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

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

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

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

2.2.3 Environmental Legislation and Other Requirements

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

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

2.2.4 Impact and Risk Identification

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

Impacts and risks of the Scarborough Project were identified in the scoping phase of the Scarborough Project (and presented within the OPP). During this phase, the relationships between the environmental aspects identified for the proposed activities and the associated potential impacts and risks for each receptor are established. This EP considers relevant impacts and risks associated with the Scarborough Project's Drilling and Completions Campaign.

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

Impacts and risks were identified during the ENVID for both planned (routine and non-routine) activities and unplanned (accidents/incidents/emergency conditions) events. During this process, risks identified as not applicable (not credible) were removed from the assessment.

2.3 Impact and Risk Analysis and Evaluation

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

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

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

2.3.1 Impact Evaluation

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

	Receptor Sensitivity		
Magnitude	Low	Medium	High
Catastrophic	B	A	A
Major	C	B	A
Moderate	D	C	B
Minor	E	D	C
Slight	F	E	D
No lasting effect	F	F	E

Significance Level
Catastrophic (A)
Major (B)
Moderate (C)
Minor (D)
Slight (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.

Consequence

	Health & Safety	Environment	Financial	Reputation & Brand	Legal & Compliance	Social & Cultural
A	> 30 fatalities and / or permanent total disabilities	Catastropic, long-term impact (> 50 years) on highly valued ecosystems, species, habitat or physical or biological attributes	> $5B	Catastrophic, long term impact (> 20 years) to reputation and brand. International concern and / or persistent national concern in significant area of operation. Company operations, major ventures, significant or multiple asset operations severely restricted or terminated, and may extend to company at stake	Loss of licence to operate. Potential jail terms for executives, directors or officers. Prolonged litigation / prosecution. Fines (> $100M) and / or civil liability (> $1B)	Catastrophic, long-term impact (> 20 years) to a community, social infrastructure or highly valued areas / items of international cultural significance
B	Multiple fatalities and / or permanent total disabilities	Major, long-term impact (10-50 years) on highly valued ecosystems, species, habitat or physical or biological attributes	> $500M - $5B	National concern and / or international interest. Medium to long-term impact (5-20 years) to reputation and brand. Venture and / or asset operations restricted	Significant restriction on licence to operate. Prolonged litigation / prosecution. Fines (< $100M) and / or civil liability (< $1B)	Major, long-term impact (5-20 years) to a community, social infrastructure or highly valued areas / items of national cultural significance
C	Single fatality and / or permanent total disability	Moderate, medium-term impact (2-10 years) on ecosystems, species, habitat or physical or biological attributes	> $50M - $500M	National concern. Moderate, medium-term impact (2-5 years) to reputation and brand. Venture and / or asset operations restricted or curtailed	Material breach of legislation, regulation, contract or licence condition. Major litigation / prosecution. Fines (< $15M) and / or civil liability (< $150M)	Moderate, medium-term impact (2-5 years) to a community, social infrastructure or highly valued areas / items of national cultural significance
D	Major injury or occupational illness or permanent partial disability	Minor, short-term impact (1-2 years) on species, habitat (but not affecting ecosystems function), physical or biological attributes	> $5M - $50M	Minor, short-term impact (1-2 years) to reputation and brand. Close scrutiny of asset level operations or future proposals	Breach of legislation, regulation, contract or licence condition with investigation and / or report to authority. Litigation / prosecution. Fines (< $5M) and / or civil liability (< $50M)	Minor, short-term impact (1-2 years) to a community or highly valued areas / items of cultural significance
E	Moderate injury or occupational illness or temporary partial disability	Slight, short-term impact (< 1 year) on species, habitat (but not affecting ecosystems function), physical or biological attributes	> $500K - $5M	Slight, short-term local impact (< 1 year) to reputation and brand. Some impact on asset level non-production activities	Breach of legislation, regulation, contract or licence condition. Regulatory action and / or sanction	Slight, short-term impact (< 1 year) to a community or areas / items of cultural significance
F	Minor injury or occupational illness	No lasting effect (< 1 month). Localised impact not significant to environmental receptors	≤ $500K	No lasting effect (< 1 month). Isolated and short-term local concern	Breach of internal standard	No lasting effect (< 1 month). Localised impact not significant to areas / items of cultural significance

Likelihood

	Remote	Highly Unlikely	Unlikely	Possible	Likely	Highly Likely
Experience	Unheard of in the industry	Has occurred once or twice in the industry	Has occurred many times in the industry but not at Woodside	Has occurred once or twice in Woodside or may possibly occur	Has occurred frequently at Woodside or is likely to occur	Has occurred frequently at the location or is expected to occur
Frequency	1 in 100,000 - 1,000,000 years	1 in 10,000 - 100,000 years	1 in 1,000 - 10,000 years	1 in 100 - 1,000 years	1 in 10 - 100 years	> 1 in 10 years
Modelled distribution %* (Probability of event occurrence)	< 1%	1% - 5%	6% - 20%	21% – 50%	51% - 80%	> 80%
LEVEL	0	1	2	3	4	5

** Not to be used for operational Health & Safety or Environment risk assessments.*

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

Risk endorsement table

Current Risk

SEVERE	Risk at this level requires **immediate (no more than 12 hours)** communication to the **CEO & divisional EVP / SVP** via VP Risk & Compliance
VERY HIGH	Risk at this level requires **immediate (no more than 12 hours)** communication to **divisional EVP / SVP** with concurrent communication to VP Risk & Compliance
HIGH	Risk at this level requires timely communication to **SVP / VP of business unit or function**
MODERATE	Risk at this level requires timely communication to **line manager** (i.e. relevant Asset or Project Manager)
LOW	Risk at this level requires timely communication to the relevant **line manager**

Note: All currency stated in $US. The consequence and likelihood categories are not necessarily equal to each other. For example, the financial column is not equal to the remediation costs or consequences described in other columns.

Figure 2-2: Environmental risk levels

2.3.3 Decision Support Framework

To support the risk assessment process Woodside's HSE risk management procedures include the use of a decision support framework based on principles set out in the Guidance on Risk Related Decision Making (Oil and Gas UK, 2014). This concept has been applied during the ENVID or equivalent preceding processes during historical design decisions to determine the level of supporting evidence that may be required to draw sound conclusions regarding risk level and whether the risk is ALARP and acceptable. This is to confirm:

- activities do not pose an unacceptable environmental risk
- appropriate focus is placed on activities where the risk is anticipated to be acceptable and demonstrated to be ALARP
- appropriate effort is applied to the management of risks based on the uncertainty of the risk, the complexity and risk rating (i.e. potential higher order environmental impacts are subject to further evaluation assessment).

The framework provides appropriate tools, commensurate to the level of uncertainty or novelty associated with the risk (referred to as Decision Type A, B or C). The decision type is selected based on an informed discussion around the uncertainty of the risk, then documented in ENVID output.

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

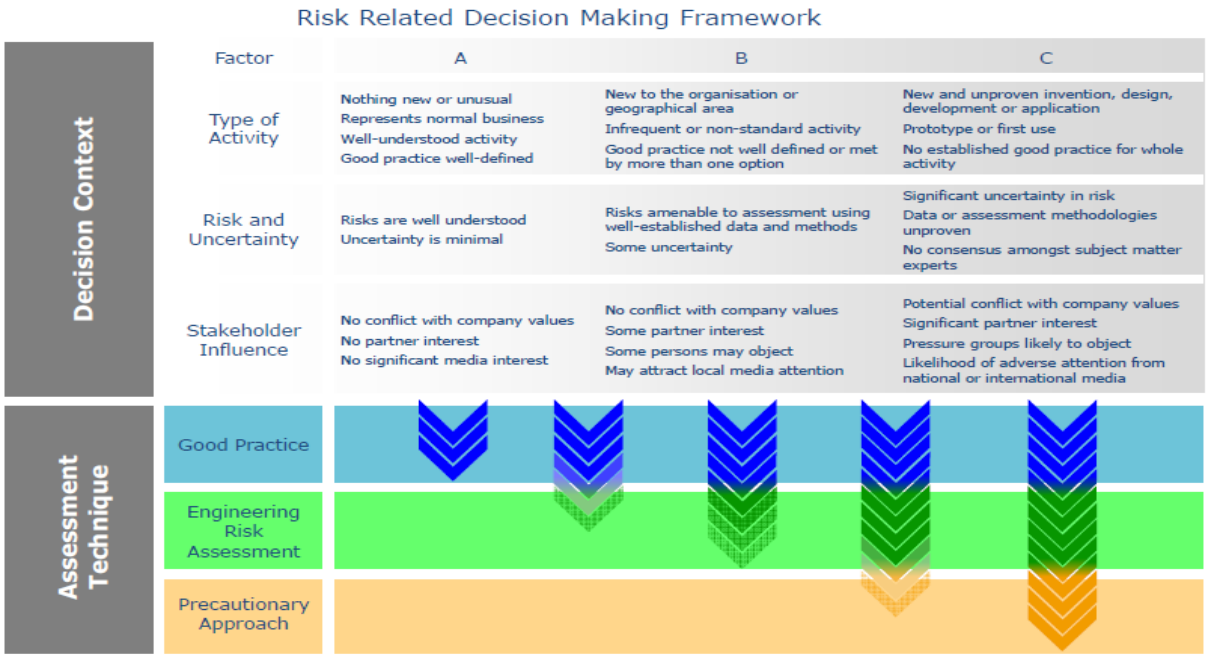


Figure 2-3: Risk related decision-making framework (Oil and Gas UK, 2014)

Decision Type A

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

Decision Type B

Risks classified as Decision Type B typically involve greater uncertainty and complexity (and can include potential higher order impacts/risks). These risks may deviate from established practice or

have some lifecycle implications, and therefore require further engineering risk assessment to support the decision and ensure the risk is ALARP. Engineering risk assessment tools may include:

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

Decision Type C

Risks classified as a Decision Type C typically have significant risks related to environmental performance. Such risks typically involve greater complexity and uncertainty; therefore, requiring adoption of the precautionary approach. The risks may result in significant environmental impact; significant project risk/exposure or may elicit negative stakeholder concerns. For these risks, in addition to Decision Type A and B tools, company and societal values need to be considered by undertaking broader internal and external consultation as part of the risk assessment process.

2.3.4 Demonstration of ALARP

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

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

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

2.3.5 Demonstration of Acceptability

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

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

- Principles of Ecologically Sustainable Development (ESD) as defined under the EPBC Act
- internal context – the proposed impacts and risk levels are consistent with Woodside policies, procedures and standards
- external context – 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 OPP has been met through the following criteria:

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

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

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

Risk	Impact	Decision Type
Low and Moderate	***Negligible, Slight, or Minor (D, E or F)***	***A***
Woodside demonstrates these Risks, Impacts and Decision Types are 'Broadly Acceptable' if they meet the EP criteria listed above in **Section 2.3.5**. Further effort towards risk reduction (beyond employing opportunistic measures) is not reasonably practicable without sacrifices grossly disproportionate to the benefit gained.		
High, Very High or Severe	***Moderate and above (A, B or C)***	***B and C***
Woodside demonstrates these higher order Risks, Impacts and Decision Types are 'Acceptable if ALARP' if they meet the EP criteria listed above in **Section 2.3.5**. 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 2.3.4**). 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 Recovery Plan and Threat Abatement Plan Assessment

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

- identify relevant listed threatened species and ecological communities (**Section 4.6**; **Appendix I**);
- identify relevant recovery plans and threat abatement plans (**Appendix I**);
- list all objectives and (where relevant) the action areas of these plans, and assess whether these objectives/action areas apply to government, the Titleholder, and the Petroleum Activities Program (**Section 6.9**); and
- for those objectives/action areas applicable to the Petroleum Activities Program, identify the relevant actions of each plan, and evaluate whether impacts and risks resulting from the activity are clearly not inconsistent with that action (**Section 6.9**).

2.5 Environmental Performance Objectives/Outcomes, Standards and Measurement Criteria

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

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

Environment Plans for petroleum activities submitted subsequent to the OPP process are required to contain EPOs that are appropriate by being consistent with those set out in the OPP. The EPOs presented in a subsequent EP are not required to be exactly the same however should achieve the same environmental outcome (or better) as that described in the OPP. Activity specific EPs will also be required to contain measurement criteria and performance monitoring, auditing and reporting processes relating to the EPOs.

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

3 DESCRIPTION OF THE ACTIVITY

3.1 Overview

This section has been prepared in accordance with Regulation 13(1) of the Environment Regulations and describes the activities to be undertaken as part of the Petroleum Activities Program under this EP. It includes the location of the activities, operational details and additional information relevant to considering environmental risks and impacts.

3.2 Project Overview

Woodside proposes to develop and produce hydrocarbons from the Scarborough field Permit Area WA-61-L.

The Petroleum Activities Program will involve drilling and installation of up to ten Scarborough development wells (eight planned wells and two contingency wells) and installation of a subsea xmas tree upon each well.

If required, Woodside may also need to intervene, workover or re-drill the proposed development wells within Permit Area WA-61-L to monitor and maintain their integrity and mechanically alter them as required.

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

Table 3-1: Petroleum Activities Program Overview

Item	Description
Permit Titles	WA-61-L
Location	North West Shelf
Water depth	Approx. 900–955 m
Number of wells	Scarborough development wells drilling and completions including: • eight development wells and the potential for two additional development wells (contingency).
Subsea infrastructure	Subsea xmas tree at each well
MODU	Dynamic Positioned (DP) MODU with contingency for moored MODU, depending on availability and suitability for the development well locations
Vessels	• Installation vessel for installing the subsea infrastructure. • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities. • Support vessels including anchor handling vessel(s) and general supply/support vessels.
Key activities	• Top hole section drilling. • Installation of blow-out preventer (and marine riser). • Bottom hole section drilling. • Completion and well unload activities. • Installation of subsea xmas trees. • Formation evaluation while drilling. • Temporary suspension or permanent abandonment of well (planned or if necessary, for unforeseen circumstances). • Contingent activities including pre-lay anchors by anchor handling vessel, anchor hold testing and mooring (in case of moored MODU); intervention, workover, well re-drill, wireline logging and installation of up to two additional development wells.

3.3 Concordance with the Scarborough OPP

The OPP describes the scope of the Scarborough 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 OPP may have progressed in level of definition from the time the 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
4.4.3 Drilling Activities	Drilling of 7 Phase 1 Development wells	It is now proposed that 8 development wells be drilled as part of Phase 1, with potential for two additional contingent wells. This is within the scope of the total well count assessed by the OPP (30 wells) however is slightly more than the original estimate for the first drilling phase provided in Table 4-8 of the description of Drilling Activities.	No	Yes	No	No. Minor change in project execution phasing which does not affect impact or risk profile as it was assessed in the OPP.
Table 7-63 Well cuttings and fluid volumes discharged	Table 7-63 in the OPP estimates cuttings and fluid volumes that might be discharged for an example Scarborough well. The volumes quoted in Table 7-63 are described as “estimates only, for the purpose of undertaking an assessment of the environmental impacts. Detailed design will be undertaken further and the assessment updated in relevant activity EPs”.	This EP provides an update on previous estimates of cuttings and fluid discharges during drilling activities, which were used in OPP risk assessment. The more recent estimation of cuttings and fluids are higher than original estimates due to refinement in well design - particularly some interval lengths have increased i.e. the 26″ surface hole goes deeper into the Muderong, which will generate more cuttings, being a longer section of a larger hole.	Yes	No	No	No. Refer to **Section 6.7.7** which shows overall environmental impact significance level is consistent with OPP assessment.
4.4.3.4 Bottom Hole Section Drilling	The OPP does not detail Formation Evaluation, which is carried out once well total depth is reached, to determine the presence and quantity of hydrocarbons in a reservoir. In Table 3-1 in the OPP which lists relevant legislation, it is noted that radioactive tracers may be used during formation evaluation. Well logging as an activity is included in the description of Well Intervention; with wireline listed as a specific example.	In this EP, Formation Evaluation While Drilling (FEWD) is proposed to be carried out, and may include extracting small cores, wireline logging, full diameter cores and other down-hole technologies, as required. Some FEWD tools contain radioactive sources, however, no radioactive material will be released to the environment and radiation fields are not generally detectable outside the tool when the tool is not energised, therefore, they do not present an environmental risk.	Yes	No	No	No. Because Formation evaluation is the interpretation of a combination of measurements taken inside a wellbore once total depth is reached, there are no specific environmental impacts from this activity.

3.4 Location

The Petroleum Activities Program is located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-north-west of Dampier. The closest landfall to the Petroleum Activities Program is the North West Cape, about 226 km south-south-east at its nearest point (**Figure 3-1**Figure). Approximate location details for the Petroleum Activities Program are provided in **Table 3-3**:.

Table 3-3: Approximate location details for the proposed Scarborough development wells

Activity	Water depth (approx. m LAT)	Latitude (WGS84)	Longitude (WGS84)	Petroleum title(s)
New Development Wells				
Well 1	910	19° 53′ 30.499″ S	113° 08′ 43.568″ E	WA-61-L
Well 2	912	19° 53′ 48.471″ S	113° 06′ 55.261″ E	WA-61-L
Well 3	912	19° 53′ 18.551″ S	113° 10′ 03.300″ E	WA-61-L
Well 4	918	19° 52′ 30.359″ S	113° 06′ 41.412″ E	WA-61-L
Well 5	918	19° 52′ 38.718″ S	113° 13′ 24.437″ E	WA-61-L
Well 6	902	19° 49′ 27.763″ S	113° 13′ 08.300″ E	WA-61-L
Well 7	907	19° 45′ 52.900″ S	113° 14′ 27.449″ E	WA-61-L
Well 8	909	19° 53′ 27.254″ S	113° 08′ 43.647″E	WA-61-L
Contingent wells	Within permit area WA-61-L			

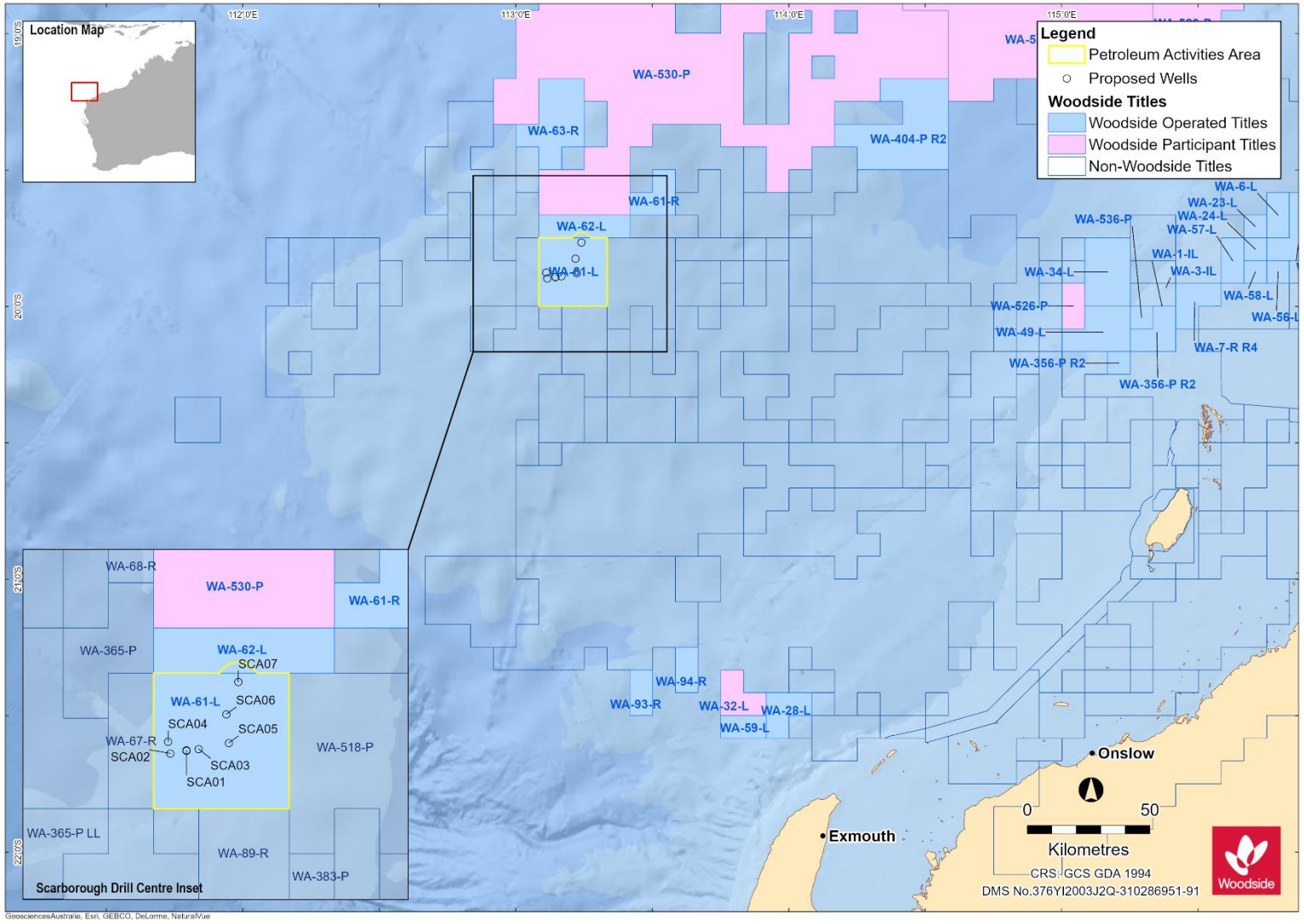


Figure 3-1: Location of the Petroleum Activities Program

3.5 Operational Areas

The spatial boundary of the Petroleum Activities Program has been described and assessed using two 'areas', the Operational Area and the Permit Area[1]. The combination of the Operational Area and Permit Area defines the spatial boundary of the Petroleum Activities Program, as described and risk assessed by this EP, including vessel related petroleum activities. For the purposes of this EP, the following Operational Areas will apply:

- For a dynamically positioned (DP) MODU, the Operational Area encompasses a radius of 500 m from each well centre, in which drilling related petroleum activities will take place and will be managed under this EP.
- For a moored MODU, the Operational Area encompasses a radius of 4000 m from each well centre, in which drilling related petroleum activities will take place and will be managed under this EP. This increased Operational Area allows for temporary installation of moorings. Noting that the Operational Area will be limited to the western boundary of Permit Area WA-61-L.
- For the installation activities, the Operational Area encompasses a radius of 1500 m around subsea locations, in which subsea installation activities will take place and will be managed under this EP. The 1500 m (radius) Operational Area around subsea installation allows for the movement and positioning of large vessels.

The Operational Area for drilling activities includes a 500 m petroleum safety zone around the MODU to manage vessel movements. The 500 m petroleum safety zone is under the control of the MODU Person in Charge.

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

3.6 Timing

The Petroleum Activities Program is planned to commence within a five-year window, with potential commencement date of H2 2023. Drilling may occur at any time within the five-year period between 2023 and 2028, for which this EP will be active. Wells may not be drilled consecutively (i.e. one well may be drilled and then the program stopped for 12 or more months before recommencing with further wells). Drilling operations for the development wells is expected to take approximately 60 days per well to complete, including mobilisation, demobilisation and contingency. Subsea xmas trees are expected to be installed after completing the relevant sections of the well while the MODU is still in the field. Installation of subsea xmas trees is expected to have a cumulative duration of about 14 days (including mobilisation, demobilisation, and contingency).

When underway activities will be 24 hours per day, seven days per week. Simultaneous Operations (SIMOPS) activities may occur (e.g. drilling and xmas tree installation, with MODU and vessel separated by at least 1 km). Timing and duration of all activities is subject to change due to project schedule requirements, MODU/vessel availability, unforeseen circumstances and weather.

The EP has risk-assessed drilling activities, installation of subsea infrastructure, IMR, support operations and contingency activities such as intervention, workover, or re-drilling activities throughout the year (all seasons) to provide operational flexibility for requirements and schedule changes and MODU/vessel availability.

[1] For the purposes of this EP the Permit Area comprises WA-61-L plus a buffer to incorporate the portion of the Operational Area that extends beyond the north boundary of the Permit Area (Figure). The existing environment of the entire Permit Area plus the defined buffer is considered to provide context for the risk assessment. This approach facilitates assessing environmental risks and impacts for the entire scope, including development drilling of the contingency wells with a moored MODU.

3.7 Subsea Inspection, Maintenance, Monitoring and Repair Activities

Subsea infrastructure is designed not to require any significant degree of intervention. However, the infrastructure is inspected and maintained to ensure its integrity and identify any issues before they present a risk of loss of containment. Intervention may be required to repair identified issues. Subsea activities are typically performed from a relevant support vessel via an ROV or divers.

Interventions often require deployment frames/baskets, which are temporarily placed on the seabed. Typically, these have a perforated base with a seabed footprint of about 15 m². They are recovered to the vessel at the end of the activity. Subsea activities are broadly categorised into inspection, monitoring, maintenance and repair; typical IMMR activities are described in the next sections.

3.7.1 Inspection

Subsea infrastructure inspections physically verify and assess components to detect changes to the as-installed location and condition by comparing them to previous inspections. The scope and frequency of subsea inspections are determined using risk-based inspection (RBI) methodology, resulting in detailed RBI plans. **Table 3-4** lists typical relevant subsea infrastructure inspections/surveys.

Table 3-4: Typical inspections/surveys

Type of Inspection/Survey	Purpose
General visual inspections	Check general infrastructure integrity
Close visual inspections	Investigate certain subsea infrastructure components
Cathodic protection	Check for corrosion
Wall thickness surveys	Monitor the condition of subsea infrastructure. (i.e. ultrasonic testing)
Non-destructive testing	Evaluate the properties of material/items using electromagnetic, radio graphic, acoustic resonance technology, ultrasonic, or magnetic equipment
Anode sampling	Take samples of anode materials for testing
Marine growth sampling	Take samples of marine growth for testing
Laser surveys	Conduct dimensional checks on trees etc. and measure proximity

Inspection methods will not directly result in environmental aspects which could lead to impacts on the environment and are therefore not discussed further. Potential impacts from vessel and ROV operations associated with inspections are described in **Section 3.9.4**.

3.7.2 Monitoring

Subsea infrastructure monitoring surveys the physical and chemical environment that a subsea system or component is exposed to, to determine if and when damage may occur, and (where relevant) predict the rate or extent of that damage.

Monitoring activities may include corrosion probes, corrosion mitigation checks, metocean and seismic monitoring, and cathodic protection testing.

Monitoring will not directly result in environmental aspects which could lead to impacts on the environment and are therefore not discussed further. Potential impacts from vessel and ROV operations associated with monitoring are described in **Section 3.9.4**.

3.8 Drilling Activities

Well construction activities are conducted in a number of stages, as described below. Detailed well designs will be submitted to the Well Integrity Department of NOPSEMA as part of the approval to drill and the accepted Well Operation Management Plan (WOMP), as required under the Offshore

Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011.

3.8.1 Drilling Operations

3.8.1.1 Cement Unit Test

The MODU may be required to perform a cement unit test, or 'dummy cement job' to test the functionality of the cement unit and the MODU's bulk cement delivery system prior to performing an actual cement job. This operation is usually performed after a MODU has been out of operation for an amount of time (warm-stack), if maintenance on the cement unit has been carried out, or if it is the first time a MODU is being used in-country and commissioning of the cement unit system is required.

A 'dummy cement job' involves mixing a sacrificial cement slurry at surface and, once functionality of the cement unit and delivery system has been confirmed, the slurry is discharged through the usual cement unit discharge line (which may be up to 10 m above the sea level) or through drill pipe below sea level. The slurry is usually a mix of cement and water, however, may sometimes contain stabilisers or chemical additives.

3.8.1.2 Top-Hole Section Drilling

Petroleum Activities Program drilling commences with the top-hole section as follows:

1. The MODU arrives and establishes position over the well site.
2. Top-hole sections are drilled riserless using seawater with pre-hydrated bentonite/guar gum or similar sweeps or drilling fluids to circulate drilled cuttings from the wellbore (discharge to seabed during riserless drilling). As a contingency Pump and Dump (PAD) water-based mud may be used if required based on shallow hazards.
3. Once the top-hole sections of the well have been drilled, steel tubulars (called conductor or casing) are inserted into the wellbore and secured in place by pumping cement into the annular space back to about 300 m above the casing shoe or to surface (seabed), which will involve a discharge of excess cement at the seabed.

At some well locations, top-hole section drilling may be batched. Batch drilling is where the same section of each well is drilled one after another, before going back and drilling the next section of each well.

3.8.1.3 Blowout Preventer and Marine Riser Installation

After setting the surface casing, a blowout preventor (BOP) and marine riser is installed on the wellhead. The BOP provides a means for sealing, controlling and monitoring the well during drilling activities. The BOP components are operated using open hydraulic systems (utilising water-based BOP control fluids). Each time a pressure and function test schedule is undertaken approximately 3620 L of water-based fluid is released to the marine environment, of this approximately 4% is control fluid additive. BOP operation includes function and pressure testing approximately every 21 days, and a function test (approx. 2665 L) approximately every seven days, excluding the week a pressure test is conducted.

The marine riser provides a physical connection between the well and MODU. This enables a closed circulation system to be maintained, where weighted water-based muds (WBM) and cuttings can be circulated from the wellbore back to the MODU via the riser.

3.8.1.4 Bottom Hole Section Drilling

A closed system (riser in place) is used for drilling bottom hole sections to the planned wellbore total depth. The plan is for bottom hole sections to be drilled using WBM drilling fluids; however, non water-based mud (NWBM) may also be used.

Protective steel tubulars (casings and liners) are inserted as required. The size, grade, weight, length and inclination of the casing/liner sections within the wellbore is determined by factors such as the geology/subterranean pressures likely to be encountered in the area and any specific information or resource development requirements.

After a string of casing/liner has been installed into the wellbore, it is cemented into place. The casing/liner is then pressure tested. Once the pressure testing is passed, drilling of the next section can resume with the riser in place to circulate drill cuttings and drilling fluids back to the MODU.

Cementing operations are also undertaken to:

- provide annular isolation between hole sections and structural support of the casing/liner as required
- set a plug in an existing well to side-track
- plug a well so it can be suspended/abandoned.

Cement, barite and bentonite is transported as dry bulk to the MODU by the support vessels. Cement is mixed as required by the cementing unit on the MODU and pumped by high pressure pumps to the surface cementing head then directed down the well.

Excess cement, barite and bentonite (dry bulk) after well operations are completed, will either be held onboard and used for subsequent wells; provided to the next operator at the end of the program or discharged to the marine environment. Excess cement, barite and bentonite that does not meet technical requirements during the Petroleum Activities Program may also be bulk discharged to the environment. Bulk discharges of cement, barite and bentonite may occur as a slurry through the usual cement discharge line or blown as dry bulk and discharged.

Cuttings in drilling fluids circulated back to the MODU are separated from the drilling fluids by the solids control equipment (SCE). The SCE comprises shale shakers to remove coarse cuttings from the drilling fluid. After processing by the shale shakers, the recovered fluids from the cuttings may be directed to centrifuges, which are used to remove the finer solids (4.5 to 6 µm). Water-based drill cuttings are usually discharged below the water line and the fluids are recirculated into the fluid system.

3.8.1.5 Drilling Fluids

Drilling muds contain a variety of chemicals, incorporated into the selected drilling fluid system to meet specific technical requirements (e.g. mud weight required to manage pressure, or for borehole stability). All chemicals selected for use have been assessed under Woodside's internal guidelines to ensure potential impacts are acceptable, ALARP and meet Woodside's expectation for environmental performance.

3.8.1.6 Water-Based (WBM) System

The Petroleum Activities Program will use a water-based drilling fluid system as the planned option. WBM is mainly comprised of water (salt or fresh). Some basic additives such as bentonite/guar gum may be added to the water.

The WBM drilling fluid will either be mixed on the MODU or received pre-mixed, then stored and maintained in a series of pits aboard the MODU. The top-hole sections will be drilled riserless with seawater containing pre-hydrated gel sweeps, and cuttings and drilling fluids returned to the seabed. The bottom hole sections may be drilled using WBM in a closed circulation system which enables re-use of the WBM drilling fluids.

WBM drilling fluids that cannot be reused (e.g. due to bacterial deterioration or do not meet required drilling fluid properties), or are mixed in excess of required volumes, may be operationally discharged to the ocean under the MODU's Permit to Work (PTW) system. Opportunities to reuse the WBM drilling fluids at the end of the Petroleum Activities Program are reviewed across current Woodside drilling activities.

WBM may not be able to be reused between drilling sections due to the drilling sequence, technical requirements of the mud (i.e. no tolerance for deterioration of mud during storage) and maintenance of productivity/injectivity.

A number of factors unique to each drilling program will determine the quantities of WBM drilling fluids required and subsequent discharge volumes if no suitable reuse option is available.

3.8.1.7 Non Water-Based Mud System (Contingency only)

The decision to use non water-based muds (NWBM) drilling fluids for the bottom hole sections of a particular well is based on various technical factors relevant to wellbore conditions, such as: well temperature, well shape and depth, reactivity of the formation to water and well friction. The technical justification to use NWBM includes but is not limited to consideration of environment, health, safety and waste management.

The use of NWBM drilling fluids is subject to a formal written commercial and/or technical justification approved in accordance with the Best Practice – Overburden Drilling Fluids Environmental Requirements. The main ingredient of NWBM is base oil and, similar to a WBM system, a range of standard solid and liquid additives may be added in the pits to alter specific mud properties for each section of the well. This depends on the conditions encountered while drilling. Where NWBM is used, the base oil will be a Group III synthetic oil (e.g. Saraline 185V), for all development wells.

The NWBM drilling fluid will be primarily mixed onshore (new or re-use existing stock) and transferred to the MODU by a support vessel, where it is stored and maintained in the mud pits. During drilling operations, the NWBM drilling fluid, like the WBM, is pumped by high pressure pumps down the drill string and out through the drill bit, returning via the annulus between the drill string and the casing back to the MODU via the riser.

The used NWBM pumped back to the MODU contains drill cuttings and is pumped to the Solids Control Equipment (SCE), where the drill cuttings are removed before being pumped back to the pits ready for re-use. The technical properties of the NWBM drilling fluids are maintained/altered (e.g. to increase weight) using additives as required when in the mud pits.

The NWBM drilling fluids that cannot be re-used (i.e. do not meet required drilling fluid properties or are mixed in excess of required volumes) are recovered from the mud pits and returned to the shore base for onshore processing, recycling and/or disposal. The mud pits and associated equipment/infrastructure are cleaned when NWBM is no longer required, with wash water treated onboard through SCE prior to discharge with mud pit washings or returned to shore for disposal if discharge criteria cannot be achieved (refer to mud pits below).

3.8.1.8 Mud Pits

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

3.8.1.9 Drill Cuttings

Drill cuttings generated from the well are expected to range from very fine to very coarse (<1 cm) particle/sediment sizes. Cuttings generated during drilling of the top hole sections are discharged at the seabed. Estimated volumes of drill cuttings that may be discharged during the Petroleum Activities Program are presented in **Table 6-8**.

The bottom hole sections will be drilled with a marine riser that enables cuttings and drilling fluid to be circulated back to the MODU, where the cuttings are separated from the drilling fluids by the SCE. The SCE comprises but is not limited to shale shakers, cuttings dryers and centrifuges. The SCE uses shale shakers to remove coarse cuttings from the drilling mud. After being processed by the

shale shakers, the recovered mud from the cuttings may be directed to centrifuges, which are used to remove fine solids (4.5 to 6 µm). The cuttings are usually discharged below the water line and the mud is recirculated into the fluid system.

If NWBM is needed to drill a well section, the cuttings which are separated from the NWBM via the shakers will also pass through a cuttings dryer and associated SCE, to reduce the average oil on cuttings (only sections using NWBM) to 6.9% wt/wt or less on wet cuttings, prior to discharge.

3.8.2 Formation Evaluation

Formation evaluation is the interpretation of a combination of measurements taken inside a wellbore to detect and quantify hydrocarbon presence in the rock adjacent to the well once total depth is reached. Formation Evaluation While Drilling (FEWD) is the process by which the presence and quantity of hydrocarbon in a reservoir is measured according to its response to radioactive and electrical input. It may include extracting small cores, wireline logging, full diameter cores and other down-hole technologies, as required. FEWD tools will be incorporated into the drillstring during development drilling and may include gamma ray, directional deep resistivity, callipers, density-neutron, sonic and tools which can measure formation pressures. Some FEWD tools contain radioactive sources, however, no radioactive material will be released to the environment and radiation fields are not generally detectable outside the tool when the tool is not energised, therefore, they do not present an environmental risk.

There will be no vertical seismic profiling for ongoing field evaluation.

3.8.3 Well Clean-out

Prior to installing the lower completion, wells will be displaced from one drilling fluid system to another, or from the drilling fluid system to completion brine. A chemical cleanout pill or fluids train will be circulated between the two fluids, then brine circulated until operational cleanliness specifications are met. Brine is typically a filtered brine with <70 NTU or <0.05% total suspended solids (TSS). This results in a brine and seawater discharge after this operation. Cleanout fluids and completion brine will be captured and stored on the MODU and discharged if oil concentration is less than 1% by volume or returned to shore if discharge requirements cannot be met.

3.8.4 Completion

Once a well has been drilled, well completion activities will be undertaken including installation of the lower completion, intermediate completion, upper completion / production tubing, and subsea tree. The well is then pressure tested for integrity prior to well unloading and suspension. Lower completion will be an open hole gravel pack with a viscous water-based fluid.

The wells will be completed with a big bore upper completion. Following installation of the upper completion, two crown plugs are installed in the tubing hanger. Crown plugs will be individually pressure tested to verify as suspension barriers prior to the BOP being removed.

3.8.5 Well Flowback

3.8.5.1 General Description

Upon successfully drilling the development wells, all completion and reservoir fluids will be flared or discharged to the environment via the temporary production system. The types of tasks associated with well testing and flowback may include:

- reservoir gas flaring
- reservoir gas venting.

During well flowback activities, all completion and reservoir fluids will be flared or discharged to the environment via the temporary production system. Base oil will be used to underbalance the well.

The base oil column, completion fluids, hydrocarbons and produced/condensed water will be treated for overboard discharge if it meets discharge requirements or flared/burned through the temporary production system on the MODU. Note that the opportunity to unload to the FPU will be considered which could eliminate or reduce well unloading to the MODU (refer to **Section 6.7.2**).

3.8.5.2 Produced / Reservoir Water Disposal

The temporary production system water filtration treatment package will be used to treat produced/reservoir water before discharge. Prior to discharging, the fluids are cycled through an oilbond filtration system and gauge tank. Water filtration is standard practice for well flowback (well unloading) operations. Fluids that cannot be treated or flared will be sent onshore in tanks for disposal.

3.8.6 Air Emissions

During well unloading it is expected that gas, condensate, base oil and methanol in the wellbore will be flared and efficiently burned. The flare may be extinguished due to water ingress, lack of pilot (propane), weather impact or equipment failure resulting in cold venting of gas from the flare for several minutes, before the flare can be restarted or venting stopped. After the objectives of the well testing and flowback are achieved, the flow is stopped and the well may be cleaned using a brine that can include several chemicals, such as biocide and surfactant.

3.8.7 Subsea Equipment Preservation Chemicals

Following well completion activities, the wells may be left with subsea equipment (such as xmas trees) installed, awaiting pre-commissioning and connection to the Floating Production Unit (FPU). All subsea equipment will contain preservation fluids to prevent corrosion and any other deterioration of the equipment before production.

3.8.8 Well Suspension

During drilling activities, wells will be suspended due to batch drilling. Suspension involves establishing suitable barriers, removing the riser and disconnecting the MODU from the well. The BOP may sometimes be left in place to act as a barrier. Suspension may be short term (e.g. in the case of a cyclone) or longer term (more than one year) after the well is constructed. On return to a well following suspension, the MODU reconnects to the well via the riser, and with BOP in place, barriers are removed and drilling and completions activity resumes.

3.8.9 Underwater Acoustic Positioning

An array of long base line (LBL) transponders may be installed on the seabed as required to support drilling activities. The LBL array provides accurate positioning by measuring ranges to three or more transponders deployed at known locations on the seabed and structures.

An array of transponders is proposed within a radius of 500 m from the proposed location of the wells and will be in place for a period of about three months per well. Transmissions are not continuous but consist of short ‘chirps’ with a duration that ranges from 3 to 40 milliseconds. Transponders will not emit any sound when on standby and are planned to only actively emit sound for about six hours per well. When required for general positioning, they will emit one chirp every five seconds (estimated to be required for four hours at a time). When required for precise positioning, they will emit one chirp every second (estimated to be required for two hours at a time).

During xmas tree installation activities ultra-short baseline transponders (USBL) may be installed on the seabed or mounted to the wellhead as required by the sub-sea installation activities. Transmissions from USBL transponders are similar to LBL transponders.

Transponders may be moored to the seabed either by a clump weight or mounted on a seabed frame. The standard clump weights used, made of cement or steel, will likely weigh about

80 kilogram (kg). A typical seabed frame is 1.5 m × 1.5 m × 1.5 m in dimension and weighs about 40 kg. On completion of the positioning operation, transponders and associated equipment will be removed.

3.8.10 Installation of Subsea Infrastructure

The subsea installation scope of work comprises the installation of subsea xmas trees. The dimensions of the xmas trees will be approximately 5 × 5 × 5 m (Length x Width x Height).

Prior to the upper completion being installed into the wells, the xmas trees will be installed from an installation vessel in SIMOPS with the MODU, or directly from the MODU. Due to the subsea well layout, if installation was to occur from the installation vessel, the MODU will be required to kedge off or reposition away from the drill centre to allow the installation vessel to install the xmas trees. The xmas trees will be suspended vertically approximately 10 m off the sea floor. Once the xmas trees have been installed, the connection to the wellhead will be pressure tested to confirm integrity. Once the MODU BOP is reconnected, a casing test will confirm integrity of xmas tree to allow continuation of drilling and completions activities.

The xmas trees will be installed with a preservation mixture in the production and annulus bores. There will be a small discharge of preservation fluid associated with testing and connection the subsea system (estimated 100 to 150 L per well).

3.8.11 Maintenance and Repair

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

Repair activities are required when a subsea system or component is degraded, damaged, or has deteriorated to a level outside acceptance limits. Damage sustained may not necessarily pose an immediate threat to continued system integrity, but presents an elevated level of risk to safety, environment, or production. Typical subsea repair activities include:

- xmas tree or component/cap repair and/or replacement
- corrosion protection.

Some environmental discharges are expected during subsea maintenance and repair activities. **Table 3-5** lists typical discharge volumes during different maintenance and repair activities.

Table 3-5: Typical discharge volume during maintenance and repair activities

Activity	Typical Discharge
Pressure/leak testing	Chemical dye >10 L
Valve functioning	0.5 L to 5 L per valve actuation
Flushing	Residual hydrocarbon or chemical releases volume depends on injection port size, component geometry, and pumping rates
Hot stab changeout	Hydrocarbons or control fluid <10 L.
Xmas tree repair, replacement, and recovery	Typical release of hydrocarbon or other chemicals depends on equipment configuration and flushing ability. This will be subject to an ALARP determination for the activity, as per normal practice.

Excess marine growth may need to be removed before undertaking subsea IMR activities and/or following return to wells after a period of suspended drilling. An ROV is used for this activity; **Table 3-6** lists the different techniques used.

Table 3-6: Marine growth removal

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

If sediment builds up around subsea infrastructure, an ROV-mounted suction pump/dredging unit may be used to move small amounts of sediment in the immediate vicinity of the subsea infrastructure (i.e. within the existing footprint) to allow inspection/intervention works to be undertaken. Sediment relocation typically results in minor seabed disturbance and some localised turbidity.

3.9 Project Vessels and Support Activities

3.9.1 MODU Operations

The Petroleum Activities Program will be drilled by a MODU. This is planned to be a DP MODU, with risks assessed in this EP for a moored MODU as a contingency. Typical specifications for these MODU types are provided in **Table 3-7** and **Table 3-8** respectively. These are collectively referred to as the MODU for the remainder of the document, unless specific risks for different MODU types have been identified. Due to variabilities, such as contractual and operational matters, the MODU used may be subject to change.

Table 3-7: Typical DP MODU specifications (Valaris DPS-1)

Component	Specification Range
Rig type / Design / Class	Ultra deepwater semi-submersible MODU
Accommodation	200 persons
Station keeping	Dynamically positioned
Bulk mud and cement storage capacity	1000 m^3
Liquid mud storage capacity	2663 m^3
Fuel oil storage capacity	3640 m^3
Drill water storage capacity	3482 m^3

Table 3-8: Typical moored MODU specification ranges (Ocean Apex)

Component	Specification Range
Rig type/design/class	Semi-submersible MODU
Accommodation	120 to 200 personnel (maximum persons on board)
Station keeping	Minimum eight-point mooring system
Bulk mud and cement storage capacity	283 to 770 m^3
Liquid mud storage capacity	576 to 2500 m^3
Fuel oil storage capacity	966 to 1400 m^3
Drill water storage capacity	3500 m^3

3.9.2 Vessel Operations

Vessels used during the Petroleum Activities Program include an installation vessel and subsea support vessels, with other vessels likely to be used to support MODU and vessel operations including general support vessel(s) and anchor handling vessel(s).

Vessels may mobilise from the nearest Australian port or directly from international waters to the Petroleum Activity Area (PAA), in accordance with biosecurity and marine assurance requirements.

All project vessels are subject to the Marine Offshore Vessel Assurance procedure which is detailed in Implementation **Section 7.7.2.3**.

3.9.2.1 Installation Vessel

The Petroleum Activities Program subsea installation scopes of work may require an installation vessel with enough capacity to accommodate hardware and equipment including the xmas trees.

A typical installation vessel would be a DP vessel (usually DP2 Class) equipped with a primary differential global surface positioning system (DGPS) and an independent secondary DGPS backup system. The specification of a typical subsea installation vessel is provided in **Table 3-9**.

Installation vessels are typically equipped with a variety of material handling equipment, which includes cranes, winches, ROVs and ROV Launch and Recovery Systems (LARS), Vertical Lay System (VLS) with either vertical reel drive or horizontal drive (carrousel) and pre-commissioning spread.

Lifting operations may involve loading and unloading of equipment from support and supply vessels onto the installation vessel and subsequently onto the seabed. Cranes are typically equipped with active heave compensation and auto tension modes and have lifting capacities in excess of expected lifting loads to be encountered during operations.

Table 3-9: Typical DP 2 Class subsea installation vessel specifications for MMA Pinnacle

Component	Specification Range
Vessel Type	DP 2 Class as minimum
Crane Capacity	150 T HMC
Deck Space	About 1000 m^2
Deck Strength	About 10 T/m^2
Accommodation	About 100 people
Fuel Oil	About 868 m^3
Potable Water	About 586 m^3

3.9.2.2 Subsea Support Vessel

During the Petroleum Activities Program, a subsea support vessel for light well intervention (LWI) operations may be used as an option for contingent well intervention, subsea installation, subsea inspection maintenance and repair and other activities. Vessels supporting offshore activities may vary depending on requirements, vessel schedules, capability and availability.

Typical support vessels use a DP system to allow manoeuvrability and avoid anchoring when undertaking works. However, vessels are equipped with anchors which may be deployed in an emergency.

An example of this vessel type is the *Sapura Constructor*, which is a 117 m long subsea support vessel equipped with a saturation dive system, two work class remotely operated vehicles (ROV), well intervention equipment, a helideck, moon pool and accommodation for 120 personnel. The final vessel selection, if required, will be subject to commercial and operational considerations.

3.9.2.3 Support and Other Vessels

Support vessels are used to transport equipment and materials between the MODU/installation vessel and port (e.g. Dampier, Onslow, Exmouth). If required, one of the vessels may be present at the MODU to perform standby duties, and others will make regular trips between the PAA to port for routine, non-routine and emergency operations.

Anchor Handling Vessels (AHVs) may be required to set anchors and support the MODU and the installation vessel, during operations.

A variety of materials are routinely bulk transferred from support vessels to the MODU including drilling fluids (e.g. muds), base fluids, cements, and drill water. Cement, barite and bentonite are transported as dry bulk to the MODU by support vessels and pneumatically blown to the MODU storage tanks using compressed air. A range of dedicated bulk transfer stations and equipment are in place to accommodate the bulk transfer of each type of material. There is also a capacity to bulk transfer waste oil from the MODU to the support vessel, for back loading and disposal on shore.

The loading and back-loading of equipment, materials and wastes is one of the most common supporting activities conducted during drilling programs. Loading and back-loading is undertaken using cranes on the MODU to lift materials in appropriate offshore rated containers (e.g. ISO tanks, skip bins, containers) between the MODU and support vessel.

For power generation, vessels may use diesel-powered generators and/or LNG. 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 MODU and support vessels will be lit to maintain operational safety on a 24-hour basis.

Standby duties may include but are not limited to periods of helicopter operations and working over the side activities while in the field.

Seawater is pumped on board and used as a heat exchange medium for the cooling of machinery engines and high temperature drilling fluid on the MODU. It is subsequently discharged from the MODU at the sea surface at potentially a higher temperature. Alternately, MODUs may use closed loop cooling systems.

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

The MODU and support vessels will also discharge deck drainage from open drainage areas, bilge water from closed drainage areas, putrescible waste and treated sewage and grey water. Solid hazardous and non-hazardous wastes generated during the Petroleum Activities Program are disposed of onshore by support vessels, or may be incinerated where permissible.

Support vessels do not anchor within the PAA during the activities due to water depth; therefore, vessels will utilise DP.

The support vessels are also available to assist in implementation of the WA-61-L Scarborough Drilling and Completions Oil Pollution First Strike Plan (FSP), should an environmental incident occur (e.g. spills).

3.9.2.4 Holding Station: Mooring Installation and Anchor Hold Testing/Soil Analysis

Mooring uses a system of chains/wires and anchors, which may be pre-laid before the MODU arrives at the location, to maintain position when drilling. A mooring analysis will be undertaken to determine the appropriate mooring system for the Petroleum Activities Program. The mooring analysis will identify whether the mooring system will be pre-laid or set by the MODU, define proof tension values, and evaluate whether synthetic fibre mooring ropes are required. A pre-laid system can generally withstand higher sea states compared to a system that only uses the MODUs mooring chain/equipment and can also save the time in establishing anchors.

Installation and proof tensioning of anchors involves some disturbance to the seabed. Anchor handling vessels (AHV) are used in the deployment and recovery of the mooring system.

As part of mooring preparations, anchor hold testing may be conducted at the development well locations. Anchor hold testing would be undertaken if Woodside determines that further assurance is required to ensure a robust mooring design.

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

Soil analysis may also be necessary to provide data on composition and rock/substrate strength as input into the mooring design and verify seabed conditions for anchor holding. Soil analysis could include taking a physical sample of the seabed using ROV or other tools or using measuring devices such as a cone penetrometer. These tests would be carried out up to several months prior to MODU arriving on location and may occur from a support vessel or anchor handling vessel.

Suction piling may be required as a contingent activity and will be reviewed with the MODU contractor.

3.9.2.5 Holding Station: Dynamic Positioning (DP MODU and DP Vessels Only)

DP uses satellite navigation and radio transponders in conjunction with thrusters to maintain the position of the MODU or vessel at the required location. Information relating to the position of the MODU or vessel is provided via seabed transponders, which emit signals that are detected by receivers on the MODU or vessel and used to calculate position. The transponders are typically deployed in a pentagon array on the seabed, using steel clump weights, for the duration of the drilling at each development well. They are recovered at the end, generally by remotely operated vehicle (ROV).

3.9.2.6 Refuelling

The MODU will be refuelled via support vessels approximately once a month or as required. Refuelling will take place within the PAA of the well being drilled at the time and has been included in the risk assessment for this EP. Other fuel transfers that may occur on board the MODU may include refuelling of cranes, helicopters or other equipment as required.

3.9.3 Helicopter Operations

During the Petroleum Activities Program, crew changes will be undertaken using helicopters as required. Helicopters are the primary means of transporting passengers and/or urgent freight to/from the activity. They are also the preferred means of evacuating personnel in an emergency.

Helicopter operations within the PAA are limited to helicopter take-off and landing on the helideck. Helicopters may be refuelled on the helideck.

3.9.4 ROV Operations

The MODU, installation vessel and support vessels may be equipped with a ROV system that is maintained and operated by a specialised contractor aboard the vessel. ROVs may be used during drilling operations and subsea installation, for activities such as:

- anchor holding testing
- pre-drill seabed and hazard survey
- transponder deployment
- blowout preventer (BOP) land-out and recovery
- BOP well control contingency
- visual observations at seabed during riserless drilling operation

- pre and post installation survey
- installation and testing of subsea infrastructure
- xmas tree operations.

An ROV can be fitted with various tools and camera systems that can be used to capture permanent records (both still images and video) of the operations and immediate surrounding environment. Specifically, during installation, the ROV will be fitted with hydraulically driven tools to facilitate flowline tie-in.

An ROV may also be used in the event of an incident for the deployment of the Subsea First Response Toolkit. This is discussed further in **Appendix D**.

3.10 Contingent Activities

The next sections present contingencies that may be required, if operational or technical issues occur during the Petroleum Activities Program. These contingencies have been considered within the relevant impact assessment sections and do not represent significant additional risks or impacts but may generate additional volumes of drilling fluids and cuttings being operationally discharged.

3.10.1 Contingency Development Wells

Two additional development wells may be installed under this EP. The wells would be installed as described in **Section 3.8** (Drilling Activities) and have not yet been located within WA-61-L.

3.10.2 Respud

A respud may be required for a number of reasons, such as if the conductor or well head slumps or fails installation criteria (typically during top hole drilling). Respudding involves moving the MODU to a suitably close location (e.g. about 25–50 m from the original location) to recommence drilling. A respud activity would result in repeating top-hole drilling (**Section 3.8.1.2**).

The environmental aspects of respudding are the same as those for drilling and are considered to be adequately addressed by this EP, with no significant changes to existing environmental risks or any additional environmental risks likely. The net environmental effect will be limited to an increase in the volume of cuttings generated (Table 6-8) and discharged at the seabed, from the repeat drilling of the top-hole section, plus an increase in the quantity of cement discharged at seabed from cementing the conductor and surface casing strings.

3.10.3 Workover

The proposed development wells may be worked over to monitor and maintain well integrity as required. A workover may be completed using either a MODU or LWI vessel. The environmental aspects of a workover operation are the same as those for undertaking well completion activities and are considered to be adequately addressed by this EP (**Section 6**), with no significant changes to existing environmental risks or any additional environmental risks likely.

3.10.4 Wireline Logging

Wireline contingencies that may be in place for development drilling include but are not limited to, Gamma Ray (GR) and Casing Collar Locator (CCL) for depth correlation, Ultrasonic Imaging Tool (USIT) and CBL to measure cement integrity, formation pressures (XPT), Density, Neutron and Resistivity and punch perforators/tubing cutters suitable for all tubing sizes. Wireline contingency work will be carried out with appropriate isolation barriers in place, i.e. an overbalanced fluid column. If wireline work is required to take place in a live well, or where there is a risk of barrier failure, then the operation will be carried out with full pressure control equipment at the surface.

Some logging tools may contain low activity radiation sources. Radiation fields are not generally detectable outside the tool when the tool is not energised, therefore they do not present an environmental risk.

3.10.5 Sidetrack

A sidetrack may be required instead of a respud if operational issues are encountered. The environmental aspects of a sidetrack well are the same as those for routine drilling activities, which are considered to be adequately addressed by this EP (**Section 6**), with no significant changes to existing environmental risks or any additional environmental risks likely. The net environmental effect will be limited to an increase in the volume of cuttings generated (**Table 6-8**), potential increase in the use of drilling fluids, and the additional emissions (atmospheric and waste) associated with an extended drilling program.

3.10.6 Well Intervention

An intervention may be carried out on any of the Petroleum Activities Program wells. Interventions may be carried out due to down-hole equipment failure or to address underperformance of a well.

Well intervention generally occurs within the wellbore and includes activities such as:

- slickline/wireline/coil-tubing operations
- well testing and flowback
- well workovers (mechanical or hydraulic).

Potential environmental impacts from intervention activities have been included in this EP, including discharge of suspension fluids and brines and small volume gas releases subsea due to removal of a tree cap which may be in place if the well was previously suspended.

During intervention activities, local control of the xmas tree may be required. Valve actuation of the trees may be required, which will result in small releases of subsea control fluids to be released to the environment. Intervention activities also include removing marine fouling by mechanical or acid soaking, resulting in the release of marine-fouling debris and small amounts of acid to the environment (refer to **Table 3-6**). When retrieving intervention tooling, small volumes of wellbore fluids may be displaced back into the well.

3.10.7 Well Abandonment

The Petroleum Activities Program covers the drilling of development wells, which are not envisaged to be abandoned until the end of the production field life. For technical reasons, it may be required to abandon the lower section of a well, prior to sidetracking, or in the event that a respud is required.

Well abandonment activities are conducted in accordance with Woodside's internal standards. Base oil may be used for inflow testing prior to abandonment, to verify barrier integrity (base oil is also used for well cleanup/well test activities and as such has been risk assessed in this EP). Base oil would be pumped down the drill string and reverse circulated back to the rig, with fluids collected for disposal onshore. If stored in a mud pit, the base oil and other fluids associated with the test may result in pit wash water contaminated with hydrocarbons. If this is the case, mud pit wash water would be discharged in accordance with requirements in this EP; with a hydrocarbon content <1% by volume.

If required, wells will be abandoned with abandonment cement plugs, including verification of the uppermost cement plug by tagging and/or pressure testing through a prescribed program. A lower section of a well may also be abandoned prior to sidetracking.

Following abandonment activity, the marine riser and BOP will be removed and every reasonable attempt for retrieval of the wellhead will be made. Wellheads are typically removed by deploying a cutting device on drill pipe which then cuts through the conductor, allowing the wellhead to be

retrieved to the surface. Another technique may use an ROV to activate the cutter. The conductor cutting equipment is usually reliable with a high success rate of cutting wellheads. Typically wellhead removal is successful after two attempts therefore this is considered reasonable. If these recognised removal techniques are ineffective after two attempts or technically the cut is deemed unfeasible after the first attempt (e.g. wellhead rotating, cutting BHA misalignment), the wellhead may be left in-situ (refer to **Section 3.10.8**).

3.10.8 Wellhead Assembly Left In-situ

If a well is abandoned due to the requirement to respud, the wellhead assembly may be left in-situ if recognised removal techniques are ineffective. Well abandonment activities would be undertaken as outlined in **Section 3.10.7**, but the wellhead assembly would remain. The integrity of the wellbore is not affected by the wellhead assembly remaining in-situ. The environmental aspects of the wellhead assembly remaining in-situ are considered to be adequately addressed by this EP (**Section 6**), with no significant changes to existing environmental risks or any additional environmental risks likely.

Final decommissioning of the development wellhead assembly and other subsea infrastructure at the end of field life will be subject to a separate EP.

3.10.9 Sediment Mobilisation and Relocation

If required, an ROV-mounted suction pump/dredging unit may be used to relocate sediment/cuttings around the wellhead or other infrastructure, to keep the area clear and safe for operations and equipment. This activity has the potential to generate plumes of suspended sediment during pumping and disturb benthic fauna in the immediate area.

3.10.10 Venting

During drilling of the well, a kick may occur. A kick is an undesirable influx of formation fluid into the wellbore. To maintain well integrity in this situation, a small volume of greenhouse gases is released to the atmosphere via the degasser, in a well control operation known as ‘venting’.

3.10.11 Emergency Disconnect Sequence

An Emergency Disconnect Sequence (EDS) may be implemented if the MODU is required to rapidly disengage from the well. The EDS closes the BOP (i.e. shutting in the well) and disconnects the riser to break the conduit between the wellhead/BOP and MODU. Common examples of when this system may be initiated include the movement of the MODU outside of its operating circle (e.g. due to a failure of one or more of the moorings or dynamic positioning system) or the movement of the MODU to avoid a vessel collision (e.g. third-party vessel on collision course with the MODU). EDS aims to leave the wellhead and BOP in a secure condition but will result in the loss of the drilling fluids/cuttings in the riser following disconnection.

4 DESCRIPTION OF THE EXISTING ENVIRONMENT

4.1 Overview

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

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

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

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

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

Hydrocarbon Type	EMBA[1]	Socio-cultural EMBA[1]	Planning Area for Scientific Monitoring
Surface	10 g/m^2 This represents the minimum oil thickness (0.01 mm) at which ecological impacts (e.g. to birds and marine mammals) are expected to occur.	1 g/m^2 This represents a wider area where a visible sheen may be present on the surface and, therefore, the concentration at which socio-cultural impacts to the visual amenity of the marine environment may occur. However, it is below concentrations at which ecological impacts are expected to occur.	NA
Dissolved	50 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA guidance note: A652993, April 2019). As dissolved hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors are associated with ecological impacts. Therefore, dissolved hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur.		10 ppb This low exposure value establishes the planning area for scientific monitoring (based on potential for exceedance of water quality triggers) (NOPSEMA guidance note: A652993, April 2019). This area is described further in **Appendix D: Figure 5-1**.
Entrained	100 ppb This represents potential toxic effects, particularly sublethal effects to highly sensitive species (NOPSEMA guidance note:		

Hydrocarbon Type	EMBA[1]	Socio-cultural EMBA[1]	Planning Area for Scientific Monitoring
	A652993, April 2019). As entrained hydrocarbons are within the water column and not visible, impacts to socio-cultural receptors are associated with ecological impacts. Therefore, entrained hydrocarbons at this threshold also represent the level at which socio-cultural impacts may occur.		
Shoreline	100 g/m^2 This represents the threshold that could impact the survival and reproductive capacity of benthic epifaunal invertebrates living in intertidal habitat.	10 g/m^2 This represents the volume where hydrocarbons may be visible on the shoreline but is below concentrations at which ecological impacts are expected to occur.	N/A

[1] *Further details including the source of the thresholds used to define the EMBA in this table are provided in* ***Section 6.8.1.3***

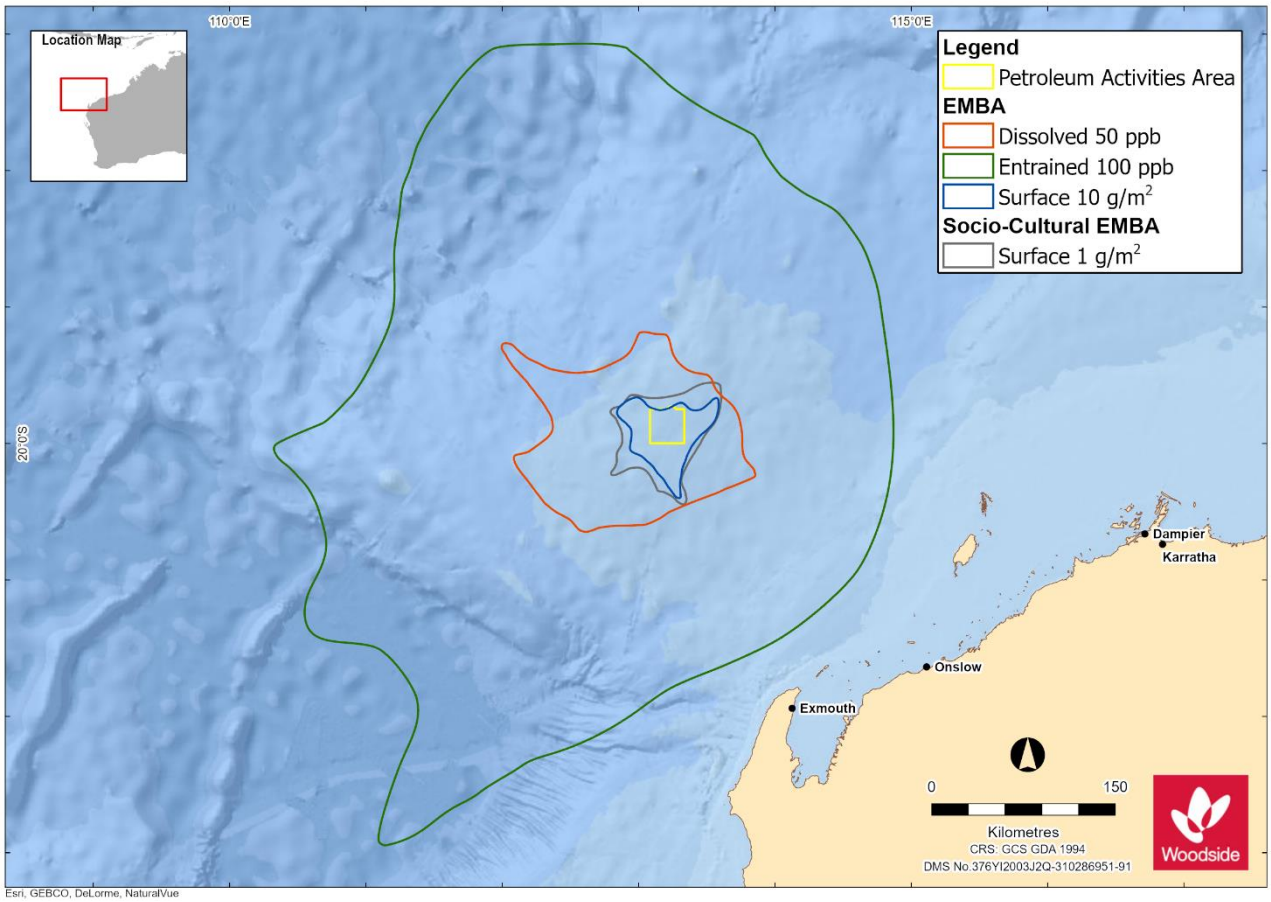


Figure 4-1: Environment that May Be Affected by the Petroleum Activities Program

4.2 Regional Context

The PAA occurs in Commonwealth waters off the north-west coast of Western Australia (WA), located in the North-west Marine Bioregion (NWMR) (IMCRA 4.0). Within the NWMR, the PAA lies within the Northern Carnarvon Basin on the Exmouth Plateau, about 374 km offshore from Dampier. The PAA overlaps with the Northwest Province and the EMBA partially overlaps with the Central Western Transition (**Figure 4-2**). Woodside's Description of Existing Environment (**Appendix I**) summarises the characteristics for the relevant marine bioregions.

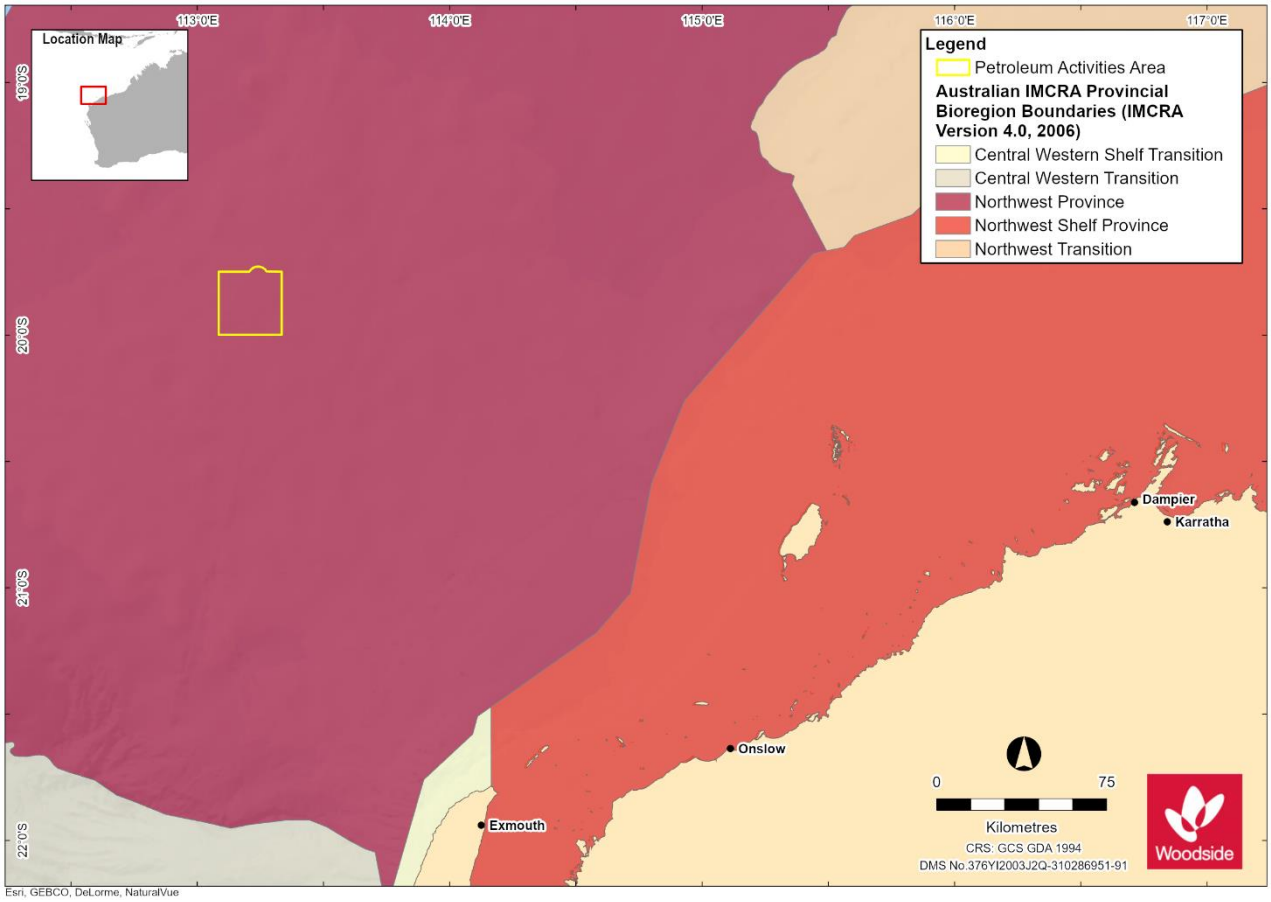


Figure 4-2: Location of the PAA and relevant marine bioregions

4.3 Matters of National Environmental Significance (EPBC Act)

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

Additional information on these MNES are provided in subsequent sections of this chapter and described in detail in **Appendix I**.

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

MNES	Number	Relevant Section
World Heritage Properties	0	**Section 4.9.2**
National Heritage Places	0	**Section 4.9.2**
Wetlands of International Importance (Ramsar)	0	**Section 4.9.2**
Commonwealth Marine Area	1	**Section 4.2**
Listed Threatened Ecological Communities	0	**Section 4.5**
Listed Threatened Species	23	**Section 4.6**
Listed Migratory Species	23	**Section 4.6**

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

MNES	Number	Relevant Section
World Heritage Properties	0	**Section 4.9.2**
National Heritage Places	0	**Section 4.9.2**
Wetlands of International Importance (Ramsar)	0	**Section 4.9.2**
Commonwealth Marine Area	2	**Section 4.2**
Listed Threatened Ecological Communities	0	**Section 4.5**
Listed Threatened Species	27	**Section 4.6**
Listed Migratory Species	43	**Section 4.6**

4.4 Physical Environment

Water depths of the PAA range from 900–955 m. The shallowest waters are approximately in the centre of the PAA, with a gradual increase in depth to the north/north-west and also to the south/south-east (**Figure 4-3**). To the centre and west of the PAA, craters (up to 400 m across and 10 m deep) and similar pockmarks (metres to tens of metres across) have been identified through geophysical surveys (Fugro, 2010). The seafloor exhibits gradients less than 1^{o} but extends to about 15^{o} on the edge of craters (Fugro, 2010). These crater and pockmark formations may be associated with hydrocarbon seeps and associated authigenic carbonate formations (Fugro, 2010).

Marine sediment quality surveys within the Scarborough (WA-61-L[2]) title were undertaken during the 2012/2013 wet and dry seasons (ERM, 2013a). The ERM marine investigation included sampling at a number of sampling sites, to:

- provide a broad characterisation of the habitats within WA-61-L
- achieve spatial coverage across WA-61-L
- provide a representative selection of the various topographic features and corresponding benthic habitats (i.e. crater/pockmark versus non-crater areas).

Key results included:

- All the sediment samples collected were predominantly (≥97% w/w) composed of clay and silt; and only small amounts (1–3% w/w) of sand and shell were detected.
- Generally, low concentrations of metals and nutrients were detected. With the exception of nickel, metal concentrations were below the sediment default guideline values (DGVs)

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

(Simpson, 2013) for analytes with defined DGVs (arsenic, cadmium, chromium, copper, mercury, nickel, lead and zinc). Nickel concentrations were below the high GV.

- No hydrocarbons were detected.

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

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

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

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

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

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

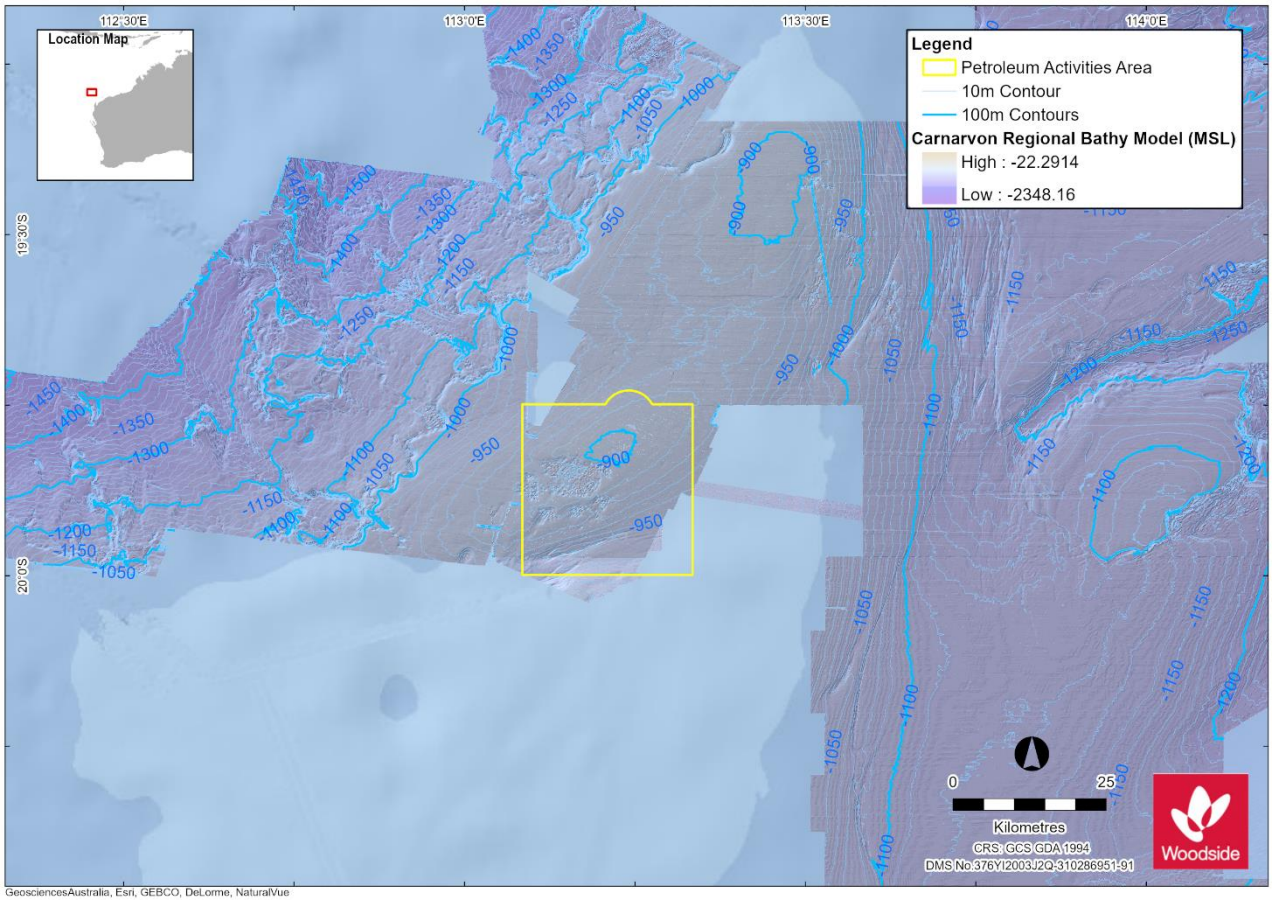


Figure 4-3: Bathymetry of the PAA

4.5 Habitats and Biological Communities

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

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

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

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

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

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

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

Table 4-4: Habitats and communities within the EMBA

Habitat/community	Key locations within the EMBA
Marine primary producers	
Coral	No hard coral habitats likely to occur within the EMBA.
Seagrass beds and macroalgae	No seagrass beds or macroalgae habitats occur within the EMBA.
Mangroves	No mangrove habitats occur within the EMBA.
Other communities and habitats	
Plankton	Plankton communities within the EMBA are expected to reflect the distribution and abundance of the NWMR.
Pelagic and demersal fish populations	Fish populations within the EMBA are expected to reflect the distribution and abundance of the NWMR.
Epifauna and infauna	Epifauna and infauna within the EMBA are expected to reflect the distribution and abundance of the NWMR.

4.6 Protected Species

A total of 40 EPBC Act listed species considered to be MNES were identified as potentially occurring within the EMBA, of which a subset of 29 species were identified as potentially occurring within the PAA. The full list of marine species identified from the PMST reports is provided in **Appendix C**, including several MNES that are not considered to be credibly impacted (e.g. terrestrial species within the EMBA). Two conservation dependent species have also been identified with a potential to occur within the PAA and / or EMBA. One of those species, southern bluefin tuna, has a spawning area within the South of Java Island Ecologically or Biologically Significant Marine Areas (EBSA) directly to the north of the PAA (Figure 4-4).

Species identified as potentially occurring within the PAA and EMBA and Biologically Important Areas (BIAs) or Habitat Critical to their Survival (Habitat Critical) that overlap the PAA and EMBA are listed in Table 4-5 to Table 4-10, and a description of species is included in **Appendix I**. Figure 4-5 and Figure 4-8 show the spatial overlap with relevant BIAs and Habitat Critical areas and the PAA.

4.6.1 Fish, Sharks and Rays

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Carcharodon carcharias	White shark, great white shark	Vulnerable	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Carcharhinus longimanus	Oceanic whitetip shark	NA	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Isurus oxyrinchus	Shortfin mako, mako shark	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Isurus paucus	Longfin mako shark	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Manta birostris (recently revised taxonomy *Mobula birostris* [White et al., 2017])	Giant manta ray, chevron manta ray, Pacific manta ray, pelagic manta ray, oceanic manta ray	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Manta alfredi	Reef manta ray	N/A	Migratory	N/A	Species or species habitat likely to occur within area
Anoxypristis cuspidata	Narrow Sawfish	N/A	Migratory	N/A	Species or species habitat may occur within area
Carcharias taurus	Grey nurse shark	Vulnerable	N/A	N/A	Species or species habitat known to occur
Lamna nasus	Porbeagle Shark/ Mackerel Shark	NA	Migratory	NA	Species or species habitat may occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Pristis clavate	Dwarf sawfish	Vulnerable	Migratory	N/A	Species or species habitat known to occur
Pristis pristis	Freshwater sawfish	Vulnerable	Migratory	N/A	Species or species habitat likely to occur
Pristis zijsron	Green sawfish	Vulnerable	Migratory	NA	Species or species habitat known to occur within area
Rhincodon typus	Whale shark	Vulnerable	Migratory	N/A	Foraging, feeding or related behaviour known to occur
Thunnus maccoyii	Southern bluefin tuna	Conservation Dependent	N/A	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Sphyrna lewini	Scalloped hammerhead shark	Conservation Dependent	N/A	Species or species habitat likely may occur within area	Species or species habitat likely to occur within area

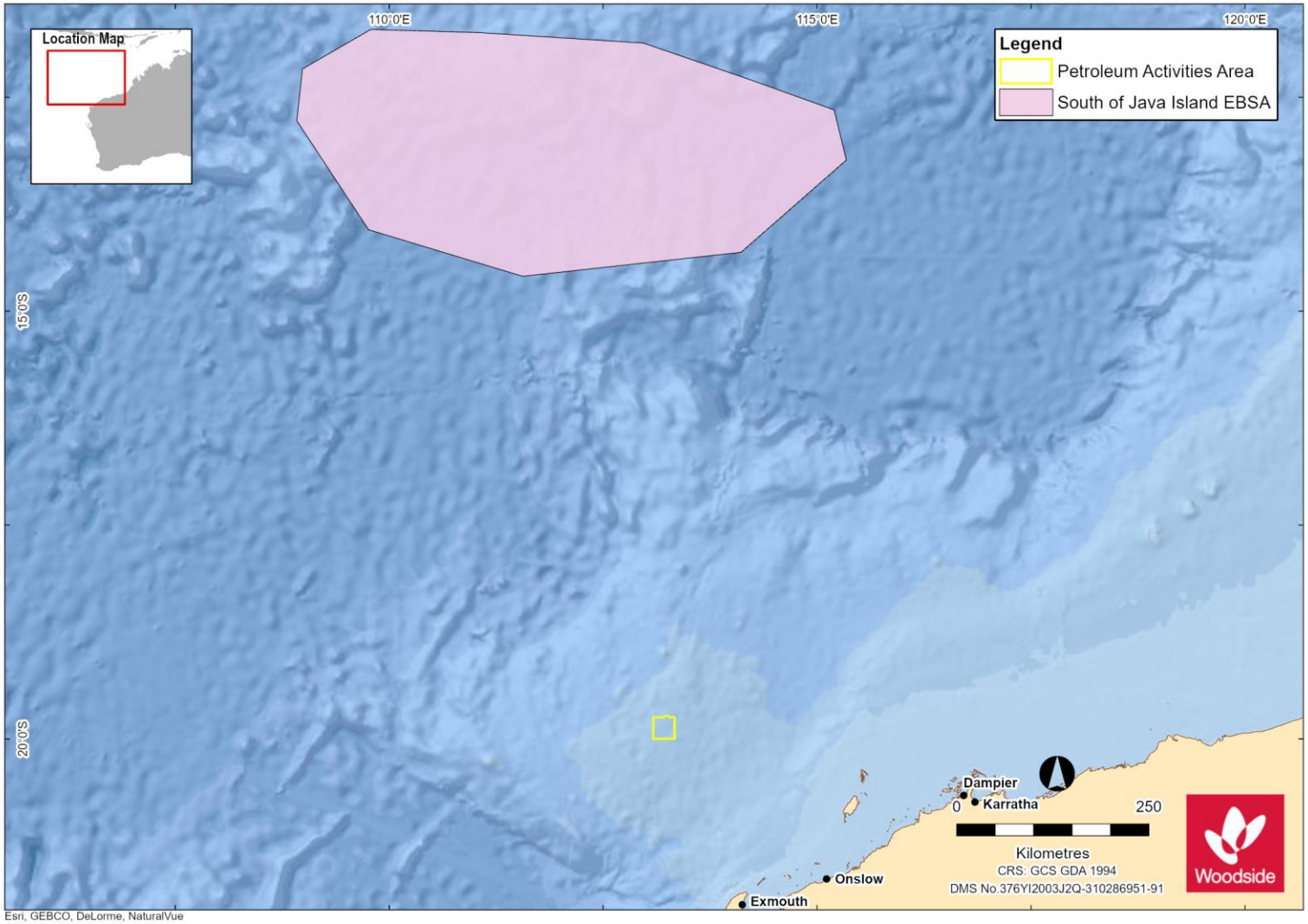


Figure 4-4: Southern bluefin tuna spawning area – South of Java Island EBSA[1]

[1] *EBSA – Ecologically or Biologically Significant Marine Areas; https://www.cbd.int/ebsa/*

4.6.2 Marine Reptiles

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Caretta caretta	Loggerhead turtle	Endangered	Migratory	Species or species habitat likely to occur within area	Species or species habitat known to occur within area
Dermochelys coriacea	Leatherback turtle, leathery turtle, luth	Endangered	Migratory	Species or species habitat likely to occur within area	Species or species habitat known to occur within area
Chelonia mydas	Green turtle	Vulnerable	Migratory	Species or species habitat likely to occur within area	Species or species habitat known to occur within area]
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Species or species habitat likely to occur within area	Species or species habitat known to occur within area
Natator depressus	Flatback turtle	Vulnerable	Migratory	Species or species habitat likely to occur within area	Congregation or aggregation known to occur

4.6.3 Marine Mammals

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

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Balaenoptera musculus	Blue whale (true/Antarctic)	Endangered	Migratory	Species or species habitat likely to occur within area	Migration route known to occur within area
*Balaenoptera musculus brevicauda**	Pygmy blue whale	Endangered	Migratory	Species or species habitat likely to occur within area	Migration route known to occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Species or species habitat likely to occur within area	Foraging, feeding or related behaviour likely to occur
Megaptera novaeangliae	Humpback whale	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat known to occur within area
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Physeter macrocephalus	Sperm whale	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat may occur within area
Balaenoptera bonaerensis	Antarctic minke whale, Dark-shoulder minke whale	N/A	Migratory	Species or species habitat likely to occur within area	Species or species habitat likely to occur within area
Orcinus orca	Killer whale, orca	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Eubalaena australis	Southern right whale	Endangered	Migratory	N/A	Species or species habitat may occur within area
Tursiops aduncus	Spotted Bottlenose Dolphin (Arafura/Timor Sea populations)	N/A	Migratory	N/A	Species or species habitat may occur within area

**Species not detected in PMST search but reported to occur in the area (McCauley, 2011b).*

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

Table 4-8: Marine mammal BIAs within the EMBA

Species	BIA type	Approximate distance (km) and direction from PAA
Balaenoptera musculus brevicauda (Pygmy blue whale)	Migration pathway extending from Perth Canyon to Indonesia	37 km south-east

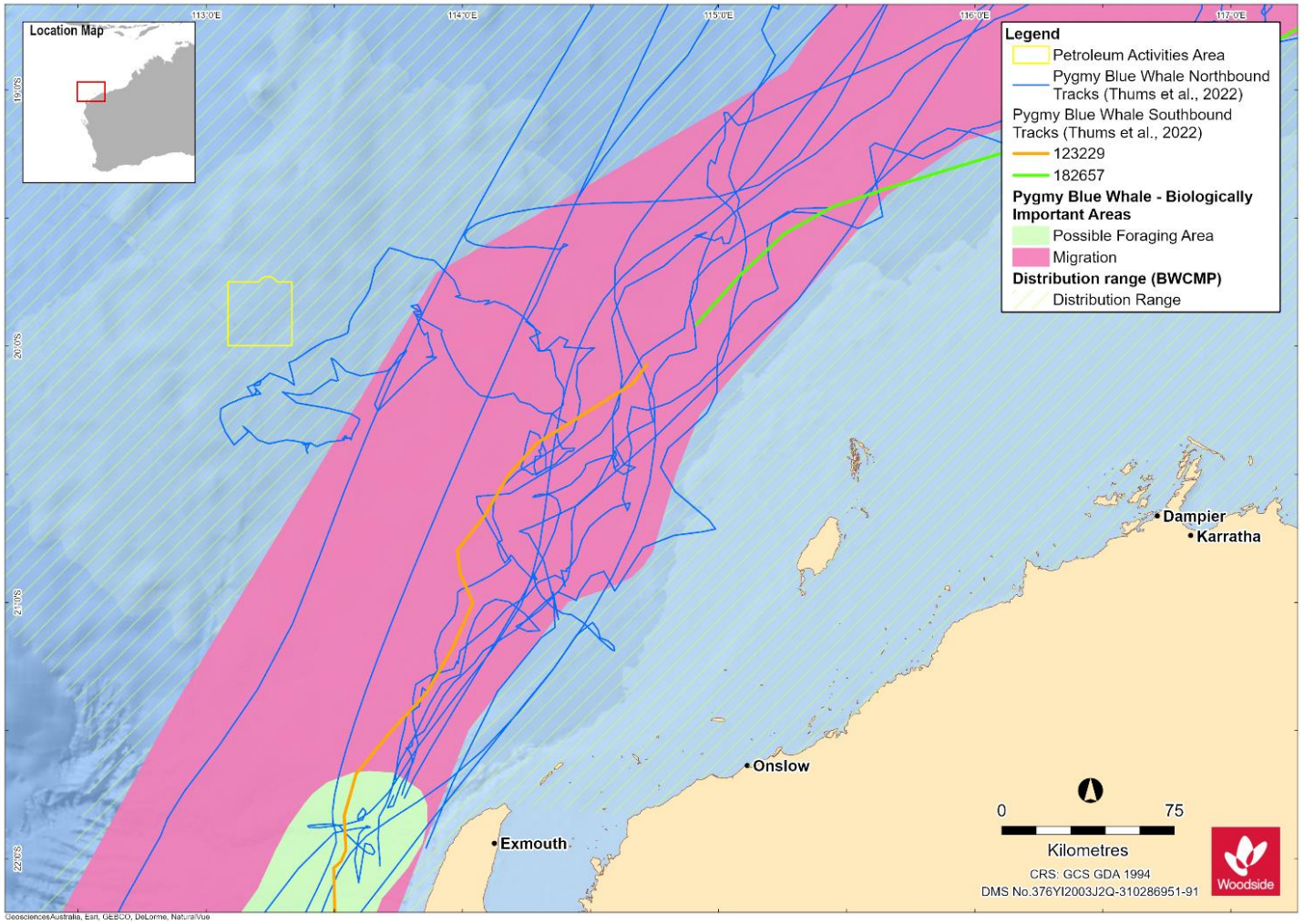


Figure 4-5: Pygmy blue whale BIAs and distribution range (as per the NCVA and Blue Whale Conservation Management Plan (BWCMP), respectively) with reference to the PAA and the 20 tracks of satellite tagged pygmy blue whales recorded in the NWMR, of the 22 tracks presented in Thums et al. (2022).

Pygmy Blue Whales

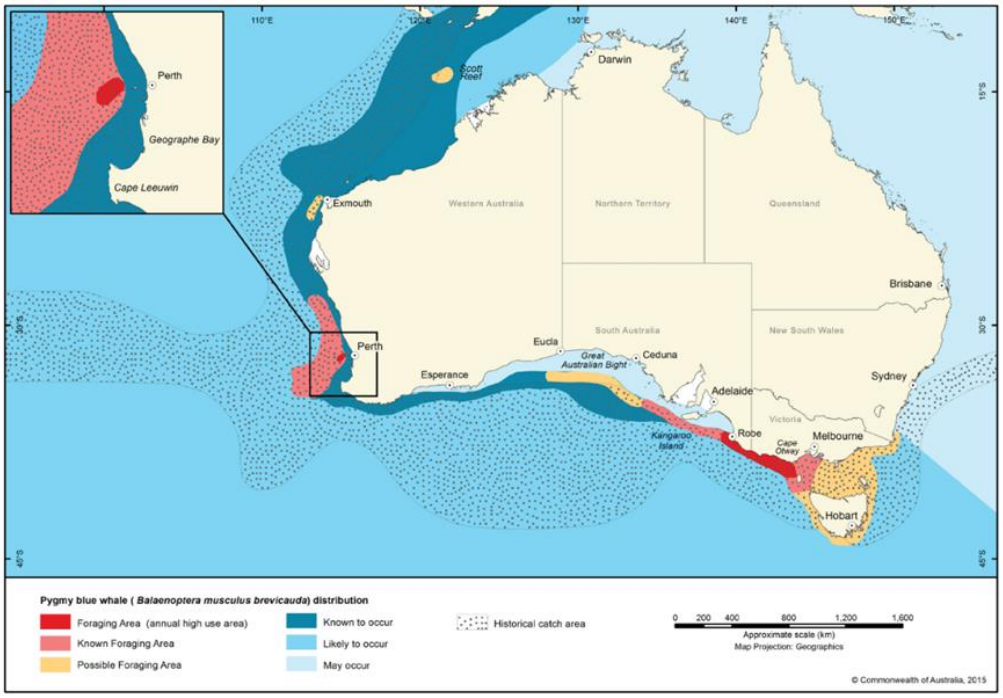
The blue whale (Balaenoptera musculus) is currently listed as Endangered, Migratory and Cetacean under the EPBC Act and Endangered under the WA Biodiversity Conservation Act 2016 (BC Act, September 2018).

The important biological habitats for critical life stages of the pygmy blue whale life cycle are presented in the Blue Whale Conservation Management Plan (CMP) (CoA, 2015a) and the National Conservation Values Atlas (NCVA). The PAA is located ~35 km west of the western edge of the migration BIA (Figure 4-5) and overlaps the broader pygmy blue whale distribution (Figure 4-6).

The pygmy blue whale distribution range is a spatially defined area where pygmy blue whales are known to occur based on direct observations, satellite tagged whales or based on acoustic detections (Commonwealth of Australia, 2015). Thums et al. (2022) acknowledged that the majority of important migration areas for north-west Australia were encompassed by the pygmy blue whale migration BIA, as shown by 20 tracks for northbound pygmy blue whale, as presented in Figure 4-5. 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 4-5. The area the whales have been shown to fan out and migrate beyond the BIA (Thums et al. (2022) is north of the PAA. Two southbound tracked whales also travelled predominantly within the migration BIA (refer to Figure 4-5).

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

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



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

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

Figure 4-6: 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.

4.6.4 Seabirds and Migratory Shorebirds

Table 4-9: Threatened and Migratory seabird and shorebird species predicted to occur within the PAA and EMBA

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Actitis hypoleucos	Common sandpiper	N/A	Migratory	Species or species habitat may to occur within area	Species or species habitat may to occur within area
Anous stolidus	Common noddy	N/A	Migratory	Species or species habitat may to occur within area	Species or species habitat may occur within area
Calidris acuminata	Sharp-tailed sandpiper	N/A	Migratory	Species or species habitat may to occur within area	Species or species habitat may to occur within area
Calidris canutus	Red knot, knot	Endangered	Migratory	Species or species habitat may to occur within area	Species or species habitat may to occur within area
Calidris melanotos	Pectoral sandpiper	N/A	Migratory	Species or species habitat may to occur within area	Species or species habitat may to occur within area
Fregata ariel	Lesser frigatebird, least frigatebird	N/A	Migratory	Species or species habitat may to occur within area	Species or species habitat likely to occur within area
Macronectes giganteus	Southern giant-petrel, southern giant petrel	Endangered	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area
Phaethon lepturus fulvus	Christmas Island White-tailed Tropicbird	Endangered	NA	Species or species habitat may occur within area	Species or species habitat may occur within area
Phaethon lepturus	White-tailed Tropicbird	N/A	Migratory	Species or species habitat may occur within area	Species or species habitat may occur within area

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Ardenna pacifica	Wedge-tailed shearwater	NA	Migratory	NA	Foraging, feeding or related behaviour likely to occur within area
Ardenna carneipes	Flesh-footed Shearwater	NA	Migratory	NA	Species or species habitat may occur within area
Calidris ferruginea	Curlew sandpiper	Critically Endangered	N/A	N/A	Species or species habitat may occur within area
Calonectris leucomelas	Streaked Shearwater	NA	Migratory	NA	Species or species habitat likely to occur within area
Fregata minor	Great frigatebird, greater frigatebird	N/A	Migratory	N/A	Species or species habitat may occur within area
Numenius madagascariensis	Eastern curlew	Critically Endangered		N/A	Species or species habitat may occur within area
Pandion haliateus	Osprey	N/A	Migratory	N/A	Species or species habitat known to occur
Papasula abbotti	Abbott's booby	Endangered	N/A	N/A	Species or species habitat may occur
Pterodroma mollis	Soft-plumaged petrel	Vulnerable	N/A	N/A	Foraging, feeding or related behaviour likely to occur within area
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	N/A	Foraging, feeding or related behaviour likely to occur

Species name	Common name	Threatened status	Migratory status	Potential for interaction	
				PAA	***EMBA***
Thalassarche carteri	Indian yellow-nosed albatross	Vulnerable	Migratory	N/A	Species or species habitat may occur
Thalassarche impavida	Campbell Albatross,	Vulnerable	Migratory	NA	Species or species habitat may occur within area

Table 4-10: Seabird BIAs within the EMBA

Species	BIA type	Approximate distance (km) and direction from PAA
Ardenna pacifica (Wedge-tailed shearwater)	Breeding and foraging (Pilbara coast)	115 km south-east

4.6.5 Seasonal Sensitivities for Protected Species

Seasonal sensitivities for protected migratory species identified as potentially occurring within the PAA are identified in Table 4-11. Movement patterns of all protected species identified in **Section 4.6** are described in **Appendix I**.

As shown in Figure 4-7, the PAA is located 35 km from the PBW migratory corridor and 187 km from the PBW possible foraging area off North-west Cape / Ningaloo Coast.

In September 2021, DAWE and NOPSEMA released guidance on key terms within the Conservation Management Plan for the Blue Whale (the CMP)[3]. This guidance recognises the potential for whale foraging and feeding to occur in areas of high primary productivity outside of designated foraging areas. Migrating pygmy blue whales are not necessarily confined to the designated migratory corridor, and there is the potential for individuals to undertake opportunistic foraging within and adjacent to the PAA, particularly during the northbound migration.

Table 4-11: Key seasonal sensitivities for protected migratory species identified as occurring within the PAA.

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Fish, sharks and rays												
Manta rays – presence/ aggregation/breeding (Ningaloo)[1]												
Marine reptiles												
Green turtle – various nesting/feeding/hatchlings/ mating areas within wider region*[2]												
Flatback turtle – various nesting/feeding/hatchlings/ mating areas within wider region*[2]												
Loggerhead turtle – various nesting areas within wider region*[2]												
Hawksbill turtles – various nesting/hatchlings/mating areas within wider region*[3]												
Mammals												
Blue whale – northern migration (North West Cape, Montebello, Scott Reef)[4]												
Blue whale – southern migration (North West Cape, Montebello, Scott Reef)[5]												
Humpback whale – northern migration (Jurien Bay to Montebello)[6]												
Humpback whale – southern migration (Montebello to Jurien Bay)[7]												
Seabirds												

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

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Wedge-tailed shearwater aggregation/breeding[8]												
	Species may be present in the PAA											
	Peak period. Presence of animals is reliable and predictable each year											

[1] (CALM, 2005; DSEWPaC, 2012a; Environment Australia, 2002; Sleeman et al., 2010)

2 (Chevron Australia Pty Ltd, 2015; CALM, 2005; DSEWPaC, 2012a)

3 (Chevron Australia Pty Ltd, 2015; DSEWPaC, 2012a)

4 (DSEWPaC, 2012a, b; McCauley and Jenner, 2010; McCauley, 2011a)

5 (DSEWPaC, 2012a, b; McCauley and Jenner, 2010)

6 (CALM, 2005; Environment Australia, 2002; Jenner et al., 2001a; McCauley and Jenner, 2001)

7 (McCauley and Jenner 2001)

8 (CALM, 2005; Department of Environmental Protection, 2001; DSEWPaC, 2012b; Environment Australia, 2002)

4.7 Key Ecological Features (KEFs)

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

KEFs within the EMBA are identified in Figure 4-12 and described in **Appendix I**. **Figure 4-7** shows the spatial overlap with KEFs and the PAA.

Table 4-12: KEFs within the PAA and EMBA

Key Ecological Feature	Distance (km) and direction from PAA to KEF
Exmouth Plateau	Overlaps PAA
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	116 km south-east
Continental Slope Demersal Fish Communities	132 km south

*note that the PMST identified that the EMBA overlaps the Ancient coastline at 125 m depth contour however further investigation confirmed there is no overlap with the EMBA

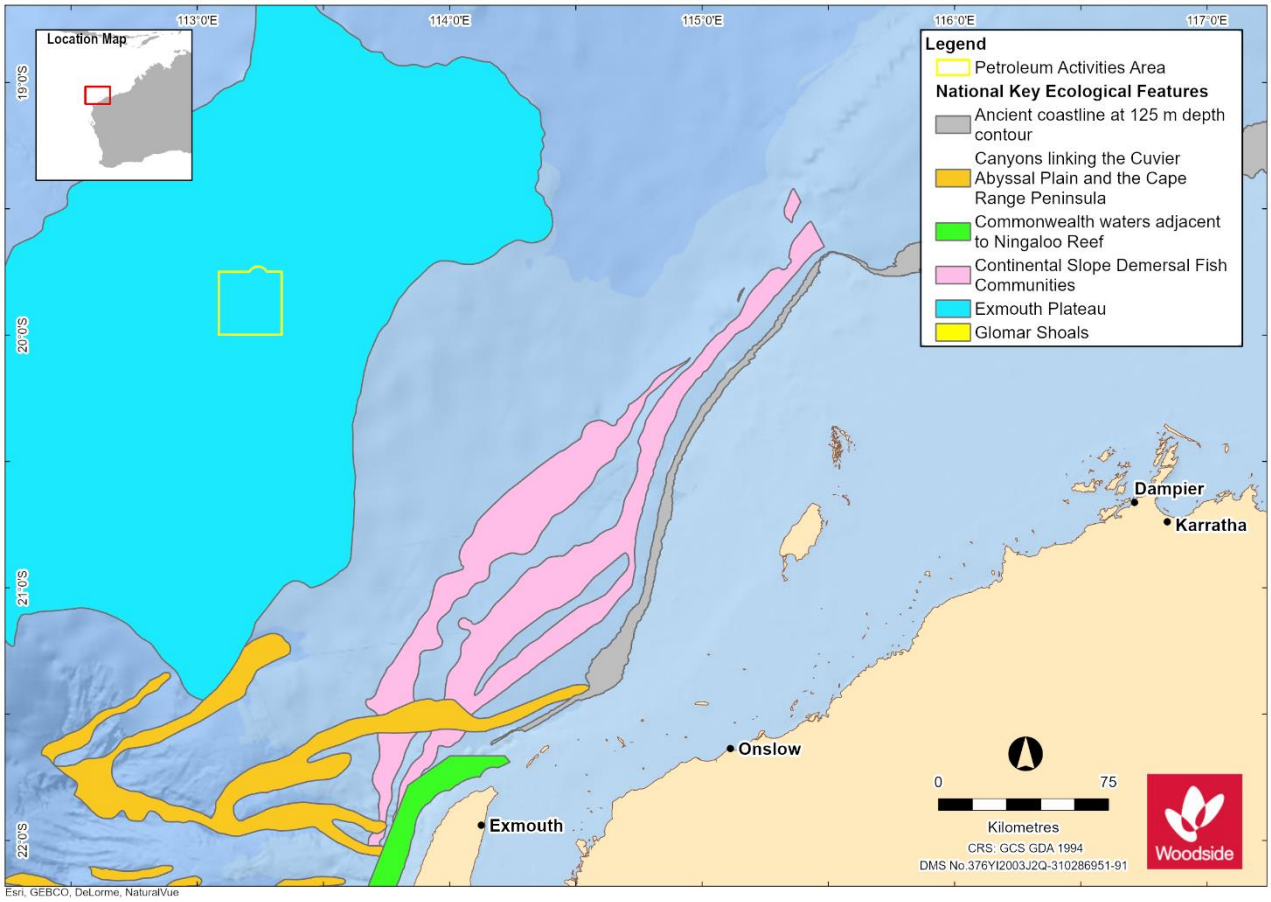


Figure 4-7: KEFs overlapping the PAA

4.8 Protected Places

No protected places overlap the PAA. Protected places within the EMBA are identified in Table 4-13: Established protected places and other sensitive areas overlapping the EMBA and presented in Figure 4-8. **Appendix I** outlines the values and sensitivities of protected places and other sensitive areas in the EMBA.

Table 4-13: Established protected places and other sensitive areas overlapping the EMBA

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

**Conservation objectives for IUCN categories include:*

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: National Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

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

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

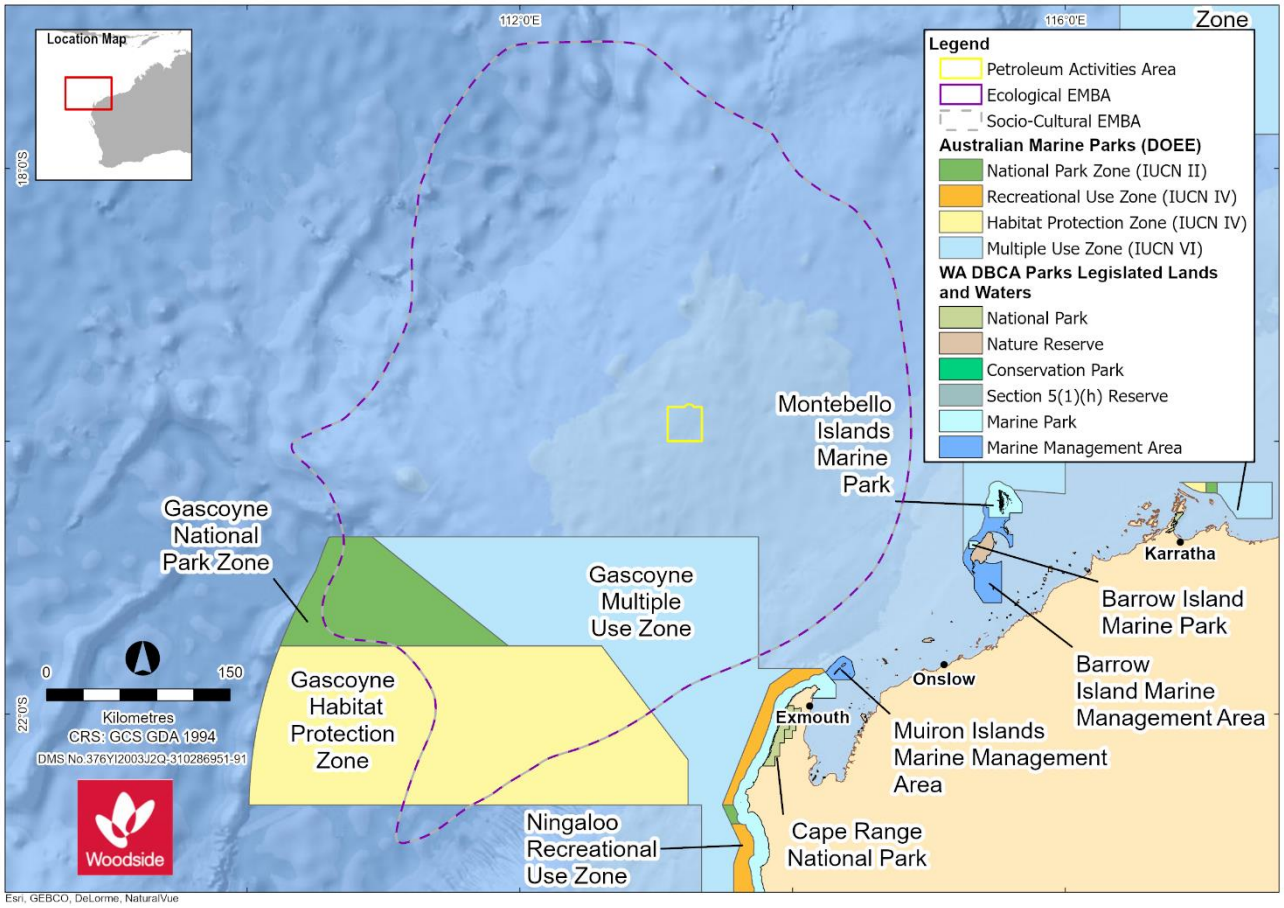


Figure 4-8: Protected areas overlapping the EMBA

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[4] 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 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
- 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).

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

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

For the activity in this EP, there are no native title claims or determinations and no ILUAs overlapping the PAA and EMBA (see **Figure 4-9**). Therefore Woodside understands that no native title rights or interests may be impacted by the activity. A summary of native title claims, determinations and ILUAs which are coastally adjacent to the EMBA is set out in **Table 4-14**. Claims and determinations have not been differentiated in this table, as it is acknowledged that rights and interests may exist within either of these.

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 4-14**).

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 group's relative proximity to the PAA or EMBA is not necessarily a meaningful indicator of the connection of First Nations groups to the area, and providing advice over such areas can be culturally dangerous. As a result, caution must be used when conducting broader engagement.

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

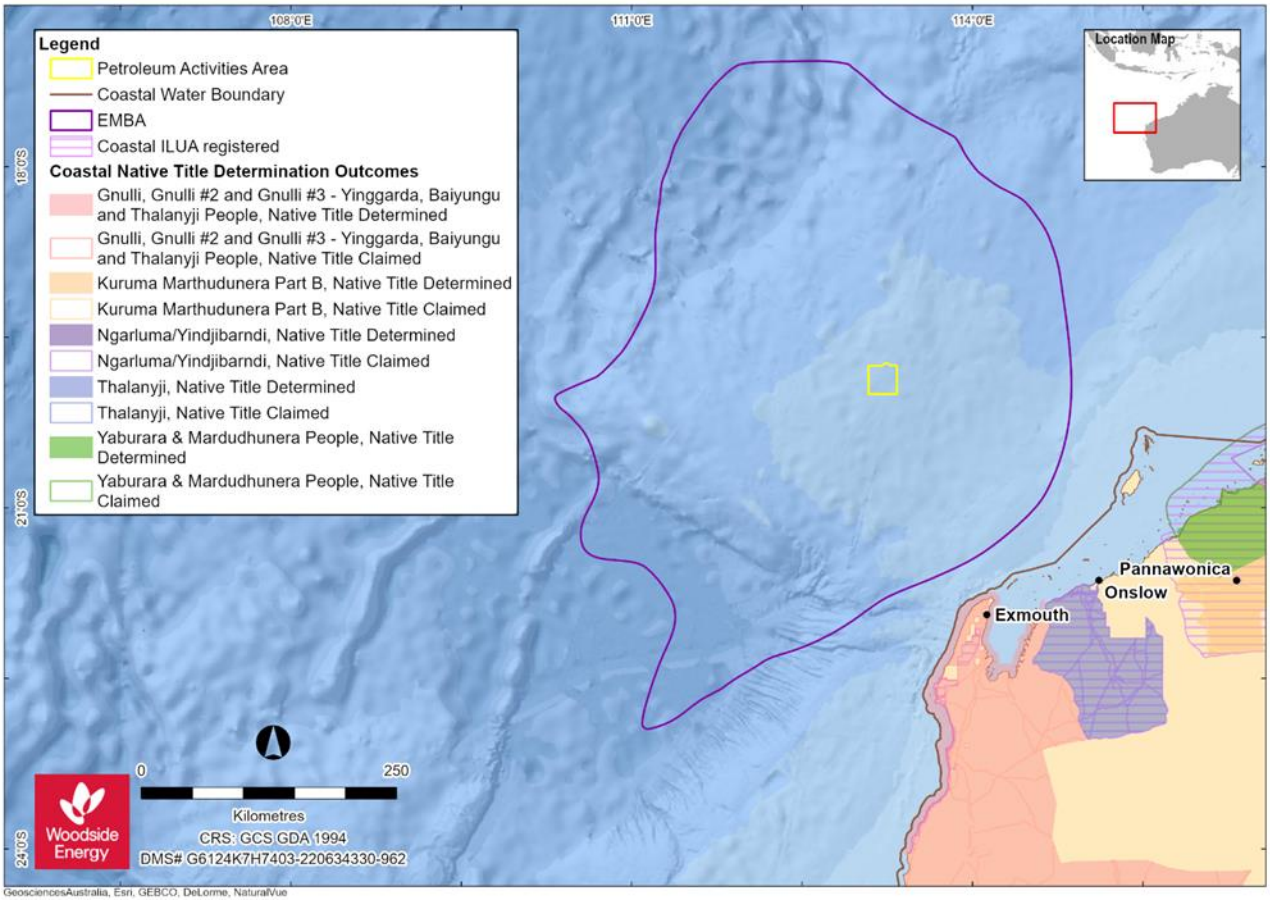


Figure 4-9: PAA and EMBA in relation to native title claims, determinations and ILUAs

Table 4-14: Summary of Native Title Claims, Determinations and ILUAs which overlap or are coastally adjacent to the EMBA.

Claim / Determination / ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally Adjacent to the EMBA
Claim / Determination			
Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People	Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), Yinggarda Aboriginal Corporation (YAC)	No	Yes
Ngarluma/Yindjibarndi People	Ngarluma Aboriginal Corporation (NAC), Yindjibarndi Aboriginal Corporation	No	Yes
Thalanyji	Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	No	Yes
Yaburara & Mardudhunera People	Wirrawandi Aboriginal Corporation (WAC)	No	Yes
ILUA			

Claim / Determination / ILUA	Registered Native Title Body Corporate	Overlap with EMBA	Coastally Adjacent to the EMBA
Cape Preston Project Deed (YM Mardie ILUA)	WAC	No	Yes
Cape Preston West Export Facility	WAC	No	Yes
KM & YM ILUA	WAC, Robe River Kuruma Aboriginal Corporation	No	Yes
Kuruma Marthudunera and Yaburara and Coastal Mardudhunera Indigenous Land Use Agreement	No representative body specified.	No	Yes
Macedon ILUA	BTAC	No	Yes
Ningaloo Conservation Estate ILUA	NTGAC	No	Yes
RTIO Ngarluma ILUA (Body Corporate Agreement)	NAC	No	Yes
RTIO Kuruma Marthudunera People ILUA	Robe River Kuruma Aboriginal Corporation	No	Yes

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 PAA and EMBA to determine whether cultural features and heritage values have been identified and whether there are specified Traditional Custodians or representative bodies referenced to contact regarding potential cultural features and heritage values.

The PAA does not overlap any Commonwealth Marine Parks. The EMBA overlaps with features of the Gascoyne AMP managed under the North-West Marine Parks Network Management Plan 2018. The PAA and the EMBA do not overlap any State Marine Parks. Where these plans specify identifiable representative bodies who may hold knowledge of heritage values or cultural features—

including but not limited to Registered Native Title Bodies Corporate—these bodies are consulted (See **Table 5-2**). Consultation with these groups may identify heritage values and cultural features beyond those addressed in the marine park management plans. No identifiable representative bodies were specified for the marine parks overlapped by the EMBA (See **Table 4-15**).

The marine park management plans did note for the Gascoyne AMP that the Yamatji Marlpa Aboriginal Corporation (YMAC) is the relevant Native Title Representative Body. YMAC was requested to identify Traditional Custodians who may hold knowledge of heritage values or cultural features (See **Appendix F**, Table 1).

Table 4-15: Summary Marine Park Management Plans that overlap the EMBA

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

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 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. 20–30km out to sea, out to the horizon and the limit of human visibility. ... However, in some coastal places, clouds that can be seen well over 100km out to sea are imbued with spiritual significance. For those groups with elaborate canoe technology, seascapes extend well over the horizon." While there is some evidence of traditional watercraft in Australia's North West, the recorded evidence is limited to travel across inland rivers (e.g. Barber and Jackson 2011) or travel between coastal islands (Paterson et al 2019).

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 First Nations language groups. Some species may travel as far as 5,000 km from Antarctica to the Kimberley region of Western Australia (Double et al., 2010, 2012), passing First Nations language groups along the entire west coast of Australia. Distribution and migratory patterns of migratory species are described in **Section 4.6** and **Appendix I**.

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 EMBA or PAA. Where cultural features or Sea Country values were identified these are summarised in **Table 4-17** according to the First Nations groups (where identified or inferable) who hold these values.

All cultural features and heritage values restricted to onshore locations or inland waters have been excluded in **Table 4-17**, noting that the closest boundary of the PAA is greater than 360 km west-north-west of Dampier, and greater than 215 km from the closest landfall at North West Cape, while the boundary of the EMBA is about 40 km from closest landfall with no shoreline contact. Where the geographical extent is not specified or unclear it has been included for completeness.

Table 4-16: Cultural features and heritage values identified in publicly available literature

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	EMBA
Gnulli (Baiyungu, Thalanyji, Yinggarda)	Feature: resources including marine animals. Value: traditional knowledge holds that ancestors live on the land and in the water. Therefore, 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	Yes Possible (unspecified)	Yes Possible (unspecified)
	Feature: resources including mangrove crabs, gastropods, shellfish, dugong, turtle).	Morse 1993	Likely to occur (turtle; **Table 4-6**) No (other resources)	Known to occur (turtle; **Table 4-6**) No (other resources)
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)	No No 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 (unspecified) – unlikely given distance offshore No	Possible (unspecified) No No Possible (unspecified) – unlikely given distance offshore No
	Value: the sea is acknowledged a starting point for songlines, including the flying fox songline.	MAC 2023a	Possible (unspecified)	Possible (unspecified)
	Feature: resources including fishes, turtles and dugong. Value: traditional knowledge recalls a sea serpent which travelled from the coast to inland pools.	Water Corporation 2019	Likely to occur (turtle; **Table 4-6**) Known to occur (fish) No (dugongs; Appendix C) Possible (unspecified)	Known to occur (turtle; **Table 4-6**) Known to occur (fish) No (dugongs; Appendix C) Possible (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	EMBA
	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) – unlikely given distance offshore Possible (unspecified)	Possible (unspecified) – unlikely given distance offshore 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	No	No
	Value: traditional knowledge recalls Murujuga is where ancestral beings emerged from the sea and brought the Law.	Australian Heritage Council 2012	Possible (unspecified) – unlikely given distance offshore	Possible (unspecified) – unlikely given distance offshore
	Feature: Submerged First Nations archaeological sites in Cape Bruguieres channel. Feature: Submerged First Nations archaeological sites in Flying Foam Passage.	Benjamin et al 2020	No No	No No
	Feature: Submerged First Nations archaeological sites in Cape Bruguieres channel. Feature: Submerged First Nations archaeological sites in 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	Possible (unspecified)	Possible (unspecified)
	Value: traditional knowledge recalls Maarga (creation ancestors) lifted the land and sky out of the ocean.	Japingka Aboriginal Art Gallery 2023	Possible (unspecified)	Possible (unspecified)
	Feature: submerged waterholes related to the Kangaroo songline. Value; traditional knowledge holds that Songlines continue beyond the current coast and across the submerged landscape.	Kearney et al 2023	No (feature restricted to Ancient Landscape) Possible (unspecified)	No (feature restricted to Ancient Landscape) Possible (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	EMBA
	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	No No	No Possible (unspecified)
	Value: songlines at Murujuga date back to times when the sea-level was lower.	MAC 2023b.	Possible (unspecified) – unlikely given distance beyond Ancient Landscape	Possible (unspecified)
	Feature: rock art Feature: sacred sites.	Weerianna Street Media Production 2017.	No Possible (unspecified) – unlikely given distance beyond Ancient Landscape	No 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	Likely to occur (turtle; **Table 4-6**) Known to occur (fish) No No No (feature restricted to Ancient Landscape) Possible (unspecified)	Known to occur (turtle; **Table 4-6**) Known to occur (fish) No No No (feature restricted to Ancient Landscape) Possible (unspecified)
	Feature: archaeological sites on Murujuga.	McDonald 2023	No	No
	Feature: archaeological sites on Murujuga.	McDonald 2015	No	No
	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: petroglyphs on Murujuga.	Mulvaney 2015.	No	No

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	EMBA
	Feature: resources including mangrove seeds, turtles, turtle eggs). Value: it is recalled that ceremonies were conducted on islands.	Smyth 2007	Likely to occur (turtle; **Table 4-6**) No (other resources) No (onshore)	Known to occur (turtle; **Table 4-6**) No (other resources) No (onshore)
	Feature: petroglyph and other archaeological sites at Murujuga.	Dortch et al 2019.	No	No
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	Likely to occur (turtle; **Table 4-6**) Known to occur (fish) No (dugongs, other resources) No (onshore) Possible (unspecified)	Known to occur (turtle, **Table 4-6**) Known to occur (fish) No (dugongs, other resources) No (onshore) Possible (unspecified)
	Feature: resources include turtles, eggs, fish, shellfish and plants.	DBCA et al. 2002	Likely to occur (turtle; **Table 4-6**) Known to occur (fish) No (other resources)	Known to occur (turtle, **Table 4-6**) Known to occur (fish) No (other resources)
	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 2004	No	No

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	EMBA
	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	No No No
	Feature: archaeological sites are located on Barrow Island.	Ditchfield et al. 2018	No	No
	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 Yes Yes Yes	No No Yes Yes Yes
	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	No No
	Feature: archaeological sites are located on Barrow Island.	Paterson 2017	No	No
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) – unlikely given distance offshore Possible (unspecified)	Possible (unspecified) Possible (unspecified)
	Feature: archaeological sites in submerged landscapes.	Bradshaw 2021	No (feature restricted to Ancient Landscape)	No (feature restricted to Ancient Landscape)
	Value: Sea Country has customary law defining ownership and management rights and responsibilities.	Muller 2008	Possible (unspecified)	Possible (unspecified)

First Nations Group	Features and Values	Source	Potential for overlap	
			PAA	EMBA
	Value: knowledge of Sea Country. Value: connection to Sea Country. Value: care for Sea Country. Value: the extent of Sea Country is determined by the travels of dreaming ancestors. This is recorded and conveyed through songlines.	Kearney et al 2023	Possible (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	No
	Value: Sea Country includes values, places, resources, stories and cultural obligations. Value: activities relating to resources included: • Dugong hunting; • Turtle hunting; • Turtle egg collecting; • Seabird egg collecting; • Spearing fish; • Reef trapping fish; • Herding fish; • Line fishing; • Collecting fish in stone fish traps; • Poisoning fish; • Gathering shellfish and other marine resources.	Smyth 2007	Possible (unspecified) Possible (unspecified) – unlikely given distance offshore	Possible (unspecified) Possible (unspecified) – unlikely given distance offshore
	Value: people have kinship relationships with every plant and animal. Value: certain species, including fish and seafood, must not be eaten during initiation rituals due to their sacredness to the creation being Barrimirndi. Breaking this law may lead to cyclones.	Juluwarlu 2004	Possible (unspecified) No	Possible (unspecified) No

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

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 2021 for an opposing view).

In recognition of this, Woodside considers the Ancient Landscape between the mainland and the Ancient Coastline KEF (see **Figure 4-7**) 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 PAA and EMBA do not overlap the Ancient Landscape.

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 Cultural Heritage Inquiry System was undertaken, which showed no registered Aboriginal sites in the EMBA (see Appendix G).

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.

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 an 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 a 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, 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 nearshore, Woodside commissioned an ethnographic survey to support the Scarborough Project (McDonald and Phillips 2021), including the PAA (See **Table 4-14**). An ethnographic survey determines both the tangible and intangible cultural heritage which may be associated with a particular story, person/peoples, animals, plants, area, features or objects. Typical results from surveys of this nature may include the identification of songlines, ceremonial places such as 'thalu' sites for managing environmental resources, or places where activities such as birthing, initiation or other significant activities are performed. 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.

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 First Nations 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 4-10**, 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 60 km 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 PAA and EMBA and hence 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. Some of these sites have spiritual connections throughout the landscape including to Cape Preston and Depuch Island. It was not proposed in the report that the Project would pose any risk to these sites or values, which are located well outside the 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 4-10: Scarborough Development Location considered in the 2020 ethnographic survey (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 First Nations groups and representatives as detailed in **Section 5**. As reported in **Section 4.9.1.5.3**, 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 First Nations 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 4.9.1.5.3** and has not identified any areas recorded as Thanlyji 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 J).

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 7.8**).

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 4-17**.

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 2020). 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[5] that First Nations people hold.

[5] 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)

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 7.8**.).

Table 4-17: Feedback Received via Consultation to Inform Existing Environment Description

Relevant First Nations Group /Individuals	Consultation context	Description of Feature and Value / Interest	Potential for overlap	
			PAA	EMBA
BTAC representing some of the Gnulli native title claimants (Baiyungu and Thalanyji people)	Raised specific to PAP (See Appendix F; Table 1) Raised in context of general Scarborough Project activities	Value: Cultural obligation to care for the environmental values of Sea Country Sea Country extends *"out to the vast islands off the coast of the Pilbara, including the Monte Bello Islands, Barrow Island, and the Mackerel Islands"*	Possible (unspecified) No (refer to further description below)	Possible (unspecified) No (refer to further description below)
Murujuga Aboriginal Corporation representing Ngarda-Ngarli people (Mardudhunera, Ngarluma, Wong-Goo-Tt-Oo, Yaburara and Yindjibarndi)	Raised in context of Nearshore Scarborough Project activities	Value: Mermaid Sound – Ecosystem health	No	No
		Feature: Whale Value: A whale Thalu is an increase at a totemic site that brings whales into beach Value: Whales and other species of totemic importance need to be protected, including their populations, biodiversity, and migration patterns Value: Whales are culturally important species that migrate through Mermaid Sound. Humpback whales in particular	Likely to occur (**Table 4-7)** Possible (unspecified) Likely to occur May occur	Known to occur (**Table 4-7)** Possible (unspecified) Known to occur Known to occur
		Feature: Dolphins Value: There are cultural ceremonies associated with communicating with dolphins	May occur Possible (unspecified)	May occur Possible (unspecified)
		Feature: Dugongs Value: Dugongs are a food source associated with seagrasses near Gidley Island	No (Appendix C) No (Appendix C)	No (Appendix C) No (Appendix C)
		Feature: Fish Value: There are Thalu ceremonies associated with increasing fish stocks	Known to occur Possible (unspecified)	Known to occur Possible (unspecified)
		Feature: Sea snakes Specifically mentioned as culturally important species	May occur (Appendix C)	May occur (Appendix C)
		Feature: Flatback, green, hawksbill, loggerhead and leatherback turtles	Likely to occur (turtles; **Table 4-6**)	Known to occur (turtles; **Table 4-6**)

Relevant First Nations Group /Individuals	Consultation context	Description of Feature and Value / Interest	Potential for overlap	
			PAA	EMBA
		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	No No No (songline geographically restricted nearshore)	No No No (songline geographically restricted nearshore)
		Interest: Coral Fish are attracted to areas with coral Concerned about coral bleaching because corals are important. Beautiful colours. They also attract a lot of other things Fish carry coral spawn like bees pollinate flowers. If fish were looked after, the corals would get brighter and brighter (by transmitting nutrients and performing other ecosystem services, fish can be symbiotic with corals) Spawning events should be avoided (associated with full moon). Locations identified during consultation include Withnell Bay; Conzinc Bay; south west of Legendre Island	No (Table 4-4)	No (Table 4-4)
		Feature: Seagrass Seagrasses provide protection for animals Locations identified during consultation include Conzinc Island; between Angel and Gidley Island.	No (Table 4-4)	No (Table 4-4)
		Value: Mangroves would have provided shelter, crabbing, digging for shellfish, could be turtle nurseries Locations identified during consultation include Conzinc Bay north end; Flying Foam Passage;	No (Table 4-4)	No (Table 4-4)

Relevant First Nations Group /Individuals	Consultation context	Description of Feature and Value / Interest	Potential for overlap	
			PAA	EMBA
		Searipple Passage; north-east bay of West Lewis Island		
		Interest: Macroalgal communities, which are important primary production sites, habitats, and food sources (not explicitly identified by elders)	No (Table 4-4)	No (Table 4-4)
		Interest: Subtidal soft-bottom communities, which support invertebrate diversity (not explicitly identified by elders)	No (Table 4-4)	No (Table 4-4)
		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)	No	No
		Interest: Rocky shores, which are habitats for intertidal organisms and provide food for shorebirds (not explicitly identified by elders)	No	No
		Feature: Fish traps	No	No
		There are known fish traps in Conzinc Bay, and others would have or do exist in coastal areas of islands, such as Angel and Gidley Islands. People still use the Conzinc Bay fish traps regularly for catching mangrove jack, trevally and other fish	No	No
		Value: Squidding (harvesting of squid from the ocean) around Conzinc Island	No	No
Ngarluma Aboriginal Corporation (NAC)	No values raised	-	-	-
Ngarluma Yindjibarndi Foundation Limited (NYFL)	No values raised	-	-	-
Nganhurra Thanardi Garrbu Aboriginal Corporation	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	Likely to occur (whale; **Table 4-7**)	Known to occur (whale; **Table 4-7**)

Relevant First Nations Group /Individuals	Consultation context	Description of Feature and Value / Interest	Potential for overlap	
			PAA	EMBA
representing Baiyungu and Thalanyji people	Raised in context of decommissioning activities	Interest: Whale sharks – query regarding activity timing Interest: Marine parks – query regarding risks from activity in relation to decommissioning	No No	Known to occur (Table 4-5) Yes (Gascoyne AMP)
Robe River Kuruma Aboriginal Corporation (RRKAC)	Raised in context of general Scarborough Project activities	Feature: Underwater heritage	No (feature restricted to Ancient Landscape)	No (feature restricted to Ancient Landscape)
Save Our Songlines, [redacted] and [redacted]	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	Likely to occur (**Table 4-7**)	Known to occur (**Table 4-7)**
		Interest: Turtles – including migration patterns	Likely to occur (**Table 4-6**)	Known to occur (**Table 4-6**)
		Interest: Dugongs – unspecified	No (Appendix C)	No (Appendix C)
		Interest: Plankton – unspecified	Known to occur	Known to occur
		Interest: Seagrass – Unspecified	No (Table 4-4)	No (Table 4-4)
		Interest: Where saltwater and freshwater meet	No	No
	Raised in Concise Statement and Affidavit[6] in context of Scarborough seismic activities[7]	Value: Caring for Country [redacted] 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) [redacted] 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)

[6] https://www.fedcourt.gov.au/__data/assets/pdf_file/0003/112278/6-Applicants-Concise-Statement.pdf
[7] Information from publicly available sources to support consultation with SOS, [redacted] and [redacted]

Relevant First Nations Group /Individuals	Consultation context	Description of Feature and Value / Interest	Potential for overlap	
			PAA	EMBA
		Feature: Whales [redacted] 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.” "In their own families, female whales have a caretaker or midwife role, and those who are connected to the Whale Dreaming and carry the women's lore also have obligations as caretakers of the earth." "The women's lore that [redacted] and [redacted] carry is the songline of the whale, which is important for sustaining the creation of all animals and humans." '[redacted] and [redacted] connect to the whales like this through their songlines, they sing to the whales, the whales feel that song and the connection through their hearts, regardless of the distance." "the whales tell [redacted] and [redacted] a story, and [redacted] and [redacted] are the people who feel and who are connected to that story. [redacted] and [redacted] have that feeling of connection inside them all the time, they live and breathe it, they are in and everything about it." "Because each animal uses songlines for migration, breeding and feeding, the disruption or	Likely to occur (whale; **Table 4-7**) Possible (songlines, unspecified)	Known to occur (whale; **Table 4-7**) Possible (songlines, unspecified)

Relevant First Nations Group /Individuals	Consultation context	Description of Feature and Value / Interest	Potential for overlap	
			PAA	EMBA
		distortion to the songlines causes the animals to become disoriented, confused or lost.”		
		Interest: Whales Interest: Pygmy Blue whales “Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales iii. whales' sonar communications systems, particularly between mothers and calves, from sound and vibrations emitted by the Activity v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon); and vi. vehicle collision and/ or entanglement with marine fauna"	Likely to occur (**Table 4-7**)	Known to occur (**Table 4-7**)
		Interest: Turtles "Other animals, such as turtles, dolphins, dugongs, and krill follow the whale's songlines, because they're all connected together - the whale creates a path for the other animals like 'grading a road'." “Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales	Likely to occur (**Table 4-6**)	Known to occur (**Table 4-6**)

Relevant First Nations Group /Individuals	Consultation context	Description of Feature and Value / Interest	Potential for overlap	
			PAA	EMBA
		v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon); and vi. vehicle collision and/ or entanglement with marine fauna"		
		Interest: Dugongs “Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: v. potential impacts on water quality and consequent potential impacts on marine fauna such as whales, dugongs, sharks, rays, and seabirds from the risk of unplanned chemical discharges (non-hydrocarbon)”	No (Appendix C)	No (Appendix C)
		Interest: Pelagic fish “Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales”	Known to occur	Known to occur
		Interest: Sharks “Potential impacts on marine species and natural environment, relevant to the natural environment, relevant to the Applicant's interests, including but not limited to: ii. behavioural changes (leaving or avoiding the area where the Activity occurs) to turtles, pelagic fish (such as tuna and billfish), sharks, pygmy blue whales	Likely to occur (Table 4-6**)**	Likely to occur (Table 4-6**)**

Relevant First Nations Group /Individuals	Consultation context	Description of Feature and Value / Interest	Potential for overlap	
			PAA	EMBA
		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	Known to occur	Known to occur
		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)	May occur (**Table 4-9**)	May occur (**Table 4-9**)

Relevant First Nations Group /Individuals	Consultation context	Description of Feature and Value / Interest	Potential for overlap	
			PAA	EMBA
		Value: 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[8] are, and that connection is a core of creation relevant to a Dreaming story."	No	No
		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	No
		Value: Bungarra, Eagle, Kangaroo Identified totemic species	No	No
		Value: Murujuga "When [redacted] and [redacted] and their people stand on Country they are connected to their songlines through the rocks. As holders of women's lore, [redacted] and [redacted] put healing energy into the rocks and use that to heal the songlines." "[redacted] and [redacted] 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	No
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 Interest: Turtles - query with regard to turtle monitoring programs Interest: Underwater heritage – query with regard to where sites have been recently found	Likely to occur (**Table 4-7**) Likely to occur (**Table 4-6**) No	Known to occur (**Table 4-7**) Known to occur (**Table 4-6)** No

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

Relevant First Nations Group /Individuals	Consultation context	Description of Feature and Value / Interest	Potential for overlap	
			PAA	EMBA
	Raised in context of decommissioning activities	Interest: Rock Art – query whether air emissions from activities impacts rock art and controls to minimise potential impacts	No	No
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	Likely to occur (**Table 4-7**)	Known to occur (**Table 4-7**)
		Value: Shark Bay Mullet – important resource	No (coastal species)	No (coastal species)
		Interest: Dugong – raised in context of Shark Bay	No	No
		Interest: Seagrass being food source for Dugong	No (Table 4-4**)**	No (Table 4-4**)**

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 protects its values and interests

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. Archae-aus 2020). An early 1940's map by Tindale shows "Ṫalaindji" (Thalanyji) Country as exclusively terrestrial and further west than areas typically recognised today as Thalanyji Country (Tindale 1940). This map also shows the Noala people as custodians of the Onslow area and defines Barrow and the Montebello Islands as "Mardudunera" (Mardudhunera) Country—it is unclear from the map if the boundary of Mardudhunera is proposed to represent an extent of Sea Country, or merely note that these islands are part of Mardudhunera Country. A further refined version of this map was produced in 1974 which shows "Talandji" in a location more closely aligned with contemporary understanding of Thalanyji Country and removes the apparent extent of Mardudhunera over Barrow and the Montebello Islands (Tindale 1947). This definition of Thalanyji Country is still confined to the mainland in this map. A more contemporary attempt at mapping traditional Country is shown in The AIATSIS Map of Indigenous Australia (Horton 1996). This map similarly confines Thalanyji Country to terrestrial areas west of Onslow and leaves Barrow and the Montebello Islands unmarked as an area with "No published information available". It is also noted that "This map is based on data collected up to 1994 and is not intended to show precise areas or boundaries" (Horton 1996).

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

> *Although some differences remain, between and among native title groups, there is now a general sense that most groups have coalesced into final forms that will, in future, be the groups that exercise rights and interests in their respective areas. many of these rights and interests will relate directly to native title. however, there is also a more broadly based*

> *appreciation of the need to accept and discharge responsibilities for land and marine management within native title areas regardless of whether native title per se is affected.* (YMAC et al. 2010, emphasis added).

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

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

The only currently operative organisation, and the only organisation with an identifiable 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 2021https://thalanyji.com.au/). 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[9], 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[10] 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[11], includes an area of water extending approximately 30 km from the mainland coast in encompassing a number of islands, including Airlie Island, Ashburton Island, Bessieres Island, Direction Island, Flat Island, Locker Island, Round Island, Serrurier Island, Table Island, Thevenard Island, Tortoise Island, and the Twin Islands. The area also includes the south-most of the Mangrove Islands, but does not include the other Mangrove Islands.

[9] http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC1995_002/Attachment%20A-%20Thalanyji%20Map.pdf
[10] http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC1996_082/SNTAExtract_WC1996_082.pdf
[11] http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC1999_045/1999_11_09%20Attachment%20B%20Map%20of%20Claim%20Area.pdf

The area of WC2010/004, as defined in the map forming Attachment C to the Native Title Application[12] includes localised areas of sea up to approximately 5 km beyond the coast.

In none of these applications do the extent of asserted interests extend to Barrow, Mackerel or the Montebello Islands. The furthest extent of a claim is the approximate 30 km margin extended from the mainland coast for WC1999/045. If this margin is precautionarily applied to the coasts of the Montebello Islands (as the closest islands to the operational area which were identified by BTAC in defining their Sea Country) this would not exceed beyond the Montebello Multiple Use Zone within the vicinity of the islands.

In summary, the publicly available information considered in this section does not record any instances of Thalanyji Sea Country extending beyond the Montebello Multiple Use Zone within the vicinity of the islands. The Montebello Islands, Barrow Island or the Mackerel Islands or the Montebello Marine Park Multiple Use Zone, or the islands indicated in WC1999/045 are outside of the PAA and EMBA for the activity.

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 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 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 4.9.1.5** and confirms whether there is any potential for these to exist within the PAA or EMBA. It also includes 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 PAA 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.

[12] http://www.nntt.gov.au/searchRegApps/NativeTitleClaims/NTDA%20Extracts/WC2010_004/WC2010_004%202.%20Map%20of%20Application%20Area.pdf

Table 4-18 Summary of cultural features and heritage values

Identified cultural features and heritage values (including interests)	Context	EP Source				Potential for overlap	
		Consultation Feedback	***First Nations Archaeological Heritage Assessment***	***Ethnographic Heritage Assessment***	***Desktop Literature Assessment***	***PAA***	***EMBA***
Archaeological heritage							
None identified – refer to **Section 4.9.1.6.1** No archaeological sites have been identified beyond terrestrial or intertidal areas, with the exception of two sites at Murujuga outside the EMBA, specifically in Cape Bruguieres channel and Flying Foam Passage (Benjamin et al. 2020; Benjamin et al 2023). While it is recognised that there is the potential for submerged archaeological sites on the Ancient Landscape as noted in **Table 4-17**, both the PAA and EMBA do not overlap the Ancient Landscape.							
Intangible values							
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)
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, but cannot be confirmed to relate to features within the EMBA.	✓	X	✓	✓	Possible (unspecified)	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.	✓	X	X	✓	Possible (unspecified)	Possible (unspecified)

Identified cultural features and heritage values (including interests)	Context	EP Source				Potential for overlap	
		Consultation Feedback	***First Nations Archaeological Heritage Assessment***	***Ethnographic Heritage Assessment***	***Desktop Literature Assessment***	***PAA***	***EMBA***
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.	✓	X	✓	✓	Possible (unspecified)	Possible (unspecified)
Connection to Country	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	✓	X	X	✓	Possible (unspecified)	Possible (unspecified)
Access to Country	Limitations on Traditional Custodians accessing or enjoying areas of Sea Country	✓	X	X	✓	Possible (unspecified)	No (No limitations on access beyond the PAA)
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.	✓	X	X	✓	Possible (unspecified)	Possible (unspecified)
Resource collection	Fishing, hunting, gathering of marine species	✓	X	X	✓	No	Possible (unspecified)
Marine ecosystems and species							
Marine species	Generally raised in consultation and literature	✓	X	X	✓	Yes	Yes

Identified cultural features and heritage values (including interests)	Context	EP Source				Potential for overlap	
		Consultation Feedback	***First Nations Archaeological Heritage Assessment***	***Ethnographic Heritage Assessment***	***Desktop Literature Assessment***	***PAA***	***EMBA***
Whales	Generally raised in consultation Thalu species of totemic importance Linked to songlines and dreaming stories Humpback whales in particular	✓	X	X	✓	Likely to occur (whales; **Table 4-7**)	Known to occur (whales; **Table 4-7**)
Dolphins	Cultural ceremonies associated with communicating with dolphins	✓	X	X	X	May occur	May occur
Marine turtles	Culturally important species and migration Turtles and turtle eggs as a resource Law run through the sea, including turtles	✓	X	X	✓	Likely to occur (turtles; **Table 4-6**)	Known to occur (turtles; **Table 4-6)**
Sea snakes	Culturally important species	✓	X	X	X	Possible	Possible
Fish (including sharks and rays)	Culturally important species Fish as a resource Law run through the sea, including fish There are Thalu ceremonies associated with increasing fish stocks	✓	X	X	✓	Known to occur	Known to occur
Seabirds	Interest only, raised as a natural environment interest as a potential impacted receptor of impacts to water quality	✓	X	X	X	May occur	May occur
Plankton	Interest only, raised as a natural environment interest	✓	X	X	X	Yes	Yes
Water quality	Interest only, raised as a natural environment interest	✓	X	X	X	Yes	Yes
Subtidal soft-bottom communities	Interest only, raised as a natural environment interest regarding invertebrate diversity	✓	X	X	X	Yes	Yes

Identified cultural features and heritage values (including interests)	Context	EP Source				Potential for overlap	
		Consultation Feedback	***First Nations Archaeological Heritage Assessment***	***Ethnographic Heritage Assessment***	***Desktop Literature Assessment***	***PAA***	***EMBA***
Marine Park	Interest only; raised in context of decommissioning activities	✓	X	X	X	No	Yes

4.9.1.6.1 Further context: Intangible cultural heritage

Intangible cultural heritage have been identified through consultation with First Nations people as culturally important (refer to **Section 4.9.1**). 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 (Adler 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).

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

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

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 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.

4.9.1.6.2 Further context: Marine ecosystems and species

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.

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 2023; 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 2021:47).

Details pertaining to whales 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 4.9.1.6.1 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).

Turtle symbology expressed through stories, music, and dance can reflect an individual or group's connections with the sea, as well as marine fauna, and comprise First Nations' cultural values (Ardler 2023; Bursill et al. 2007). Beyond mythology and symbolism, turtles can be connected with various economic and social functions associated with everyday life including hunting and settlement location. Turtles speak to a broader connection that exists between First Nation people and their surrounding environment, including cultural values associated with food security (Delisle et al.2018:250).

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

Fish have been identified through consultation with First Nations people as a culturally important species, with fish generally being identified as a resource.

First Nations may identify cultural values associated with fish species as important to maintaining both tangible (physical cultural sites) and intangible (cultural knowledge) cultural heritage. Tangible cultural heritage associated with fish can include important cultural sites such as midden sites, fish traps and thalu sites. Traditional fish traps require traditional knowledge of the surrounding

environment and may involve specialised techniques which have been developed in adaptation to location conditions over time (Fijn 2021:63).

Intangible cultural heritage associated with fish include songlines, dreaming, art, song and dance. Cultural values relating to fish, and other marine fauna, can collectively capture 'Sea Country' which refers to a seascape that Traditional Custodians view, interact with or hold knowledge of. As a result, fish may be culturally value in relationship with broader marine environmental values that are of cultural importance to First Nations people (Smyth 2007).

Details pertaining to fish, sharks and rays are described in **Section 4.6.1**, with further details in **Appendix I** (Master Existing Environment).

Natural environment interests

First Nations people have advised through consultation that they have a general interest in environmental management and ecosystem health, including understanding changes in water quality as a result of the Petroleum Activities Program and potential resultant affects on marine species and benthic communities in the PAA and EMBA. This includes marine mammals, marine reptiles, fish, seabirds, plankton and subtidal soft bottom communities, which are described in context of their distribution and populations in **Section 4.6**, with further details in **Appendix I** (Master Existing Environment).

4.9.2 Heritage Listed Places

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

A search of the Australasian Underwater Cultural Heritage, which records all known Maritime Cultural Heritage (shipwrecks, aircraft, relics and other underwater cultural heritage) in Australian waters indicated that there are no underwater heritage sites or shipwrecks within the PAA or EMBA.

4.9.3 Commercial Fisheries

A number of Commonwealth and State fishery management areas are located within the PAA 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 that have fished within the Operational Area 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 (DPIRD, 2022). Data from Fishcube and ABARES was reviewed from the last 5 years as a subset of past fishing effort. This was deemed an appropriate period to represent potential future fishing effort over the lifecycle of this EP (5 years). In addition, any impacts to fish are expected to be temporary in nature (See **Section 6.1** and **Section 6.2**) and therefore not extending beyond the life of the EP. **Table 4-16** provides an assessment of the potential interaction and **Appendix I** provides further detail on the fisheries that have been identified through desk-based assessment and consultation (**Section 5**). No fisheries were identified as having a potential interaction with the Petroleum Activities Program.

Table 4-16: Commonwealth and State commercial fisheries overlapping the PAA and EMBA

Fishery	Potential for interaction × no potential for interaction ✓ potential for interaction		
	Overlap with PAA	**Overlap with EMBA**	**Description**
Commonwealth Managed Fisheries			
North West Slope Trawl Fishery	×	✓	The North West Slope Trawl Fishery management area overlaps the combined EMBA. Between one to six vessels have been active in the fishery since 2005. Fishery Status Reports indicate most recent activity inside the EMBA occurred in the 2020-2021 season (ABARES, 2021). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the combined EMBA.
Western Deepwater Trawl Fishery	×	✓	The Western Deepwater Trawl Fishery overlaps the PAA and EMBA. Fishery Status Reports indicate most recent activity overlapping the EMBA occurred in the 2020-2021 season (ABARES, 2021). Accordingly, Woodside considers it a possibility that interactions with the fishery may occur in the combined EMBA.
Southern Bluefin Tuna Fishery	×	×	The Southern Bluefin Tuna Fishery spans the Australian Fishing Zone, however since 1992, the majority of Australian catch has concentrated in south-eastern Australia. (ABARES, 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
Western Skipjack Tuna Fishery	×	×	The Western Skipjack Tuna Fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. The Fishery is not currently active and no fishing has occurred since 2009 (ABARES, 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
Western Tuna and Billfish Fishery	×	×	The Western Tuna and Billfish Fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. However, in the last five years (2016 – 2021), fishing effort has concentrated south of Carnarvon (ABARE., 2021). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
State Managed Fisheries			
West Coast Deep Sea Crustacean Managed Fishery	×	✓	The West Coast Deep Sea Crustacean Managed Fishery is permitted to fish in waters deeper than the 150 m isobath, overlapping the PAA and EMBA. The fishery is active in the EMBA with two 60NM CAES blocks overlapping the EMBA reported less than 3 vessels in the 2021 – 2022 seasons (DPIRD, 2022). FishCube data reported no fishing effort at 10 NM CAES blocks in the last five years overlapping the PAA (DPIRD, 2022). Woodside considers there to be potential for interaction with the fishery in the EMBA.
Pilbara Line Fishery	×	✓	The Pilbara Line Fishery licensees are permitted to operate anywhere within Pilbara waters (Newman et al., 2021), overlapping the PAA and EMBA. The fishery is active in the EMBA, with one 60 NM Catch and Effort System (CAES) block reporting up to four licences across the 2017 – 2022 seasons (DPIRD, 2022). FishCube data for the Pilbara Line Fishery is not provided at the 10 NM scale, however effort reported in the 60 NM CAES block does not overlap

Fishery	Potential for interaction × no potential for interaction ✓ potential for interaction		
	Overlap with PAA	**Overlap with EMBA**	**Description**
			with the PAA. Therefore, Woodside considers it a possibility that interactions with the fishery may occur only in the EMBA.
Mackerel Managed Fishery (Areas 2 and 3)	×	✓	The Mackerel Managed Fishery overlaps the PAA and EMBA. FishCube data reported active fishing by up to three vessels in one CAES block between the 2017 – 2022 seasons (DPIRD, 2022). FishCube data reported no fishing effort at 10 NM CAES blocks in the last five years overlapping the PAA (DPIRD, 2022). Woodside considers there to be potential for interaction with the fishery in the EMBA.
Marine Aquarium Managed Fishery	×	✓	The Marine Aquarium Fish Managed Fishery management area overlaps the PAA and the EMBA, however generally collects fish for display in water depths of less than 30 m. The fishery is active in the EMBA, with one 60 NM CAES block reporting less than three licences across the 2017 – 2021 seasons (DPIRD, 2022). FishCube data reported no active fisheries at 10 NM CAES block overlapping the PAA (DPIRD, 2022). Therefore, Woodside considers it a possibility that interactions with the fishery may occur in the EMBA.
South West Coast Salmon Managed Fishery	×	×	The South West Coast Salmon Fishery management area overlaps the EMBA. However, FishCube data reported no fishing effort within the PAA 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.
Pilbara Crab Managed Fishery	×	×	The Pilbara Crab Managed Fishery management area overlaps the PAA and the EMBA. However, FishCube data reported no fishing effort within the PAA or EMBA in the last five years (2017 – 2022) (DPIRD, 2022). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
West Coast Rock Lobster Fishery	×	×	The Western Rock Lobster Fishery management area overlaps the EMBA (DPIRD 2022). However, FishCube data reported no fishing effort within the PAA or EMBA in the last five years (2017 – 2022) (DPIRD, 2022). Accordingly, Woodside considers there to be no potential for interaction with this fishery and the Petroleum Activities Program.
Pearl Oyster Managed Fishery	×	×	The Pearl Oyster Managed Fishery management area overlaps the EMBA. However, FishCube data reported no fishing effort within the PAA 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.
Charter based commercial operators			
Tour Operators	×	✓	Fishing Tour Operators are permitted to operate across WA state waters and are required to report monthly logbook records of client fish catches. FishCube data reports consistent fishing effort across three 60 NM CAES blocks that overlap the EMBA (DPIRD, 2022). Fishing effort was reported by up to 17 vessels across the 2017 – 2022 seasons (DPIRD, 2022). FishCube data reported no active tour operators at 10 NM CAES blocks overlapping the PAA (DPIRD, 2022). FishCube data indicate tour operator fishing effort highest around Ningaloo and Murion Islands and at Barrow Island and the Montebello Islands, east of the

Fishery	Potential for interaction × no potential for interaction ✓ potential for interaction		
	Overlap with PAA	Overlap with EMBA	Description
			EMBA. Accordingly, Woodside considers it a possibility that interactions with tour operators will occur within the EMBA.

4.9.4 Traditional Fisheries

There are no identified traditional or customary fisheries within the offshore waters of the PAA and EMBA, as these are typically restricted to shallow coastal waters and/or areas with structure such as reef.

4.9.5 Tourism and Recreation

From a regional perspective, recreation and tourism activities within the NWMR are of high social value. The majority of tourism and recreation activities occur on land and within State waters. Recreational and tourism activities include charter fishing, other recreational fishing, diving, snorkelling, whale, whale shark, marine turtle and dolphin watching, cruise ship stop-overs and yachting.

The PAA is 215 km from Exmouth and 216 km from the Muiron Islands, while these locations are the closest areas with regular tourism and recreation activities, they are both located outside of the EMBA. Tourism and recreation activity within the PAA, socio-cultural EMBA and EMBA is therefore not expected.

4.9.6 Commercial Shipping

The Australian Maritime Safety Authority (AMSA) has introduced a network of marine fairways across the NWMR off WA to reduce the risk of vessel collisions with offshore infrastructure. It is noted that none of these fairways intersect with the PAA; the nearest fairway is approximately 38 km east of the PAA (**Figure 4-11**). Vessel tracking data suggest the majority of shipping is concentrated to the east of the PAA, which is likely associated with ports.

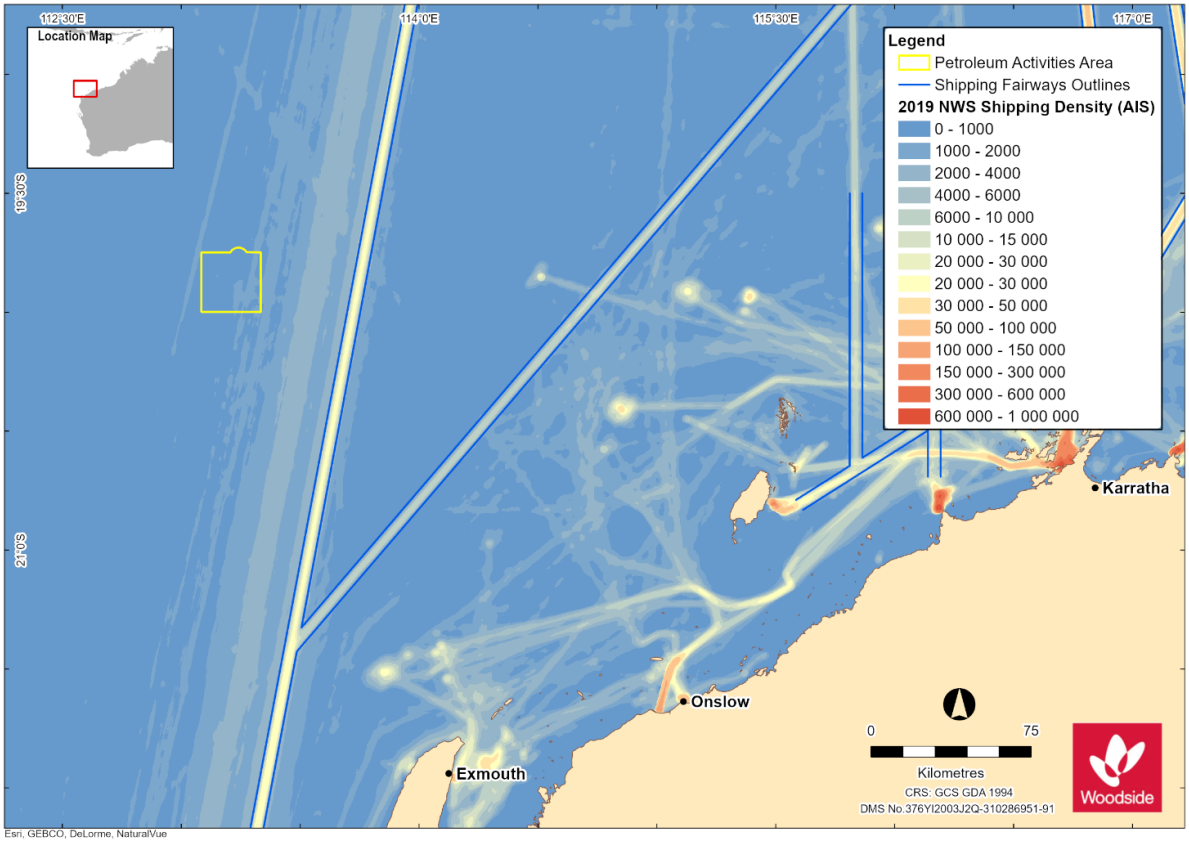


Figure 4-11: Vessel density map for the PAA, derived from AMSA satellite tracking system data

(vessels include cargo, LNG tanker, passenger vessels, support vessels, and others/unnamed vessels)

4.9.7 Defence

There are designated Department of Defence practice areas in the offshore marine waters off Ningaloo Reef and the North West Cape, associated with the Royal Australian Air Force base located at Learmonth, of which a military flying training area partially overlaps the PAA **Figure 4-12.**

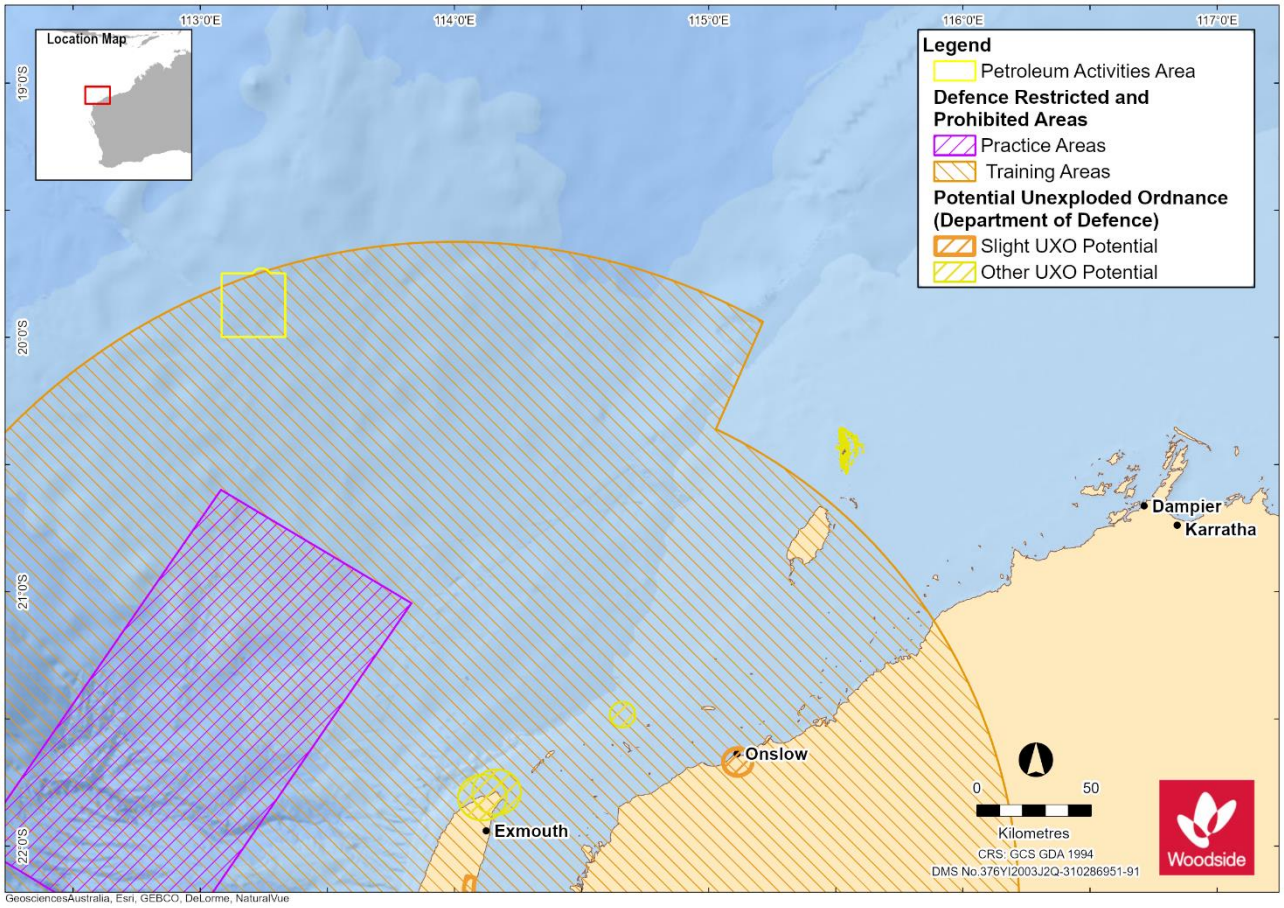


Figure 4-12: Defence training areas relative to the PAA

4.9.8 Oil and Gas

The PAA is located in the Exmouth Plateau area of the Northern Carnarvon Basin. No subsea infrastructure is present in the PAA or WA-61-L permit (there are no wellheads above the seabed).

There are a number of petroleum titles held by various titles within the vicinity of the Petroleum Activities Program, but currently no oil and gas facilities. The proposed Equus Development Project is located about 70 km east of the PAA, within the EMBA. The closest facilities, the Pluto and Wheatstone platforms, are located outside the EMBA.

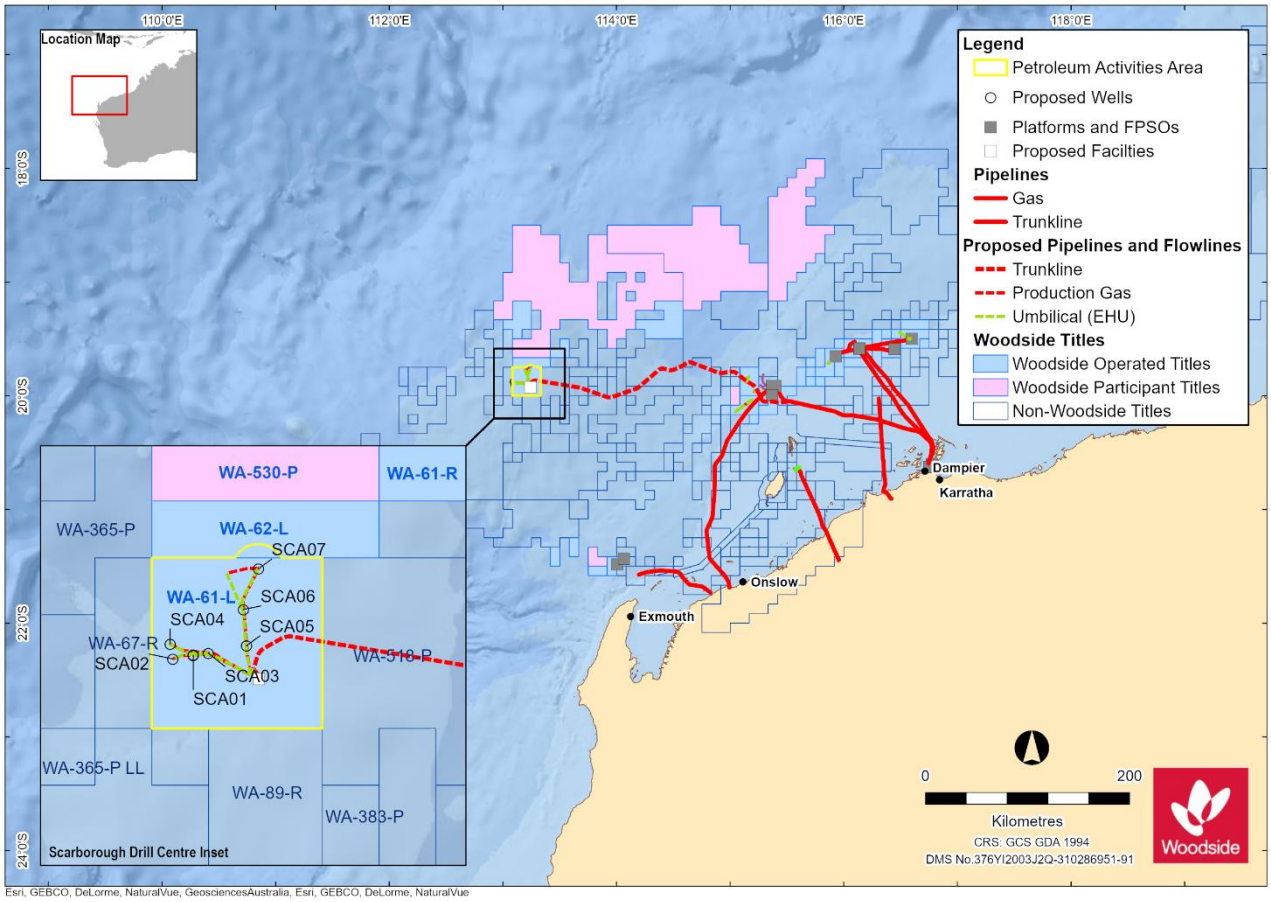


Figure 4-13: Oil and gas titles and infrastructure within the region

5 CONSULTATION

5.1 Summary

Woodside consults relevant persons in the course of preparing an Environment Plan 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 5.2** and **5.5.1**) delivered on 2 December 2022.

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

Woodside's consultation methodology is divided into three parts:

- The first section (**Section 5.2** to **5.7**) provides an overview of Woodside's consultation methodology for its Environment Plans, 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 Environment Plan.
- The third section **(Section 5.9)** details the:
  - Opportunities provided to persons or organisations to be aware of Woodside's proposed Environment Plan and to 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 5.3.4**).

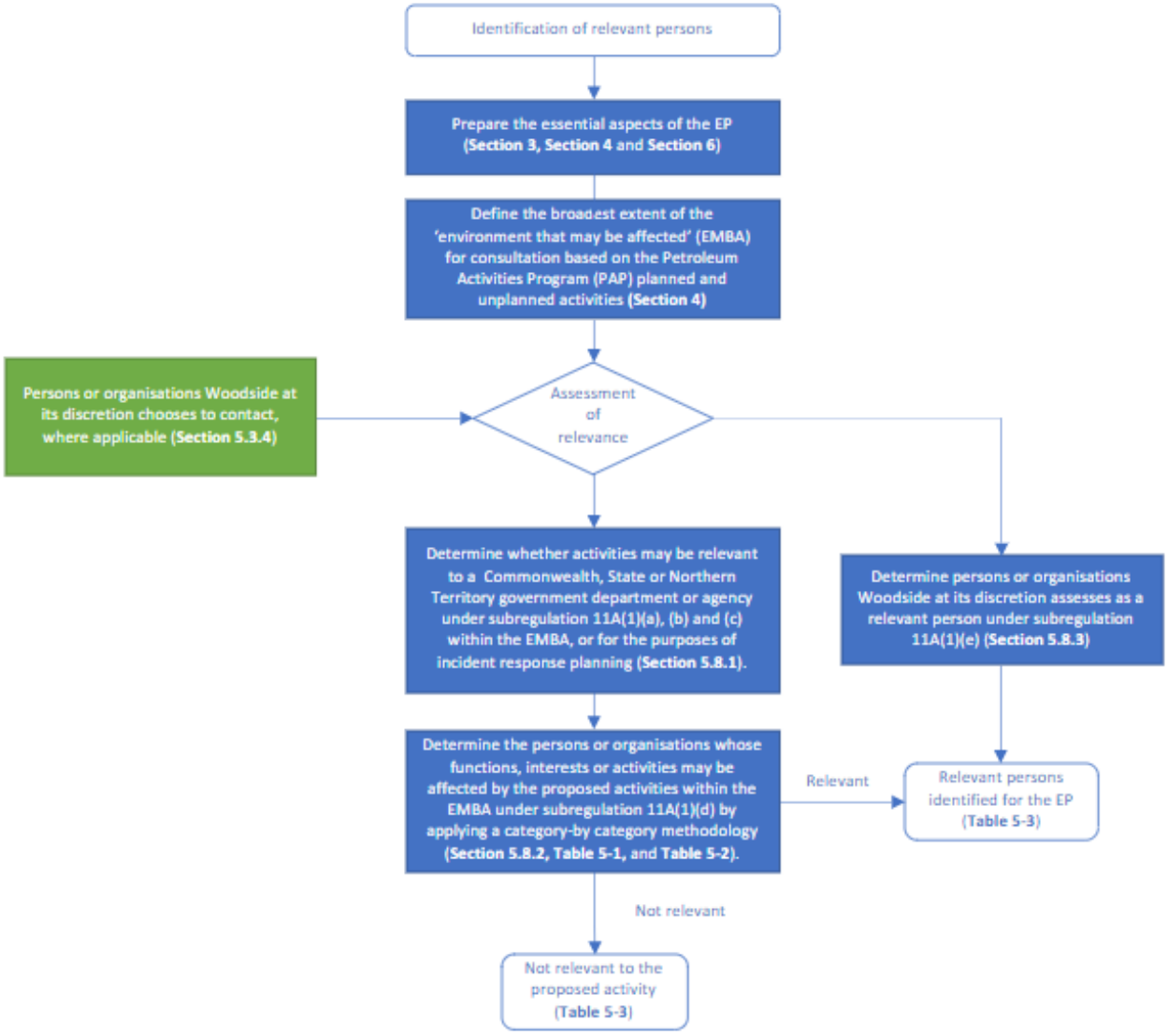


Figure 5-1: Overview of Woodside's methodology to identify relevant persons

5.2 Consultation – General Context

Woodside has a portfolio of quality oil and gas assets and more than 30 years of operating experience. We have a strong history of working with local communities, the relevant regulators and a broad range of persons and organisations to understand the potential risks and impacts from our proposed activities and to develop appropriate measures to manage them.

The length of time that we have operated in Commonwealth and State waters, and the history of continued engagement with a wide range of persons and organisations, enables Woodside to develop an extensive consultation list to inform its consultation process. This consultation list is not used as a definitive list of persons to consult, but rather, assists Woodside as an input to its understanding of relevant persons with whom to consult on a proposed petroleum activity. The information in the consultation list has been captured from years of experience, it contains insights relating to the type of information particular persons or organisations want to receive during consultation, the appropriate method of consultation for relevant persons, and includes appropriate contact details, which are 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 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 Environment Plan acceptance) when preparing the Environment Plan, 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 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 Environment Plan 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 Environment Plan, or the revision of the Environment Plan, 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 Environment Plan, or the revision of the Environment Plan; 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 Environment Plan through its ongoing consultation process (refer to **Section 5.7** and **Section 7.11**).

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

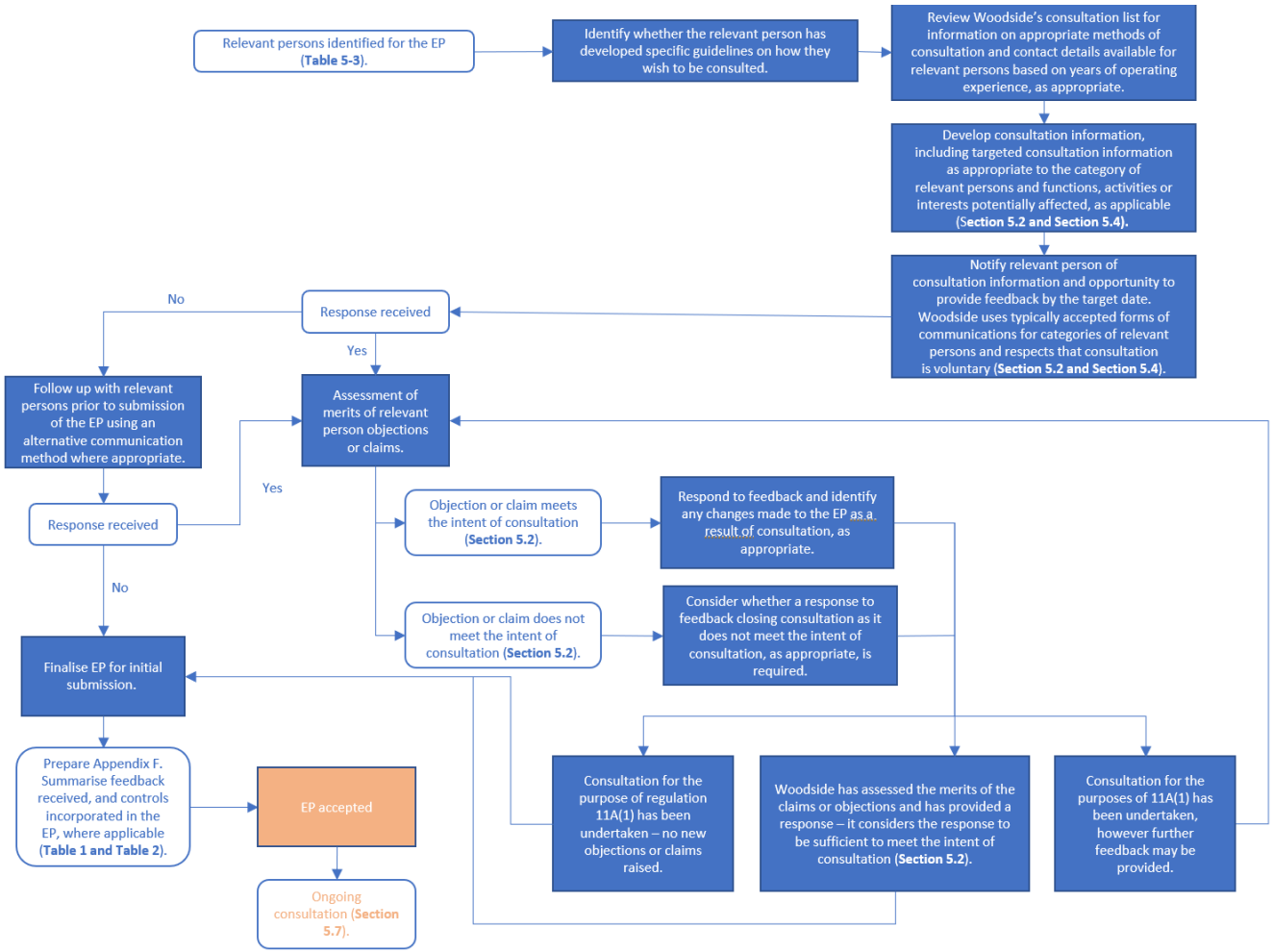


Figure 5-2: Overview of Woodside's consultation approach.

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

Federal Court:

- Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193

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

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 Environment Plan 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** below. In accordance with regulation 11A(1)(c), Woodside

consults with the department of the relevant State Minister, which for this Environment Plan 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):

Functions	Refers to a power or duty to do something.
Interests	Conforms to the accepted concept of 'interest' in other areas of public administrative law and includes any interest possessed by an individual whether or not the interest amounts to a legal right or is a proprietary or financial interest or relates to reputation.
Activities	Broader than the definition of 'activity' in Regulation 4 of the Environment Regulations and is likely to be directed to what the relevant person is already doing.

As discussed in **Section 5.1** 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 regulation11 A(1)(d), Woodside has discretion to categorise any other person or organisation as a relevant person under regulation11A(1)(e).

5.3.4 Persons or Organisations Woodside Chooses to Contact

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

- that are 'not relevant' pursuant to regulation 11A(1) but that Woodside has chosen to seek additional guidance from, for example, to inform the correct contact person 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 organisation's 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 Environment Plan 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 PAP. Woodside recognises published guidance for good practice consultation relevant to different sectors and disciplines (see 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 Environment Plan (**Appendix F, reference 1.1 and 1.25**). 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 Environment Plan 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 (**Appendix F, reference 1.1 and 1.25**);

- Summary Consultation Information Sheet, presentations or summaries specific to a particular relevant person group (**Appendix F, reference 1.26 and 1.27**);
- subscription (available on Woodside's website) to receive notification of new Consultation Information Sheets for Woodside Environment Plans;
- emails;
- letters;
- phone calls;
- face-to-face meetings (virtual or in person) with presentation slides or handouts as appropriate;
- maps outlining a persons or organisations defined area of responsibility in relation to the proposed activity, for example a fisheries management area or defence training area; and
- community meetings, as appropriate.

Woodside recognises that information may need to be provided to relevant persons in an iterative manner during the consultation process. Woodside considers that in line with the intent of consultation (see **Section 5.2**), the threshold for genuine two-way engagement is met via 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 Environment Plan.

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

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

Information which is provided to relevant persons for the purposes of consultation on this Environment Plan 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 exceeds 250 days, from the date of first advertising consultation on this Environment Plan in October 2022, to the date of submission of this Environment Plan, being 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 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..."[13]

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 selected local, state and national newspapers (**see Appendix F, reference 1.89**) 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;

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

- following up with relevant persons prior to Environment Plan 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 7.11**, 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.

5.5 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 5.5.2.4).**

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,[14] 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.*" [15]
>
> "*We consider the authorities in relation to processes under the NTA to be* ***illustrative*** *of how a seemingly rigid statutory obligation to consult persons holding a communal interest may operate in a workable manner*"[16] (emphasis added).

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

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

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

> "*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*"[17] (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.[18] 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 5.2**).

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 Prescribed Bodies Corporates (PBCs) established under the NTA) have a designated role of representing the views of their member Traditional Custodians. They have established methods for engaging with their own members. Woodside will not undermine the purpose and authority of nominated representative corporations by requiring full group meetings where the nominated representative corporations have not requested engagement of members via full group meetings. 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

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

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

to the characteristics of groups.[19] Woodside's consultation methodology is adapted and appropriate to the recognised systems of communal interests in Western Australia.

In Western Australia (relevant for this EP), Woodside has sought to follow the established, effective and respectful means of communication used by Native Title Representative Bodies and nominated representative corporations (including PBCs) with their respective First Nations communities. Woodside follows these processes for the appropriate broad capture of individuals' awareness of our activities, to self-identify (**Section 5.5.2.2),** 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 (i.e. Facebook/Instagram), texts and emails. These mediums are the preferred communication methods used by Traditional Custodians throughout Western Australia and on that basis used by Native Title Representative Bodies and other government agencies and industry, to engage with Traditional Custodians or call meetings. First Nations woman, Professor Bronwyn Castle through 10 years of research found "Social media is an intrinsic part of daily life. The use of Facebook is around 20 per cent higher [among First Nations people] than the national average across all geographical locations" (Social media mob: being Indigenous online, Professor Bronwyn Carlson (2018));
- For ongoing consultation post regulation 11A consultation, Woodside introduced a Program of Ongoing Engagement with Traditional Custodians which sets out Woodside's commitment to ongoing engagement and support to care for and manage country, including Sea Country. The program was developed in response to Traditional Custodian feedback;
- Woodside has members of its First Nations team who are based in Karratha and Roebourne and who serve as on-Country points of contact for First Nations organisations and individuals. These team members have broad local knowledge and established, on-the-ground relationships within communities. This helps contribute to positive outcomes including encouraging First Nations attendance and involvement at Woodside's information sessions and Community roadshows. Team members on the ground engage in a great deal of preparatory work including by distributing information and providing notice to the community to support First Nations attendance at information sessions and Community roadshows;
- 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); and
- providing information specifically designed to be easily understood, to reach all relevant people, and give a reasonable period of time for those people to make an informed assessment of the possible consequences of the proposed activity on them.

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

5.5.2.1 Identification of Relevant Persons

In order to undertake consultation, Woodside has developed a methodology for identifying 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 5.5.2.4 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 5.5.2.4** below, individuals are also given the opportunity to self-identify, consult and provide their own feedback on the proposed activity. When approached in this way, Woodside will engage individuals as relevant persons and will also (subject to any confidentiality or cultural restrictions) advise the nominated representative body of the consultation where it relates to cultural values. These methods of consultation are consistent with requirements for notification under the *Native Title Act 1993* (Cth), such as under the future act provisions (section 29), which requires notification of the Native Title Representative Body, the PBC (or nominated representative) and notification through newspapers. The notification process has been selected as a respectful, practical and pragmatic analogue for consultation with First Nations peoples, rather than requiring members to be notified via a formal authorisation process which aims to seek, from members, authorisation of agreements and native title/compensation claims under the Native Title Act 1993 (Cth)[20].

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 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**

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

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.
- 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 requesting dissemination with members. However, Woodside recognises consultation is voluntary and it cannot compel them to do so nor would it be appropriate to seek to audit the representative entities for compliance with any request.

5.5.2.3 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

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**).[21] Consultation is a "real world activity" and must be capable of reasonable discharge.[22] 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.[23]

When the titleholder demonstrates that it has provided sufficient information and a reasonable period for consultation, the regulation 11A consultation requirements are met.[24] 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.[25]

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.[26] 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.

[21] *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 [89], [98], [103]-[104] and [109].
[22] *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 at [89].
[23] *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 at [96] and [103].
[24] Explanatory Statement, Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, page 29.
[25] Explanatory Statement, Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023, page 30 and *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 at [153].

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

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.

5.6 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 Environment Plans 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 Environment Plan 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 Environment Plan. 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 Environment Plan 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 Environment Plan, 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.

5.7 Ongoing Consultation

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

As per Woodside's ongoing consultation approach (refer to **Section 7.11**, feedback and comments received from relevant persons continue to be assessed and responded to, as required, throughout the life of an Environment Plan, 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 Environment Plan 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 7.7**).

5.8 Woodside's Methodology to Identify Relevant Persons

5.8.1 Identification of Relevant Persons Under Regulation11A(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 Environment Plan 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 accommodating government restructures, renaming of departments, shifting portfolios and/or to account for new agencies that might arise.
- Woodside has categorised government department or agency groups as follows:

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

- Woodside considers each of the responsibilities of the departments and agencies and determines whether those responsibilities overlap with potential risks and impacts specific to the proposed petroleum activity in the EMBA. The assessment is both activity and location based.
- Woodside acknowledges the roles and responsibilities of government departments and agencies acting on behalf of various industry participants. For example, AMSA – Marine Safety is responsible for the safety of vessels and the seafarers who are operating in the domestic commercial shipping industry and AHO is responsible for maritime safety and Notices to Mariners. To undertake the PAP in a manner that prevents a substantially adverse effect on the potential displacement of marine users, Woodside therefore consults AMSA – Marine Safety and AHO on its proposed activities. Woodside considers each of the responsibilities of the departments and agencies and determines those that would either be involved in the incident response itself or in

relation to the regulatory or decision-making capacity with respect to planning for the unlikely event of a worst-case hydrocarbon release incident response specific to the PAP. Feedback received, if any, is assessed in accordance with the intended outcome of consultation (as set out in **Section 5.2**).

- The list of those government departments and agencies assessed as relevant is set out in **Table 5-3**.
- Feedback received, if any, is assessed in accordance with the intended outcome of consultation (as set out in **Section 5.2**) and summarised at **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 Environment Plan, 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 Regulation11A(1)(d))

Relevant persons under regulation11A (1)(d) are defined as a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the Environment Plan, or a revision of the Environment Plan. In identifying relevant persons, Woodside considers:

- the planned activities to be carried out under this Environment Plan (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 Environment Plan, 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 (Commonwealth and State) and peak representative bodies	Commonwealth or State Commercial Fishery with a fishery management plan recognised under the Commonwealth Fisheries Management Act 1991 (Cth) and Western Australian Fish Resources Management Act 1994 (WA), which may be amended from time to time. Commonwealth peak fishery representative bodies are identified by AFMA. WAFIC is the peak representative body for state fishers in Western Australia.
Recreational marine users and peak representative bodies	Charter boat, tourism and dive operators identified by DPIRD specific to the location of the proposed activity. Representative bodies are the recognised peak organisation(s) for recreational marine users.
Titleholders and operators	Registered holder of an offshore petroleum title or GHG title governed by the OPGGS Act and associated regulations.
Peak industry representative bodies	Recognised peak organisation(s) for the oil and gas sector.
Traditional Custodians (individuals and/or groups/entity)	Traditional Custodians are First Nations Australians 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 Local Government Act 1995 (WA) which is responsible for representing the local community. Recognised local community reference/liaison group or organisation in relation to oil and gas matters.
Other non-government groups or organisations	Non-government organisation with public website material targeting the proposed activity.
Research institutes and local conservation groups or organisations	Research institutes are government or private institutions that conduct marine or terrestrial research. Local conservation groups are local non-government organisation that regularly conduct conservation activities focused on the local environment or wildlife.

Table 5-2: Methodology for identifying relevant persons within the EMBA undertaken under subcategory 11A(1)(d) – by category

Category	Relevant person identification methodology
Commercial fisheries (Commonwealth and State) and peak representative bodies	Woodside assesses relevance for commercial fisheries (Commonwealth and State) and their representative bodies using the following next steps in its methodology: • Defining the parameters having regard to timing, location and duration of the proposed petroleum activity. • Confirming whether the EMBA overlaps with the fisheries management area (i.e. the spatial area the fishery is legally permitted to fish in) (see **Section 4.9.3**). • Woodside acknowledges WAFIC's consultation guidance[27] (accessed on 2 February 2023), that Titleholders develop separate consultation strategies for significant unplanned events (for example oil spill) where Titleholders can demonstrate the likelihood of such events occurring is extremely low. WAFIC's guidance is that consultation on unplanned events resulting in an emergency scenario should only be undertaken if an incident occurs (**see Appendix H)**. • For Commonwealth and State commercial fisheries, Woodside assesses the potential spatial and temporal extent for interaction with the fishery by reviewing AFMA ABARES and DPIRD Fishcube data within the Operational Area and EMBA (see **Section 4.9.2**). Assessment of relevance: • State commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see **Section 4.9.2**) are assessed as relevant to the proposed activity. Woodside acknowledges WAFIC's consultation guidance1 (see above) and applies this by: - directly consulting fishery licence holders that are assessed as having a potential for interaction in the Operational Area; and - consulting fisheries that are assessed as having a potential for interaction in the EMBA via WAFIC. • Commonwealth commercial fisheries that have been assessed as having a potential for interaction within the Operational Area or EMBA (see **Section 4.9.2**) are assessed as relevant to the proposed activity. • If Woodside has identified that a Commonwealth or State fishery is a relevant person, then Woodside also consults the fisheries relevant representative body. For example, WAFIC represents the interests of State fisheries in Western Australia. If a state fishery is identified as relevant, Woodside would also identify WAFIC as relevant. Recognised Commonwealth fishery representative bodies are identified by AFMA via its website. WAFIC is the only recognised state fishery representative body.
Recreational marine users and peak representative bodies	Woodside assesses relevance for recreational marine users and peak representative bodies using the following next steps in its methodology: • From Woodside knowledge and operating experience, knowledge of recreational marine users in the area. This assessment is both activity and location based. • Defining the parameters having regard to timing, location and duration of the proposed petroleum activity. • Assessing the potential spatial and temporal extent for interaction with recreational marine users by reviewing DPIRD Fishcube data to assess whether there has been activity within the EMBA in the past 5 years. Assessment of relevance: • Recreational marine users that have been active in the past 5 years within the EMBA are assessed as relevant to the proposed activity. Woodside is provided

[27] Consultation Approach for Unplanned Events - WAFIC

Category	Relevant person identification methodology
	with the contact details of charter, boat tourism and dive operators specific to the region of the EMBA by DPIRD to consult with the relevant persons. • If Woodside has identified recreational marine users as relevant persons, then Woodside also consults identified peak recreational marine user representative bodies. For example, Recfishwest represents the interests of recreational fishers. These representative bodies are identified via Woodside's existing consultation list, which is updated as appropriate via advice from known groups and DPIRD.
Titleholders and Operators	Woodside assesses relevance for other Titleholders and operators using the following next steps in its methodology: Using WA Petroleum Titles (DMIRS-011) to determine overlap with other Titleholders or Operators permit areas within the EMBA. From Woodside knowledge and operating experience, knowledge of other operators in the area. Woodside produces a map showing the outcome of this assessment. Assessment of relevance: Titleholders and Operators whose permit areas are identified as having an overlap within the EMBA are assessed as relevant.
Peak industry representative bodies	Woodside assesses relevance for peak industry representative bodies using the following next steps in its methodology: • Review of peak industry representative bodies responsibilities that Woodside actively participates in, with consideration of overlap between industry focus area and Woodside's proposed activities within the EMBA. • Review of Woodside's existing consultation list. • Website search to identify whether any additional peak industry representative bodies have been created whose responsibilities may overlap with Woodside's proposed activities within the EMBA. Assessment of relevance: • Peak industry representative bodies whose responsibilities are identified as having an overlap with Woodside's proposed activities within the EMBA are assessed as relevant.
Traditional Custodians (individuals and/or groups/entity) and Nominated Representative Corporations	Consistent with its understanding of the matters discussed in **Section 4.9.1** and **5.5**, to identify Traditional Custodian groups or individuals, Woodside: • Uses existing systems of recognition to identify First Nations groups who overlap or are coastally adjacent to the EMBA (for example, recognition provided under native title or cultural heritage legislation, or marine park management plans, or identification by other First Nations groups or entities) (**Section 4.9.1**) • 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**) • 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**) • Requests advice as to other First Nations groups or individuals that should be consulted (**Section 5.5.2.1**) • Requests the nominated representative body to provide consultation materials to its members (**Section 5.5.2.2.1)** • Advertises widely so as to invite self-identification and consultation by First Nations groups and/or individuals (**Section 5.5.2.2.1**). Further detail to Woodsides methodology is as follows. Woodside uses the databases of the National Native Title Tribunal (**Section 4.9.1**): • to understand whether there are any Native Title Claims (historical or current) or determinations overlapping or coastally adjacent to the EMBA;

Category	Relevant person identification methodology
	• to understand whether there are any relevant Indigenous Land Use Agreements (ILUA), registered with the National Native Title Tribunal that overlap or are adjacent to the EMBA that may identify Traditional Custodians or representative bodies to contact regarding potential cultural values. Where there is a positive determination of native title, contacting the PBC or, where their representative is a Native Title Representative Body contacting the Native Title Representative Body. Where appropriate, contacting the relevant Native Title Representative Body to request a list of any First Nations groups asserting Traditional Custodianship over an area of coastline adjacent to the EMBA. Review of Commonwealth and State Marine Park Management Plans that overlap the EMBA which may identify Traditional Custodians or representative bodies to contact regarding potential cultural values. 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. First Nations groups or individuals identified by a Traditional Custodian, nominated representative corporation, Native Title Representative Body. Request to the PBC to distribute Woodside consultation materials through its membership. Woodside is unable to contact this membership through any other means. Woodside has a number of public notification and information sharing processes by which individual Traditional Custodians can become aware of the proposed activity, its risks and impacts, and self identify. Individuals that consider their functions, interests or activities may be affected by a proposed activity 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 EMBAs overlap. This decision is for the individual to make. The public notification, information sharing, and consultation processes Woodside puts in place enables Traditional Custodians to become aware of proposed activities, assess any risks and impacts to their values, and enable individuals to self-identify. Assessment of relevance: Traditional Custodian groups, entities or individuals and Nominated Representative Corporations who are identified through the above methodology and overlap or are coastally adjacent to the EMBA are assessed as relevant.
Native Title Representative Bodies	Woodside assesses relevance for Native Title Representative Bodies using the following steps in its methodology (**Section 4.9.1**): • 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. • Review of National Native Title Tribunal RATSIB areas that overlap or are coastally adjacent to the EMBA. Assessment of relevance: • Where the area for which a Native Title Representative Body is recognised under the Native Title Act 1993, overlaps with the EMBA or is coastally adjacent to the EMBA, Woodside will assess the Native Title Representative Body as relevant.
Historical heritage groups or organisations	Woodside assesses relevance for groups or organisations whose responsibilities are focused on historical heritage using the following next steps in its methodology: • Using the Australasian Underwater Cultural Heritage Database to assess any known records Maritime Cultural Heritage sites (shipwrecks, aircraft and relics) within the EMBA (see **Section 4.9.1**).

Category	Relevant person identification methodology
	Assessment of relevance: • Where there is a known underwater heritage site (shipwrecks, aircraft and relics) within the EMBA, the relevant group or organisation that manages the site will be assessed as relevant.
Local government and recognised local community reference/liaison groups or organisations	Woodside assesses relevance for local government and recognised local community reference/liaison groups or organisations using the following next steps in its methodology: • Review of Woodside maps (developed based on data from the WA Local Government, Sport and Cultural Industries My Council database and WA Local Government Association (WALGA) Local Government Directory maps) to assess any overlap between the local government's defined area of responsibility and the EMBA. • Woodside hosts regular community reference/liaison group meetings. Members represent a cross-section of the community and local towns interests. Representatives are from community and industry and generally include, Woodside, State Government (for instance relevant Regional Development Commissions), Local Government, Indigenous Groups, Industry representative bodies, Community and industry organisations. Woodside considers these reference/liaison groups to be the appropriate recognised representatives of the local community for the oil and gas sector. • Woodside reviews the community reference/liaison group's terms of reference to determine its area of responsibility and any overlap with the EMBA. For example, the Exmouth Community Liaison Group's area of responsibility in relation to Woodside's operational, development and planning activities, is defined in the terms of reference as the Exmouth sub-basin. Comparatively, the Karratha Community Liaison Group's area of responsibility is the Pilbara region (i.e. onshore). Assessment of relevance: • The local government whose defined area of responsibility overlaps the EMBA is assessed as relevant. • The community reference/liaison group whose defined area of responsibility overlaps the EMBA is assessed as relevant and consulted collectively via the relevant reference/liaison group.
Other non-government groups or organisations	Woodside assesses relevance for other non-government groups or organisations using the following next steps in its methodology: • Review of Woodside's existing consultation list. • Website search of registered non-government groups or organisations (i.e. registered with an Australian Business Number (ABN) and publicly available contact information) that may have public website material specific to the proposed activity at the time of development of the Environment Plan. • Organisation has a publicly available mission statement (or purpose) that clearly describes their collective functions, interests or activities. • Review of current website material to identify targeted information which demonstrates functions, interests or activities relevant to the potential risks and impacts associated with planned activities. Assessment of relevance: • Registered non-government groups or organisations with current targeted public website material specific to the proposed activity at the time of developing the Environment Plan 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.

Category	Relevant person identification methodology
Research institutes and local conservation groups or organisations	Woodside assesses relevance for research institutes and local conservation groups or organisations using the following next steps in its methodology: • Review of Woodside's existing consultation list. • Website search for research institutes that may operate within the EMBA. This assessment is both activity and location based. • Website search for local conservation groups or organisations that regularly conduct conservation activities within the EMBA. Assessment of relevance: • Where there is known research being undertaken by a research institute within the EMBA, the research institute that is conducting the research will be assessed as relevant. • Local environmental conservation groups who regularly conduct conservation activities or have demonstrated conservation functions, interests or activities within the EMBA are assessed as relevant. This assessment is both activity and location based.

5.8.3 Identification of Relevant Persons Under Regulation11A(1)(e)

Woodside adopts a case-by-case approach for each Environment Plan 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 5-3** 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**.

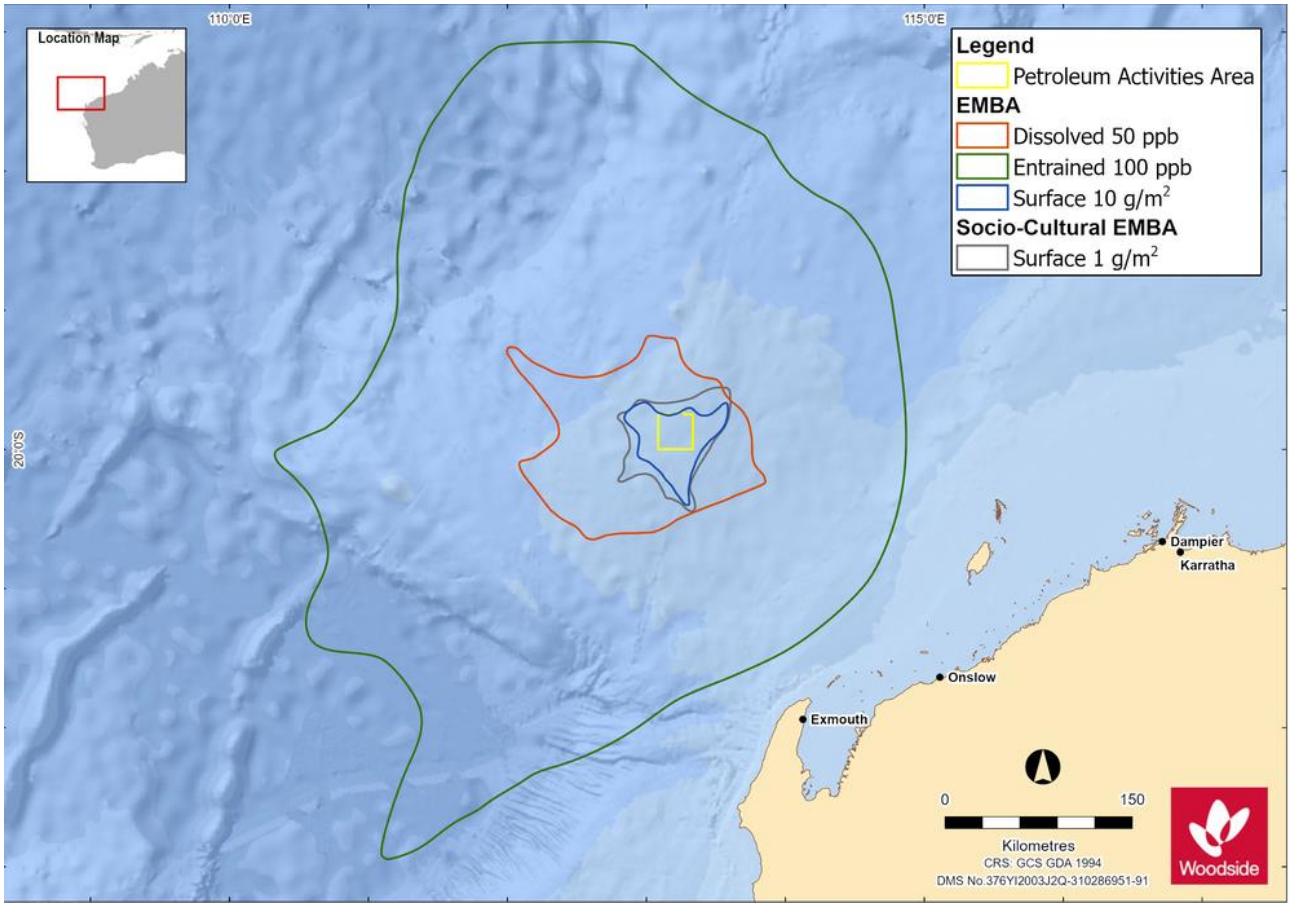


Figure 5-3: Operational Area and EMBA for this Environment Plan.

Table 5-3: Assessment of relevance

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Commonwealth and WA State Government Departments or Agencies – Marine			
Australian Border Force (ABF)	Responsible for coordinating maritime security	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 11A(1)(a). ABF's responsibilities may be relevant to the activity as there are proposed vessel activities.	Yes
Australian Fisheries Management Authority (AFMA)	Responsible for managing Commonwealth fisheries	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 11A(1)(a). The North West Slope and Trawl Fishery and Western Deepwater Trawl Fishery are active in the EMBA. AFMA's responsibilities may be relevant to the activity as the North West Slope and Trawl Fishery and Western Deepwater Trawl Fishery are active in the EMBA.	Yes
Australian Hydrographic Office (AHO)	Responsible for maritime safety and Notices to Mariners	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 11A(1)(a). AHO's responsibilities may be relevant to the activity as there are proposed vessel activities.	Yes
Australian Maritime Safety Authority (AMSA) – Marine Safety	Statutory agency for vessel safety and navigation	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 11A(1)(a). AMSA – Marine Safety's responsibilities may be relevant to the activity as there are proposed vessel activities.	Yes
Australian Maritime Safety Authority (AMSA) – Marine Pollution	Legislated responsibility for oil pollution response in Commonwealth waters	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 11A(1)(a). AMSA – Marine Pollution's responsibilities may be relevant to the activity as the proposed activity has a hydrocarbon spill risk which may require AMSA response in Commonwealth waters.	Yes
Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries *(formerly DAWE)*	Responsible for implementing Commonwealth policies and programs to support	Woodside has applied its methodology for 'Government departments / agencies – marine' under regulation 11A(1)(a). The North West Slope and Trawl Fishery and Western Deepwater Trawl Fishery are active in the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	agriculture, fishery, food and forestry industries	DAFF – Fisheries' (formerly DAWE) responsibilities may be relevant to the activity as the North West Slope and Trawl Fishery and Western Deepwater Trawl 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). No State fisheries are active in the Operational Area. The Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2 and 3), West Coast Deep Sea Crustacean Managed Fishery and Pilbara Line Fishery are active in the EMBA. DPIRD's responsibilities may be relevant to the activity as the government department responsible for State fisheries.	Yes
Department of Transport (DoT)	Legislated responsibility for oil pollution response in State waters	Woodside has applied its methodology for 'Government departments / agencies – 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 no known Maritime Cultural Heritage overlapping the EMBA.	No
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 does not have the potential to impact Pilbara Ports Authority's responsibilities as the EMBA does not overlap the Pilbara Ports Authority's area of responsibility.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Commonwealth and WA State Government Departments or Agencies – Environment			
Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel) *(formerly DAWE)*	DAFF administers, implements and enforces the Biosecurity Act 2015. The Department requests to be consulted where an activity has the potential to transfer marine pests. DAFF also has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft) arriving in Australian territory comply with international health regulations and that any biosecurity risk is managed. DAFF requests to be consulted where an activity involves the movement of aircraft or vessels between Australia and offshore petroleum activities either inside or outside Australian territory.	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, water resources, the environment and our heritage.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(a). DCCEEW's (formerly DAWE) responsibilities may be relevant to the proposed activities in the EMBA as there are potential environmental impacts from the proposed activity. There are known Maritime Cultural Heritage overlapping the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	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.		
Director of National Parks (DNP)	Responsible for the management of Commonwealth parks and conservation zones.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(a). DNP's responsibilities may be relevant to the activity as DNP requires an awareness of activities that occur within AMPs, and an understanding of potential impacts and risks to the values of parks (NOPSEMA guidance note: N-04750-GN1785 A620236, June 2020). Titleholders are required to consult DNP on offshore petroleum and greenhouse gas exploration activities if they occur in, or may impact on the values of marine parks, including where potential spill response activities may occur in the event of a spill (i.e. scientific monitoring).	Yes
Ningaloo Coast World Heritage Advisory Committee (NCWHAC)	Supports the DBCA to manage the Ningaloo Coast World Heritage Area.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(a). The proposed activity does not have the potential to impact NCWHAC's responsibilities as the EMBA does not overlap the Ningaloo Marine Park.	No
Department of Biodiversity, Conservation and Attractions (DBCA)	Responsible for managing WA's parks, forests and reserves to achieve wildlife conservation and provide sustainable recreation and tourism opportunities.	Woodside has applied its methodology for 'Government departments / agencies – environment' under regulation 11A(1)(b). The proposed activity EMBA does not overlap WA parks, forests or reserves. Activities have the potential to impact marine tourism in the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Commonwealth and State Government Departments or Agencies – Industry			
Department of Industry, Science and Resources (DISR) *(formerly DISER)*	Department of relevant Commonwealth Minister.	Required to be consulted under regulation 11A(1)(a).	Yes
Department of Mines, Industry Regulation and Safety (DMIRS)	Department of relevant State Minister	Required to be consulted under regulation 11A(1)(c).	Yes
Commonwealth Commercial fisheries and representative bodies			
North West Slope and Trawl Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the Operational Area. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	Yes
Southern Bluefin Tuna Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the Operational Area and EMBA it has not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider that the proposed activity will present a risk to licence holders, given since 1992, the majority of Australian catch has concentrated in south-eastern Australia. (Patterson et al., 2022). In addition, given fishing methods by licence holders for species fished in this fishery (Australia has a 35% share of total global allowable catch of Southern Bluefin Tuna, which is value-added through tuna ranching near Port Lincoln (South Australia), or fishing effort in New South Wales (Australian Southern Bluefin Tuna Industry Association).	No
Western Deepwater Trawl Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Western Skipjack Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider that the activity will present a risk to licence holders, given the fishery spans the Australian Fishing Zone west of Victoria and the Torres Strait. The Fishery is not currently active and no fishing has occurred since 2009 (Patterson et al., 2022). In addition, interactions are not expected given the species' pelagic distribution fishing methods for species fished by licence holders.	No
Western Tuna and Billfish Fishery	Commonwealth commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps Operational Area and EMBA, it has not been active in the Operational Area or EMBA within the last 5 years. Woodside does not consider that the activity will present a risk to licence holders, given fishing methods for species fished by licence holders. Future interactions are not expected given the species' pelagic distribution.	No
Commonwealth Fisheries Association (CFA)	Represents the interests of commercial fishers with licences in Commonwealth waters	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The North West Slope and Trawl Fishery and Western Deepwater Trawl Fishery are active in the EMBA. CFA's functions may be relevant to the activity as the North West Slope and Trawl Fishery and Western Deepwater Trawl Fishery are active in the EMBA.	Yes
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	Represents the interests of the Southern Bluefin Tuna Fishery and Western Skipjack Fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The Southern Bluefin Tuna Fishery has been assessed as not relevant to the proposed activity. As the peak representative body for the Southern Bluefin Tuna Fishery, the ASBTIA has also been assessed as not relevant. Woodside has provided information to the ASBTIA at its discretion in line with **Section 5.3.4** on AFMA advice that it expects all Commonwealth fishers who have entitlements to fish within the proposed area to be consulted, which can be through the relevant fishing industry associations.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Tuna Australia	Represents the interests of the Western Tuna and Billfish Fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The Western Tuna and Billfish Fishery has been assessed as not relevant to the proposed activity. As the peak representative body for the Western Tuna and Billfish Fishery, Tuna Australia has also been assessed as not relevant. Woodside has provided information to Tuna Australia at its discretion in line with **Section 5.3.4** on AFMA advice that it expects all Commonwealth fishers who have entitlements to fish within the proposed area to be consulted, which can be through the relevant fishing industry associations.	No
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
State Commercial fisheries and representative bodies			
Marine Aquarium Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the Operational Area it has not been active in the Operational Area within the last 5 years. The fishery overlap the EMBA and has been active in the 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).	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Although Area 3 of the fishery overlaps the Operational Area, it has not been active in the Operational Area within the last 5 years - no fishing occurs due to the water depths and distance from shore. Area 2 and 3 of the fishery have been active in the EMBA within the last 5 years.	
Pilbara Crab Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the Operational Area and EMBA, the fishery has not been active in the Operational Area or EMBA within the last 5 years. The Operational Area overlaps with a closed area of the fishery (as per Schedule 2 of the draft Management Plan [DPIRD, 2018]) and therefore, fishing activity within the Operational Area is currently not permitted.	No
West Coast Deep Sea Crustacean Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the Operational Area, the fishery has not been active in the Operational Area within the last 5 years. Fishing effort is primarily concentrated between Fremantle and Carnarvon. A single 10 nm CAES block (202125) was reportedly fished on the Exmouth Plateau at the southern boundary of the Operational Area sometime between 2003 and 2010 (How et al., 2015, 2017). However, fishing effort has not been reported here since and more recent catch and effort data (2010–2019) confirms no catch or effort within the Operational Area; the closest blocks fished during this period were located about 300 km south (10 nm CAES block 230130) of the Operational Area (DPIRD, 2021). The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	Yes
Pearl Oyster Managed Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the Operational Area. The fishery overlaps the EMBA but has not been active in the EMBA within the last 5 years. Woodside does not consider that the activity will present a risk to licence holders given fishing methods and location for species fished by licence holders (fishing effort is mostly focussed in shallow coastal waters of 10-15 m depth, with a maximum depth of 35 m) (Lulofs rt al. 2002).	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
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 but has not been active in the EMBA within the last 5 years.	No
Demersal Scalefish Fishery: Pilbara Trawl Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the Operational Area or EMBA.	No
Pilbara Trap Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). The fishery does not overlap the Operational Area or EMBA.	No
Pilbara Line Fishery	State commercial fishery	Woodside has applied its methodology for 'Commercial fisheries (Commonwealth and State) and peak representative bodies' under regulation 11A(1)(d). Although the fishery overlaps the Operational Area, it has not been active in the Operational Area within the last 5 years. The fishery overlaps the EMBA and has been active in the EMBA within the last 5 years.	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). No State fisheries are active in the Operational Area. The Marine Aquarium Managed Fishery, Mackerel Managed Fishery (Area 2 and 3), West Coast Deep Sea Crustacean Managed Fishery and Pilbara Line Fishery are active in the EMBA. WAFIC's functions may be relevant to the activity as the peak representative body for State fisheries.	Yes
Recreational marine users and representative bodies			
Exmouth recreational marine users Andro Maritime Services Australia Aquatic Adventure Exmouth Birds Eye View	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

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Blue Horizon Charters Blue Lightning Charters Cape Immersion Tours Coastal Adventure Tours Coral Bay Ecotours Cruise Ningaloo Dampier Island Tourism Dive Ningaloo Evolution Fishing Charters Exmouth Adventure Co. Exmouth Dive Centre Exmouth Fly Fishing Exmouth Game Fishing Club Indian Chief Charters Innkeeper Sport Fishing Charter Kings Ningaloo Reef Tours Live Ningaloo Mahi 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			

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Ningaloo Reef to Range Tours Ningaloo Safari Tours Ningaloo Sportfishing Charters Ningaloo Whaleshark n Dive Ningaloo Whaleshark Swim Ocean Eco Adventures On Strike Charters Peak Sportfishing Charters Pelican Charters Sail Ningaloo 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	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

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Seafresh Holdings Pty Ltd Eco-Abrolhos Pty Ltd C Emery Fishing Pty Ltd On Strike Charters (WA) Pty Ltd Melkit Pty Ltd Maritime Engineering Services Pty Ltd G. C. Bass Nominees Pty Ltd Brefjen Nominees Pty Ltd W.A Maritime Investments Pty Ltd Blue Juice Tours Pty Ltd Surefire Marine Services Pty Ltd Makalee Pty Ltd L & S Family Holdings Pty Ltd Bondall Pty Ltd Kw Marine Pty Ltd Sharkbay Charters Pty Ltd Bluecity Enterprises Pty Ltd Jostan Holdings Pty Ltd Monkey Mia Yacht Charters Pty Ltd On Strike Charters (Wa) Pty Ltd Rainfield Pty Ltd Monster Sportfishing Adventures Pty Ltd			

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Lulamanzi Investments Pty Ltd Millennial Charters Pty Ltd Chapel Nominees Pty Ltd Regalchoice Holdings Pty Ltd Fawesome Expeditions Pty Ltd On Strike Charters (WA) Pty Ltd The Great Escape Charter Company Pty Ltd Aoa International Pty Ltd Fire Tiger Pty Ltd			
Recfishwest	Represents the interests of recreational fishers in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 11A(1)(d). Activities have the potential to impact recreational fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
Marine Tourism WA	Represents the interests of marine tourism in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 11A(1)(d). Activities have the potential to impact recreational fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes
WA Game Fishing Association	Represents the interests of game fishers in WA.	Woodside has applied its methodology for 'Recreational marine users and representative bodies' under regulation 11A(1)(d). Activities have the potential to impact game fishers' functions, interests or activities due to the location offshore and there has been recorded charter effort in the EMBA in the past 5 years.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Titleholders and Operators			
Chevron Australia	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Western Gas	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Exxon Mobil Australia Resources Company	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Shell Australia	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
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
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
Finder Energy (Finder No 10)	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d).	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Titleholder or Operator's permit areas overlaps the EMBA.	
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 WA Northwest / Santos Offshore / Santos WA PVG	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). Titleholder or Operator's permit areas overlaps the EMBA.	Yes
OMV Australia	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
Peak Industry Representative bodies			
APPEA	Represents the interests of oil and gas explorers and producers in Australia.	Woodside has applied its methodology for 'Peak Industry Representative bodies' under regulation 11A(1)(d). APPEA's responsibilities are identified as having an intersect with Woodside's planned activities in the EMBA.	Yes
Traditional Custodians and nominated representative corporations			
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 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.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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. 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	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d). There are no native title claims or ILUAs that NAC is party to overlapping the EMBA or coastally adjacent to the EMBA. 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**). Woodside chose to assess NAC as relevant under regulation 11A(1)(e).	Yes
Wirrawandi Aboriginal Corporation (WAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d). There are no native title claims or ILUAs that WAC is party to overlapping the EMBA or coastally adjacent to the EMBA.	Yes
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d). The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, which the	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Baiyungu, Thalanyji and Yinggarda people are party to. The NTGAC and YAC are the Registered Native Title Body Corporates holding native title on behalf of the Baiyungu, Thalanyji and Yinggarda people. The NTGAC is also party, with the WA State Government, to the Ningaloo Conservation Estate Indigenous Land Use Agreement (the ILUA), which is coastally adjacent to the EMBA. The NTGAC is responsible for the joint management of the inner Ningaloo Marine Park (State Waters), the Cape Range National Park and new conservation areas extending along the Ningaloo Coast, which runs in parallel to the outer Ningaloo Marine Park in Commonwealth waters. The NTGAC's nominated representative is the YMAC and the NTGAC executive officer and contact officer pursuant to the Corporations (Aboriginal and Torres Strait Islander) Act 2006 is employed by YMAC. Woodside has therefore consulted the NTGAC, via YMAC.	
Yinggarda Aboriginal Corporation (YAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d). The Gnulli, Gnulli #2 and Gnulli #3 - Yinggarda, Baiyungu and Thalanyji People native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, which the Baiyungu, Thalanyji and Yinggarda people are party to. The NTGAC and YAC are the Registered Native Title Body Corporates holding native title on behalf of the Baiyungu, Thalanyji and Yinggarda people. The YAC nominated representative was the YMAC and the YAC executive officer and contact officer pursuant to the Corporations (Aboriginal and Torres Strait Islander) Act 2006 is employed by YMAC. Woodside therefore consulted YAC, via YMAC. Woodside was advised that as of late April 2023, the nominated representative for YAC was now Gumala Aboriginal Corporation.	Yes
Robe River Kuruma Aboriginal Corporation (RRKAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d). There are no native title claims or ILUAs that the RRKAC is party to overlapping the EMBA or coastally adjacent to the EMBA.	Yes
Yindjibarndi Aboriginal Corporation	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d). There are no native title claims or ILUAs that the Yindjibarndi Aboriginal Corporation is party to overlapping the EMBA or coastally adjacent to the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		Woodside chose to assess the Yindjibarndi Aboriginal Corporation as relevant under regulation 11A(1)(e).	
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	Representative Aboriginal Corporation	Woodside has applied its methodology for 'Traditional Custodians and Nominated Representative Corporations' under regulation 11A(1)(d). The Thalanyji native title claim does not overlap the EMBA. The claim is coastally adjacent to the EMBA, which BTAC is the Registered Native Title Body Corporate for. BTAC is also party to the Macedon ILUA which is coastally adjacent to the EMBA.	Yes
Native Title Representative Bodies			
Yamatji Marlpa Aboriginal Corporation (YMAC)	Native Title Representative Body	Woodside has applied its methodology for 'Native Title Representative Bodies' under regulation 11A(1)(d). YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders. The NTGAC's nominated representative is YMAC. Woodside has therefore consulted the NTGAC via YMAC. YMAC was also the nominated representative for YAC. Woodside was advised that as of late April 2023, the nominated representative for YAC is now Gumala Aboriginal Corporation. Woodside contacted YMAC to seek guidance with respect to the appropriate Traditional Custodian group(s) to engage with respect to the proposed activity where this was not clear. YMAC's functions may be relevant to the proposed activity in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation.	Yes
Self-identified First Nations Groups			
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	Traditional Custodian - entity	Woodside has applied its methodology for 'Traditional Custodians' under regulation11 A 1 (d). 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	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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. Both NAC and YAC are relevant people. 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. NYFL self-identified and has advised it is relevant for this EP.	
Historical cultural heritage groups or organisations			
Western Australian Museum	Manages 200 shipwreck sites of the 1,500 known to be located off the Western Australian coast.	Woodside has applied its methodology for 'Historical cultural heritage groups or organisations' under regulation 11A(1)(d). There are no known shipwrecks overlapping the EMBA which the Western Australian Museum may be responsible for.	No
Local government and community representative groups or organisations			
Shire of Exmouth	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Exmouth, Learmonth and North West Cape.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d). The Shire of Exmouth's area of responsibility does not overlap the EMBA. The Shire of Exmouth was consulted as a member of the Exmouth Community Reference Group. Under subregulation 11 A 1 (e), Woodside, at its discretion, chose to assess the Shire of Exmouth as a relevant person.	Yes
City of Karratha	Local government governed by the Local Government Act 1995 representing the suburbs and localities of Baynton, Baynton West, Bulgarra, Cossack, Dampier, Gap Ridge, Karratha, Karratha Industrial Estate, Jingarri, Madigan, Millars Well, Nickol, Pegs Creek,	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d). The City of Karratha's area of responsibility does not overlap the EMBA. The City of Karratha was consulted as a member of the Karratha Community Liaison Group. Under subregulation 11 A 1 (e), Woodside, at its discretion, chose to assess the City of Karratha as a relevant person.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
	Point Samson, Roebourne, Whim Creek and Wickham.		
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 Gascoyne Development Commission Gun Marine Services Ningaloo Lodge Offshore Unlimited Shire of Exmouth	The Exmouth CRG represents the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Exmouth region.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d). The Exmouth CRG's area of responsibility under its terms of reference overlaps the EMBA.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
BHP Petroleum Santos Community Member			
Karratha Community Liaison Group (KLG) WA Police Karratha Health Care Development WA Ngarluma Yindjibarndi Foundation Ltd (NYFL) Department of Education Pilbara Ports Authority Regional Development Australia Pilbara Development Commission Dampier Community Association City of Karratha Karratha & Districts Chamber of Commerce and Industry Horizon Power Murujuga Aboriginal Corporation (MAC)* Department of Local Government, Sport and Cultural Industries **MAC was consulted directly as described above.*	The KLG is the recognised community group that represents the interests of a range of local government, industry and community organisations in relation to oil and gas matters in the Pilbara region.	Woodside has applied its methodology for 'Local government and community representative groups or organisations' under regulation 11A(1)(d). The KLG's area of responsibility under its terms of reference does not overlap the EMBA. Under subregulation 11 A 1 (e), Woodside, at its discretion, chose to assess the KLG as a relevant person.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Other non-government groups or organisations			
350 Australia (350A)	Non-government organisation	During the course of preparing the EP, 350A self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that 350A's public website material demonstrates an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2**)	Yes
Australasian Centre for Corporate Responsibility (ACCR)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine ACCR's relevance for the proposed activity. Woodside has assessed that ACCR's public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2**). Woodside chose to contact ACCR at its discretion in line with **Section 5.2**.	No
Australian Conservation Foundation (ACF)	Non-government organisation	During the course of preparing the EP, ACF self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that ACF's public website material and feedback demonstrates an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2**).	Yes
Australian Marine Conservation Society (AMCS)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine AMCS's relevance for the proposed activity. Woodside has assessed that AMCS's public website material demonstrates an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2**).	Yes
Climate Council	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine Climate Council's relevance for the proposed activity. Woodside has assessed that Climate Council's public website material does not demonstrate an interest with the potential risks and impacts associated with planned	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		activities in accordance with the intended outcome of consultation (as set out in **Section 5.2).** Woodside chose to contact Climate Council at its discretion in line with **Section 5.2**.	
Conservation Council of Western Australia (CCWA)	Non-government organisation	During the course of preparing the EP, CCWA self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that CCWA's public website material 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
Doctors for the Environment (DEA)	Non-government organisation	During the course of preparing the EP, DEA self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that DEA's public website material and feedback does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2).**	No
Extinction Rebellion WA (XRWA)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine XRWA's relevance for the proposed activity. Woodside has assessed that XRWA's public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2).** Woodside chose to contact XRWA at its discretion in line with **Section 5.2**.	No
Friends of Australian Rock Art. Inc (FARA)	Non-government organisation	During the course of preparing the EP, FARA self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that FARA's public website material and feedback does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2).**	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Greenpeace Australia Pacific (GAP)	Non-government organisation	During the course of preparing the EP, GAP self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that GAP's public website material and feedback demonstrates an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2).**	Yes
International Fund for Animal Welfare (IFAW)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine IFAW's relevance for the proposed activity. Woodside has assessed that IFWA's public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2).** Woodside chose to contact IFAW at its discretion in line with **Section 5.2**.	No
Lock The Gate Alliance (LTGA)	Non-government organisation	During the course of preparing the EP, LTGA self-identified, provided comment on the broader Scarborough Project and requested to be consulted on Scarborough EPs. Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d). Woodside has assessed that LTGA's public website material and feedback does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2).**	No
Market Forces	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine Market Forces relevance for the proposed activity. Woodside has assessed that Market Forces public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2).** Woodside chose to contact Market Forces at its discretion in line with **Section 5.2**.	No
Say No to Scarborough Gas (SNTSG)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine SNTSG's relevance for the proposed activity.	Yes

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
		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).**	
Sea Shepherd Australia (SSA)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine SSA's relevance for the proposed activity. Woodside has assessed that SSA's public website material 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).** Under subregulation 11 A 1 (e), Woodside, at its discretion, chose to assess SSA as a relevant person.	Yes
The Wilderness Society (TWS)	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine TWS's relevance for the proposed activity. Woodside has assessed TWS's public website material and feedback, with the latter demonstrating an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2).**	Yes
World Wildlife Fund (WWF) Australia	Non-government organisation	Woodside has applied its methodology for 'Other non-government groups or organisations' under regulation 11A(1)(d) to determine WWF's relevance for the proposed activity. Woodside has assessed that WWF's public website material does not demonstrate an interest with the potential risks and impacts associated with planned activities in accordance with the intended outcome of consultation (as set out in **Section 5.2**)**.** Woodside chose to contact WWF at its discretion in line with **Section 5.2**.	No
Research institutes and local conservation groups or organisations			
University of Western Australia (UWA)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 11A(1)(d) to determine UWA's relevance for the proposed activity. There is no known research being undertaken by the UWA that intersects within the EMBA. Woodside chose to contact UWA at its discretion in line with **Section 5.2**.	No

Person or Organisation	Summary of responsibilities and/or functions, interests or activities	Assessment of relevance	Relevant person
Western Australian Marine Science Institution (WAMSI)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 11A(1)(d) to determine WAMSI's relevance for the proposed activity. 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 5.2**.	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 11A(1)(d) to determine CSIRO's relevance for the proposed activity. There is no known research being undertaken by CSIRO that intersects within the EMBA. Woodside chose to contact CSIRO at its discretion in line with **Section 5.2**.	No
Australian Institute of Marine Science (AIMS)	Research institute	Woodside has applied its methodology for 'Research institutes and local conservation groups or organisations' under regulation 11A(1)(d) to determine AIMS's relevance for the proposed activity. There is no known research being undertaken by AIMS that intersects within the EMBA. Woodside chose to contact AIMS at its discretion in line with **Section 5.2**.	No
National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP) acting for a consortium of operators	Titleholder or Operator	Woodside has applied its methodology for 'Titleholders and Operators' under regulation 11A(1)(d). During the course of preparing the EP, NERA CSEP self-identified for a related EP and requested to be consulted. Titleholder or Operator's permit areas overlaps the EMBA.	Yes
Other			
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

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

5.9 Consultation Activities and Additional Engagement for the Scarborough Drilling and Completions Environment Plan

Woodside has been conducting extensive consultation with relevant persons and other parties since February 2018, when preliminary consultation for the Scarborough OPP commenced with interested and affected stakeholders as part of a planned, integrated and consistent approach to stakeholder engagement for Woodside's proposed opportunities (including the Browse to North West Shelf (NWS) Project, Scarborough, Pluto Train 2, NWS Project Extension and Pluto-NWS Interconnector). Consultation aims to be inclusive, transparent, voluntary, respectful and two-way. Consultation was undertaken by email, letter, phone call or meeting.

- Woodside advertised the planned activities proposed for this Environment Plan in the 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) (see **Appendix F, reference 1.89**). 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 EMBAs for this Environment Plan and additional information relating to mitigation and managements measures for this Environment Plan (**Appendix F, reference 1.25**).
- Since the commencement of the initial consultation period in July 2021, the Stakeholder Consultation Information Sheet has been available on the Woodside website. The activity update Consultation Information Sheet has been available since January 2023. The Woodside Consultation Information Sheets include a toll-free 1800 phone number and Woodside's feedback email address (feedback@woodside.com.au).
- Additional targeted information was provided to relevant marine users including AHO and AMSA – Marine Safety (**Appendix F, reference 1.3, 1.4 and 1.5**). 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 Environment Plan, 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 1.91**) 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 1.92.1)** and for the Karratha Community Session in the Pilbara News on 28 June 2023 (**Appendix F, reference 1.93.3**).
  - From 8 June 2023, Woodside commenced a geotargeted social media campaign along the coastline from Geraldton to Derby (**Appendix F, reference 1.91**) 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 1.94.1)** A Karratha Community Information Session was advertised via a Facebook post on 28 June 2023 and a geotargeted social media campaign from 16 June to 29 June 2023 **(Appendix F, reference 1.93.3)**.
  - 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 1.93.1 and 1.93.2**).
  - 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 1.93.3)** 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 1.93.3).**
- 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 1.93.4**).
- 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 1.93.5).**
- 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 Sept 2023: Karratha Shopping Centre 8am–12pm; Red Earth Arts Precinct 3–6pm. Estimated number of people consulted: 20;
  - 19 Sept 2023: Port Hedland, South Hedland Square 10am–5pm. Estimated number of people consulted: 20;
  - 20 Sept 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 1.93.6).**

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 1.26**). 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 1.25**) and Summary Consultation Information Sheets (**Appendix F, reference 1.26**);
  - 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 1.91**) 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 1.91**), 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 2** of this EP.

6.1.1 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 relevant petroleum activities, including other Scarborough activities, that could realistically result in overlapping temporal and spatial extents.

Other facilities located in proximity to the PAA were identified within **Section 4.9.8**. Given the distance between the location of the PAA and other nearby petroleum facilities and activities, no cumulative risks or impacts will credibly occur.

Woodside has also identified and assessed the following proposed activities for WA-61-L that may overlap temporally and/or spatially:

- Scarborough 4D B1 marine seismic survey may be undertaken over WA-61-L however there will be no temporal overlap (activities will not occur concurrently) and therefore no cumulative impacts are predicted with this activity.
- Scarborough trunkline installation may result in cumulative impacts due to both a spatial and temporal overlap, however any potential impacts will be described, assessed and managed under the Scarborough Seabed Intervention and Trunkline Installation EP (under development).
- Fibre optic cable installation in WA-61-L may be undertaken during the timing of the Petroleum Activities Program. However given that the distance between activities in this EP and fibre optic cable installation activities would be at least 10 km, no cumulative risks or impacts will credibly occur.

Where relevant the cumulative impacts of activities associated with undertaking multiple concurrent or parallel activities of this Petroleum Activities Program have been assessed in **Sections 6.7**, **6.8** and **6.10.**

6.2 Impact and Risk Analysis and Evaluation

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

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

- Planned activities (routine and non-routine) that have the potential for inherent environmental impacts; and

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

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

The ENVID (performed in accordance with the methodology described in **Section 2**) identified 16 sources of environmental impacts and risks. A summary of the ENVID is provided in Table 6-1.

The Scarborough Drilling and Completions specific ENVID workshop was conducted on 18 May 2021. Attendees included: Superintendent (Drilling and Completions), Environmental Advisers, Environmental Scientists, Environmental Engineers, Lead Drilling Engineer, Hydrocarbon Spill Adviser, and Environmental Consultants.

The impact and risk analysis and evaluation for the Petroleum Activities Program indicates that all current environmental risks and impacts associated with the individual activities are reduced to ALARP and are of an acceptable level, as discussed further in **Sections 6.7**, **6.8** and **6.10.**

Table 6-1: Environmental Impact and Risk analysis and summary

Aspect	EP Section	Risk Rating				Acceptability
		Impact/ Consequence	Potential Impact/Consequence Level	Likelihood	Current Risk Rating	
Planned Activities (Routine and Non-routine)						
Routine Light Emissions: External Lighting on MODU and Project Vessels	**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**
Routine Atmospheric and Greenhouse Gas Emissions	**6.7.2**	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 – Generation of Noise from MODU, Project Vessels and Positioning Equipment	**6.7.3**	E	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	-	-	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Physical Presence – Interaction with other marine users	**6.7.4**	E	Slight, short-term impact (<1 year) to a community or area/item of cultural significance.	-	-	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Physical Presence – Disturbance to Benthic Habitat from MODU Anchoring, Drilling Operations, Subsea Installation and ROV Operations	**6.7.5**	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 and Non-Routine Discharges: MODU and Project Vessels	**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**

Aspect	EP Section	Risk Rating				Acceptability
		Impact/ Consequence	Potential Impact/Consequence Level	Likelihood	Current Risk Rating	
Routine and Non-Routine Discharges: Drill Cuttings and Drill Fluids	**6.7.7**	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 and Non Routine Discharges: Cement, Cementing Fluids, Subsea Well Fluids, Produced Water and Unused Bulk Product	**6.7.8**	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**
Unplanned Activities (Accidents, Incidents, Emergency Situations)						
Unplanned Hydrocarbon Release: Vessel Collision	**6.8.2**	D	Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	1	M	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Unplanned Hydrocarbon Release: Loss of Well Integrity	**6.8.3**	D	Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	1	M	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Unplanned Discharge: Chemicals and Hydrocarbons	**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 Hydrocarbon Release: Bunkering	**6.8.5**	D	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	1	M	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Unplanned Discharge: Hazardous and Non – Hazardous Solid Waste	**6.8.6**	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**

Aspect	EP Section	Risk Rating				Acceptability
		Impact/ Consequence	Potential Impact/Consequence Level	Likelihood	Current Risk Rating	
Physical Presence (Unplanned): Seabed Disturbance	**6.8.7**	D	Minor, short-term impact (1–2 years) on species, habitat (but not affecting ecosystem function), physical or biological attribute.	1	M	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Physical Presence (Unplanned): Invasive Marine Species	**6.8.8**	E	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	0	L	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**
Physical Presence (Unplanned): Collision with Marine Fauna	**6.8.9**	E	Environment – Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes.	1	L	Broadly Acceptable Has been shown to meet requirements listed in **Section 2.3.5**

6.3 Environmental Performance Outcomes, Standards and Measurement Criteria

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

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

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 7.10.4**).

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

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

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

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

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Planned Activities			
Section 6.7.1 Routine Light Emissions: External Lighting on MODU and Project Vessels	**EPO 1** Undertake the Petroleum Activities Program in a manner that will not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results.	**EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2:**	The EPOs adopted in the EP for routine light emissions are consistent with the EPOs in the OPP.
	EPO 2 Undertake the Petroleum Activities Program in a manner that will not have a substantial adverse effect on a population of seabirds or shorebirds, or the spatial distribution of the population.	**EPO 1.2; EPO 15.3**	
	EPO 3 Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	**EPO 1.4; EPO 4.3; EPO 10.6; EPO 15.9; EPO 18.5**	
	EPO 4 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population.	**EPO 4.2; EPO 15.7; EPO 18.4**	
Section 6.7.2 Routine Atmospheric and Greenhouse Gas Emissions	**EPO 5** Undertake the Petroleum Activities Program in a manner that will not result in a substantial change in air quality which may adversely impact on biodiversity, ecological integrity social amenity or human health.	**EPO 2.1**	**New EPO –** EPO 6 relating to Atmospheric and GHG emissions to be inclusive of all emissions relevant to this Petroleum Activities Program. This EPO was updated during EP assessment
	EPO 6 Assess opportunities to improve energy efficiency and reduce GHG emissions from the Petroleum Activities Program.	**New EPO**	

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Section 6.7.3 Routine Acoustic Emissions – Generation of Noise from MODU, Project Vessels and Positioning Equipment	**EPO 3** Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	**EPO 1.4; EPO 4.3; EPO 10.6; EPO 15.9; EPO 18.5**	The EPOs adopted in the EP for routine noise emissions are consistent with the EPOs in the OPP.
	EPO 4 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population.	**EPO 4.2; EPO 15.7; EPO 18.4:**	
	EPO 8 Undertake the Petroleum Activities Program in a manner that will not substantially modify, destroy or isolate an area of important habitat for a migratory species.	**EPO 1.3; EPO 10.5; EPO 15.8**	
Section 6.7.4 Physical Presence – Interaction with Other Marine Users	**EPO 9** Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on the sustainability of commercial fishing.	**EPO 5.1**	The EPOs adopted in the EP for interaction with other marine users are consistent with the EPOs in the OPP.
	EPO 10 Undertake the Petroleum Activities Program in a manner that does not interfere with other marine users to a greater extent than is necessary for the exercise of right conferred by the titles granted.	**EPO 5.2**	
Section 6.7.5 Physical Presence – Disturbance to Benthic Habitat from MODU Anchoring, Drilling Operations,	**EPO 1** Undertake the Petroleum Activities Program in a manner that will not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results.	**EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2:**	The EPOs adopted in the EP for the disturbance to benthic habitat are consistent with the EPOs in the OPP.

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Subsea Installation and ROV Operations	**EPO 11** Undertake the Petroleum Activities Program in a manner that prevents a substantial change to water quality that may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**EPO 6.1; EPO 7.1; EPO 8.1; EPO 9.1; EPO 10.1; EPO12.1; EPO 13.1; EPO 15.2**	
	EPO 28 No adverse impact to unexpected finds of Underwater Cultural Heritage without a permit[28].	**New EPO**	
Section 6.7.6 Routine and Non-Routine Discharges: MODU and Project Vessels	**EPO 11** Undertake the Petroleum Activities Program activities in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health	**EPO 6.1; EPO 7.1 ; EPO 8.1 ; EPO 9.1; EPO 10.1; EPO12.1; EPO 13.1; EPO 14.1; EPO 15.2**	The EPOs adopted in the EP for MODU and project vessel discharges are consistent with the EPOs in the OPP.
	EPO 12 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of plankton including its life cycle and spatial distribution.	**EPO 10.2; EPO 11.3; EPO 12.3; EPO 13.3**	
	EPO 13 Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity an area defined as a Key Ecological Feature.	**EPO 10.8; EPO 11.6; EPO 12.5; EPO 13.6; EPO 16.3**	
Section 6.7.7 Routine and Non-Routine Discharges: Drill cuttings and drilling fluids	**EPO 1** Undertake Petroleum Activities Program in a manner that 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 results.	**EPO 1.1; EPO 4.1; EPO 6.4; EPO 6.8; EPO 11.5, EPO 12.4; EPO 13.4; EPO 15.6; EPO 16.2; EPO 17.2; EPO 18.2**	The EPOs adopted in the EP for the drilling discharges are consistent with the EPOs in the OPP.

[28]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
	EPO 11 Undertake Petroleum Activities Program in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**EPO 6.1; EPO 7.1 ; EPO 8.1 ; EPO 9.1; EPO 10.1; EPO12.1; EPO 13.1; EPO 14.1; EPO 15.2**	
	EPO 12 Undertake Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of plankton including its life cycle and spatial distribution.	**EPO 10.2; EPO 11.3; EPO 12.3; EPO 13.3**	
	EPO 13 Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity an area defined as a Key Ecological Feature.	**EPO 10.8; EPO 11.6; EPO 12.5; EPO 13.6; EPO 16.3**	
	EPO 14 Undertake Petroleum Activities Program in a manner that prevents substantial change in sediment quality, which may adversely impact biodiversity, ecological integrity, social amenity or human.	**EPO 13.2**	
	EPO 15 Undertake Petroleum Activities Program in a manner that prevents significant impacts on the values of the Exmouth Plateau KEF.	**EPO 10.3; EPO 11.4; EPO 13.5**	
Section 6.7.8 Routine and Non-Routine Discharges: Cement, Cementing Fluids, Subsea Well Fluids, Produced Water and Unused Bulk Product	Same as **Section 6.7.7** above		
Unplanned Activities			

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
Section 6.8.2 Unplanned Hydrocarbon Release: Vessel Collision	**EPO 16** No release of hydrocarbons to the marine environment due to a vessel collision associated with the Petroleum Activities Program.	**EPO 19.1**	The EPOs adopted in the EP for an unplanned hydrocarbon release from a vessel collision are consistent with the EPOs in the OPP.
Section 6.8.3 Unplanned Hydrocarbon Release: Loss of Well Control	**EPO 17** No loss of well control resulting in loss of hydrocarbons to the marine environment during the Petroleum Activities Program	**New EPO**	This EPO is new to this EP, and is consistent with both the wording of previous Woodside Environment Plans and the intent of EPO 19.1 in the OPP.
Section 6.8.4 Unplanned Discharge: Chemicals and Hydrocarbons	**EPO 18** Undertake the Petroleum Activities Program in a manner that will prevent an unplanned release of chemicals or non-process hydrocarbons to the marine environment resulting in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**EPO 14.1**	The EPOs adopted in the EP for an unplanned hydrocarbon release from bunkering are consistent with the EPOs in the OPP.
Section 6.8.5 Unplanned Hydrocarbon Release: Bunkering	Same as **Section 6.8.4** above		
Section 6.8.6 Unplanned Discharge: Hazardous and Non – Hazardous Solid Waste	**EPO 2** Undertake Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of seabirds or shorebirds, or the spatial distribution of the population	**EPO 1.2; EPO 15.3**	The EPOs adopted in the EP for an unplanned discharge of hazardous and non-hazardous solid wastes are consistent with the EPOs in the OPP.
	EPO 3 Undertake Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	**EPO 1.4; EPO 4.3; EPO 10.6; EPO 15.9; EPO 18.5**	

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
	EPO 4 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population.	**EPO 4.2; EPO 15.7; EPO 18.4**	
	EPO 8 Undertake Petroleum Activities Program in a manner that will not substantially modify, destroy or isolate an area of important habitat for a migratory species.	**EPO 1.3; EPO 10.5; EPO 15.8**	
	EPO 11 Undertake Petroleum Activities Program in a manner that will prevent a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**EPO 6.1; EPO 7.1; EPO 8.1; EPO 9.1; EPO 10.1; EPO12.1; EPO 13.1; EPO 14.1; EPO 15.2**	
	EPO 19 Undertake Petroleum Activities Program in a manner that will prevent an unplanned release of solid waste to the marine environment resulting in a significant impact	**EPO 15.1**	
	EPO 20 Undertake Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of fish, or the spatial distribution of the population.	**EPO 10.4; EPO 15.4**	
	EPO 21 Undertake Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of marine mammals or the spatial distribution of the population.	**EPO 10.7; EPO 15.5; EPO 18.3**	
Section 6.8.7 Physical Presence (Unplanned): Seabed Disturbance	**EPO 13** Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in an area defined as a Key Ecological Feature.	**EPO 10.8; EPO 11.6; EPO 12.5; EPO 13.6; EPO 16.3**	The EPOs adopted in the EP for unplanned seabed disturbance are consistent with the EPOs in the OPP.

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
	EPO 22 Undertake the Petroleum Activities Program in a manner which prevents unplanned seabed disturbance.	**EPO 16.1**	
Section 6.8.8 Physical Presence (Unplanned): Invasive Marine Species	**EPO 13** Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in an area defined as a Key Ecological Feature.	**EPO 10.8; EPO 11.6; EPO 12.5; EPO 13.6; EPO 16.3**	OPP EPO's 17.1, 17.3 and 17.4 have been combined to form one EPO which encompasses the intent and outcome of all three.
	EPO 23 Undertake the Petroleum Activities Program in a manner which prevents a known or potential pest species (IMS) becoming established.	**EPO 17.1, EPO 17.3, EPO 17.4**	
Section 6.8.9 Physical Presence (Unplanned): Collision with Marine Fauna	**EPO 26** Undertake the Petroleum Activities Program in a manner which prevents a vessel strike with protected marine fauna during project activities.	**EPO 18.1**	The EPOs adopted in the EP for the unplanned collision with marine fauna are consistent with the EPOs in the OPP.
Section 6.10 Cultural Features and Heritage Values Assessment	**EPO 27** Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values.	**EPO 5.2**	**New EPO –** This EPO was updated during EP assessment
	EPO 28 New cultural values identified through the Program and supporting studies (**EPO 27**) will be managed to ALARP and an Acceptable level of impact.		

Aspect	EPOs in this EP	Relevant EPOs from the Scarborough OPP	Comparison
	EPO 29 No impact to known cultural features and heritage value, as stated in Table 4-18, greater than a consequence level of F[29] from the Petroleum Activities Program.		

[29] Defined as F – Negligible, no lasting effect (< 1 month) Localised impact not significant to areas /items of cultural significance

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		
<Reference to section number in the Scarborough Project OPP>		
Context <Description of the context for the impact/risk. Regulation 13(1, 13(2) and 13(3)>		
Relevant Activities Source of Aspect – **Section reference** *Description of the Activity – Regulation 13(1)*	**Existing Environment** Relevant environment – **Section reference** *Description of the Environment – Regulations 13(2)(3)*	**Consultation** Consultation – **Section reference** *Consultation – Regulation 11A*

Impact/Risk Evaluation Summary														
	Environmental Value Potentially Impacted Regulations 13(2)(3)							***Evaluation***						
Source of Impact/Risk Regulation 13(1)	**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**
Summary of source of risk/impact														

Description of Source of Impact/Risk
Description of the identified impact/risk including sources or threats that may lead to the risk or identified event. Regulation 13(1).

Detailed Impact Assessment
Assessment of Potential Impacts
Receptor <u>Impact / risk</u> Assessment of potential impact *Discussion and assessment of the potential impacts to the identified environment value(s). Regulations 13(5)(6).* *Potential impacts to environmental values have been assigned and discussed based on Woodside's Environmental Consequence Definitions for Use in Environmental Risk Assessments (**Figure 2-1**).*
Cumulative Impacts
Description of any cumulative impacts specific to the PAA (cumulative impact assessment of Scarborough project as a whole is covered in the OPP)
Summary of Assessment Outcomes

Receptor	**Impact**	**Receptor Sensitivity Level**	**Magnitude**	**Impact Significance Level / Risk Consequence**

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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
ALARP Tool Used – Section 2.3.4				
Summary of control considered to ensure the impacts and risks are continuously reduced to ALARP. *Regulation 13(5)(c).*	*Technical/logistical feasibility of the control.* *Cost/sacrifice required to implement the control (qualitative measure).*	*Quantum of impact/risk that could be averted (measured in terms of reduction of likelihood, consequence and current risk rating) if the cost/sacrifice is made and the control is adopted.*	*Proportionality of cost/sacrifice vs environmental benefit. If proportionate (benefits outweigh costs) the control will be adopted. If disproportionate (costs outweigh benefits) the control will not be adopted.*	*If control is adopted: Reference to Control # provided.*

ALARP Statement:

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

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

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO# S: *Specific performance which addresses the legislative and other controls that manage the 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.*	**C#** *Identified control adopted to ensure the impacts and risks are continuously reduced to ALARP.* *Regulation 13(5)(c).*	*PS# Statement of the performance required of a control measure. Regulation 13(7)(a)*	*MC# Measurement criteria for determining whether the outcomes and standards have been met. Regulation 13(7)(c)*

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
A: *Achievability/feasibility of the outcome demonstrated via discussion of feasibility of controls in ALARP demonstration. Controls are directly linked to the outcome.* R: *The outcome will be relevant to the source of risk and the potentially impacted environmental value.* T: *The outcome will state the timeframe during which the outcome will apply or by which it will be achieved.*			

6.5 Potential Environment Risks Not Included Within the Scope of this Environment Plan

The ENVID identified environmental risks that were assessed as not being applicable within or outside the PAA as a result of the Petroleum Activities Program and, therefore, were determined to not form part of this EP. These are described in the next sections for information only.

6.5.1 Shallow/Near-shore Activities

The Petroleum Activities Program is located in water depths greater than 100 m and at a significant distance from nearest landfall (Montebello Islands). Consequently, risks associated with shallow/ near-shore activities such as vessel anchoring, and risks of grounding were assessed as not credible.

6.5.2 Generation of Noise from Flaring and Helicopters

It is not credible that airborne noise from flaring and helicopter transfers would add to levels of underwater noise emanating from the MODU, project vessels and positioning equipment to any extent. Similarly, it is not credible that noise from ROV operations at the seabed in ~900 m water depth would add to levels of noise emanating from the MODU and project vessels just below the sea surface, or noise emissions from transponders on the seabed, to any extent. Noise emissions from these other sources would not add to cumulative sound fields from MODU, project vessel and transponders to any discernible extent. As such noise emissions from these sources has not been considered in **Section 6.7.3**.

6.6 Indirect Impacts

For the proposed Scarborough Drilling and Completions activity, the potential 'indirect' environmental impacts and risks evaluated are those associated with mobilisation/demobilisation of the MODU and project vessels to the PAA, which have been considered in the environmental impact assessment in **Sections 6.7 and 6.8**.

Due to the nature and scale of these potential indirect environmental impacts and risks (such as fuel usage, interaction with other marine users and usual vessel discharges), and the regulatory frameworks and applicable maritime regulations in place to manage them, Woodside considers the potential impacts and risks from mobilisation and demobilisation of the MODU and project vessels to be inherently ALARP in its current state. Therefore, Woodside considers that standard vessel and

MODU operations are appropriate to manage the potential impacts and risks from mobilisation and demobilisation of the MODU and project vessels to a level that is acceptable.

The extraction of Scarborough gas for onshore processing is not included in this Petroleum Activities Program. Subsequent and future petroleum activities must first be authorised under the OPGGS(E)R and implemented before Scarborough gas is able to be extracted for onshore processing. Therefore, any indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of this Petroleum Activities Program, but will be evaluated in future Scarborough EPs as appropriate. **Section 1.10.2.1** outlines the list of broader Scarborough Development activities, which will be addressed in EPs submitted to NOPSEMA for assessment.

6.7 Planned Activities (Routine and Non-Routine)

6.7.1 Routine Light Emissions: External Lighting on MODU and Project Vessels

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.1 – Routine Light Emissions		
Context		
Relevant Activities Well Flowback – **Section 3.8.5** Vessel Operations – **Section 3.9.2** MODU Operations – **Section 3.9.1** Contingency Activities – **Section 3.10**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Protected Species – **Section 4.6**	**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**
External light emissions on board MODU and vessels						✓		A	E	-	-	GP	Broadly Acceptable	EPO 1, 2, 3, 4

Description of Source of Impact/Risk

Vessel and MODU Operations

Vessels and the MODU will have external lighting to support safe navigation and safe operations at night. This lighting typically consists of bright white (i.e. metal halide, halogen, fluorescent) lights, and is not dissimilar to lighting used for other offshore activities, including fishing and shipping.

Lighting is required for the safe operation of the MODU and vessels and cannot reasonably be eliminated.

The extent of this potential impact for the Petroleum Activities Program is restricted to the line of sight for each activity emitting light (**Table 6-3**), which based on previous work undertaken by Woodside is about 30 km from the MODU during drilling activities and 30 km from vessels. For well flowback, specifically flaring, the distance at which the flare will be visible is expected to be less than 50 km from the source, and potentially around 10 km further during emergency flaring (Woodside, 2011, 2014).

Table 6-3: Extent of potential impact from light sources associated with Scarborough

Activity	Estimated visual line of sight	Reference
Vessel operations	30 km	Woodside, 2014
MODU operations	30 km	Woodside, 2014
Well flowback (flaring)	50 km (+ 10 km during emergency flaring)	Woodside, 2011

While the line of sight may extend tens of kilometres from the source, the light density (measured in Lux – which represents the intensity of light that arrives at or leaves a surface, as perceived by the human eye) rapidly decreases as distance increases from the source of the light. Monitoring undertaken as a part of Woodside's 2014 study indicated that light density (from navigational lighting) attenuated to below 1.00 Lux and 0.03 Lux at distances of 300 m and 1.4 km, respectively, from the source (a MODU). Light densities of 1.00 and 0.03 Lux are comparable to natural light densities experienced during deep twilight and during a quarter moon. Navigational lighting from vessels

is less than lighting on a MODU. Therefore, light emissions from the MODU and vessels are expected to be below 1.00 Lux within 300 m from the source.

Note that flaring, which is a relatively bright light source, may occur during well unloading.

Detailed Impact Assessment

Assessment of Potential Impacts

Ambient Light

The introduction of light emissions from activities associated with the Petroleum Activity Program can result in a temporary change to ambient light.

The area of operation is at a significant distance from coastal sources of light emissions. However, there are existing activities in the region which also generate light including offshore facilities and supporting activities, as well as shipping traffic.

The contribution of light emissions from the Petroleum Activities Program will be comparable with existing vessels and facilities on the North West Shelf and will not result in a notable increase.

Given the distance from shore, low sensitivity of receptors offshore (i.e. no presence of nesting turtles and low likelihood of hatchling turtles in the offshore environment), and the negligible contribution of light emissions to the environment from the Petroleum Activities Program, the habitat or ecosystem function or integrity of the marine area will not be impacted. Potential impacts of changes to ambient light are included in a number of recovery plans and conservation advice, including the Recovery Plan for Marine Turtles in Australia (Commonwealth of Australia, 2017) and the Wildlife Conservation for Migratory Shorebirds (Commonwealth of Australia, 2015b).

The National Light Pollution Guidelines for Wildlife (NLPG) addresses potential impacts to marine turtles, seabirds and migratory shorebirds from artificial light (Commonwealth of Australia, 2020). The guidelines recommend a specific artificial light impact assessment process where there is important habitat for listed species that are known to be affected by artificial light within 20 km of a project. The 20 km threshold provides a precautionary limit based on observed effects of sky glow on marine turtle hatchlings demonstrated to occur at 15–18 km (Kamrowski, et al., 2014; Hodge et al., 2007) and fledgling seabirds grounded in response to artificial light 15 km away (Rodríguez et al., 2014). The PAA is about 215 km offshore and outside known BIAs for turtles and seabirds/migratory shorebirds, therefore a specific assessment of potential impacts of artificial lighting is not required under the NLPG.

Seabirds

High levels of marine lighting can attract and disorient seabird species resulting in species behavioural changes (e.g. circling light sources or disrupted foraging), injury or mortality near the light source (e.g. Longcore and Rich, 2004; Gaston et al., 2014; Rich and Longcore, 2006). As the PAA is offshore and away from islands or other emergent features, any presence of seabirds or shorebirds is considered likely to be of a transient nature only. The nearest BIA for birds within the EMBA is a breeding and foraging BIA for the wedge-tailed shearwater, located 115 km to the south-east of the PAA. Impacts to shearwaters within the BIA are therefore not expected.

Behavioural disturbance to birds from light is expected to be localised to within the vicinity of the MODU and vessels within the permit areas. The light source from the MODU and vessels within the PAA will be temporary and only when operations are occurring. Interactions with seabirds are therefore expected to be unlikely. Any impacts are predicted to be at an individual level and not a population level. The temporary behavioural disturbance of birds will be localised around the light sources, and not result in a substantial adverse effect on a population of species or its lifecycle. Additionally, light emissions will not seriously disrupt the lifecycle of an ecologically significant proportion of any migratory birds.

Based on the detailed evaluation, the magnitude of impacts to birds from light emissions during activities associated with the Petroleum Activities Program is expected to have no lasting effect.

Marine Reptiles

Exposure of marine turtles to artificial light can result in changes to their natural behaviour. Witherington and Martin (2003) state that light pollution on nesting beaches is detrimental to marine turtles because it alters critical nocturnal behaviours, namely, how turtles choose nesting sites, how they return to the sea after nesting, and how hatchlings find the sea after emerging from their nests. However, there are no sensitive marine turtle habitats near the PAA. The closest known turtle nesting beaches are at the North West Cape and Montebello Islands, located about 215 km and 225 from the PAA respectively. Marine turtles generally have a pelagic life stage as juveniles, before returning to nearshore coastal habitats as adults to forage and breed. At the PAA, marine turtles are unlikely to occur due to the deep waters (>900 m) however, they may occur offshore in small numbers. Leatherback turtles are an oceanic, pelagic species known to regularly forage within continental shelf waters. While leatherback turtles may occur in the PAA in small numbers, their distribution is widespread in Australia and their presence is unlikely. No turtles were observed during the winter or summer offshore marine surveys in the PAA (ERM, 2013).

While artificial lighting may be visible up to tens of kilometres away from the MODU/vessels, the light intensity will be low beyond several hundred metres from the light sources as described above. Although individuals undertaking behaviours such as migration or foraging (adults and pelagic juveniles) may occur within the PAA, marine turtles do

not use light cues to guide these behaviours. Furthermore, there is no evidence, published or anecdotal, to suggest that foraging or migrating turtles are impacted by light from offshore vessels. As such, light emissions from the project vessels/MODU are unlikely to result in displacement of, or behavioural changes to individuals in these life stages

Any hatchlings within the PAA, due to the distance offshore the density of any hatchlings is expected to be very low and limited to individuals, may temporarily alter their normal behaviour if attracted to the light spill from vessel and MODU operations. For any isolated individuals potentially attracted to light spill from project vessels/MODU, following sunrise, any effect of these light sources on hatchlings will be eliminated allowing dispersal behaviour to resume.

As described above, behavioural disturbance to turtles from light in the PAA is expected to be localised to within the vicinity of the MODU and vessels within the Permit Area. The light source from the MODU and vessels within the PAA will be temporary and interaction with turtles is expected to be low. Therefore, any impacts are predicted to be at an individual level and not a population level. Impacts will not occur to significant proportions of the populations of the species, nor result in a decrease of the quality of the habitat such that the extent of these species is likely to decline.

Based on the detailed evaluation, the magnitude of impacts to marine turtles from light emissions during activities associated with the Petroleum Activities Program is evaluated to have no lasting effect.

Summary of Assessment Outcomes				
Receptor	**Impact**	**Receptor Sensitivity Level**	**Magnitude**	**Impact Significance Level**
Ambient Light	Change in ambient light	Low value (open water)	Slight	Negligible (F)
Seabirds and migratory shorebirds	Change in fauna behaviour	High value species (e.g. wedge-tailed shearwater)	No lasting effect	Slight (E)
Marine reptiles		High value species (e.g. flatback turtle)	No lasting effect	Slight (E)
Overall Impact Significance Level: The overall impact significance level for routine light emissions is E based on no lasting effect to the high value receptors (seabirds, migratory shorebirds and marine turtles). The impact significance levels for individual receptors are consistent with the level in the OPP.				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
No additional controls identified.				
Good Practice				
Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	F: Yes. Lighting is typically appropriate for navigation and safety.	Given the potential impacts to turtles during this activity is insignificant, implementation of this control would not result in a reduction in consequence.	While the control does not result in significant reduction of impacts, it is good practice and not at significant cost.	**C 1.1**
Professional Judgement – Eliminate				
Substitute external lighting with ‘‘turtle friendly’’ light sources (reduced emissions in turtle visible spectrum).	F: Yes. Replacement of external lighting with turtle friendly lighting is technically feasible, although is not considered to be practicable.	Given the potential impacts to turtles during this activity is insignificant, implementation of this control would not result in a reduction in consequence.	Grossly disproportionate. Implementation of the control requires considerable cost sacrifice and provides minimal environmental benefit.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	CS: Significant cost sacrifice. The retrofitting of external lighting on the MODU and vessels, etc., would result in considerable cost and time expenditure. Considerable logistical effort to source sufficient inventory of the range of light types onboard the MODU.		The costs/sacrifices outweigh the benefit gained.	
Variation of the timing of the Petroleum Activities Program to avoid peak turtle internesting periods (December to January).	F: Not feasible due to total length of drilling campaign, planned batch drilling sequence and successive activities dependent upon completion timing of D&C campaign execution CS: Significant cost and schedule impacts due to delays in securing vessels/MODU for specific timeframes.	Not considered – control not feasible.	Not considered, control not feasible.	No
Do not flare.	F: No. Flaring is the only feasible way to manage the reservoir fluids and achieve well objectives. CS: Not considered – control not feasible	Not considered – control not feasible.	No considered – control not feasible.	No
Well unloading acceptance criteria that define the well objectives will be established.	F: Yes CS: Standard practice	Eliminates unnecessary flared volumes and corresponding emissions (light and GHG)	Benefits outweigh cost/sacrifice	Yes **C 1.2**
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the potential impacts from routine light emissions from the MODU and vessels to be ALARP. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.1.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the EP acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to routine light emissions have been adopted. • There are no changes to internal context specific to this risk from the OPP. • Impacts from routine light emissions was raised during consultation (**Appendix F, Table 1**) and this feedback was considered in the finalisation of the EP.
Acceptability Statement: The impact assessment has determined that, given the adopted controls, routine light emissions from external lighting on the MODU and project vessels is unlikely to result in an impact significance level greater than slight. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. Regard has been given to relevant conservation advice and wildlife conservation plans during the assessment of potential impacts and the NLPG were taken into consideration during the impact evaluation. The Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice (**Section 6.8**). 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 light emissions to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 1 Undertake the Petroleum Activities Program in a manner that will not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results. **EPO 2** Undertake the Petroleum Activities Program in a manner that will not have a substantial adverse effect on a population of seabirds or shorebirds, or the spatial distribution of the population. **EPO 3** Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. **EPO 4** Undertake the Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of marine reptiles or the spatial distribution of the population.	**C 1.1** Lighting will be limited to the minimum required for navigational and safety requirements, with the exception of emergency events.	**EPS 1.1** Lighting will be limited to that required for safe work/navigation.	**MC 1.1.1** Inspection verifies no excessive light being used beyond that required for safe work/ navigation.
	C 1.2 Well unloading acceptance criteria that defines well objectives will be established.	**PS 1.2** Flaring restricted to a duration necessary to achieve the well objectives	**MC 1.2.1** Records demonstrate flaring was restricted to a duration necessary to achieve well objectives.

6.7.2 Routine Atmospheric and Greenhouse Gas Emissions

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.2: Routine Atmospheric and Greenhouse Gas Emissions		
Context		
Relevant Activities Well Flowback – **Section 3.8.5** Vessel Operations – **Section 3.9.2** MODU Operations – **Section 3.9.1** Contingency Activities – **Section 3.10**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Protected Species – **Section 4.6**	**Stakeholder Consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Internal combustion engines and incinerators on MODU and vessels				✓				A	F	-	-	LCS GP PJ	Broadly Acceptable	EPO 5, 6
Well flowback (flaring) inc. base oil				✓										
Contingent venting of gas during drilling (i.e. well kick)				✓										

Description of Source of Impact

Atmospheric emissions assessed in this EP have been classified into two categories:

- Atmospheric pollutants (non-greenhouse gas emissions) are gases and particulates from an activity, or piece of machinery, which have a recognised adverse effect on human health and/or flora and fauna. The main emissions responsible for these effects include carbon monoxide (CO), oxides of nitrogen (NOx), sulphur dioxide (SO2), particulate matter less than 10 microns (PM10), non-methane volatile organic compounds (VOCs), BTEX (benzene, toluene, ethylbenzene and xylenes), which are specific VOCs of interest
- Greenhouse gas (GHG) emissions are those gasses within the atmosphere that absorb long-wave radiation, and thus trap heat reflected from the Earth's surface. The main gases responsible for this effect include carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). Other greenhouse gases include perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphur hexafluoride (SF6).

Applying definitions from the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard, GHG emissions associated with the activity are considered indirect because they are not from sources that are owned or controlled by Woodside. Woodside has influence over GHG emissions from the MODU, vessels and helicopters via contractual arrangements and scope definition, however does not have the authority to implement operational policies.

MODU, Vessel and Helicopter Operations

Atmospheric emissions are generated by project vessels from internal combustion engines (including all equipment and generators) and incineration activities (including onboard incinerators for standard operations, excluding drilling waste).

Atmospheric emissions generated during these operations will include SOx, NOx, particulates and VOCs. SOx and particulate matter emissions are heavily influenced by the fuel used and its relative sulphur content, MGO usually having a lower sulphite content than marine diesel oil (MDO) or heavy fuel oil (HFO).

NO_2 emissions from routine MODU power generation for an offshore project were modelled previously by another operator (BP, 2013). NO_2 is the focus of the modelling, on account of the larger predicted emission volumes compared to the other atmospheric emissions, and the potential for NO_2 to impact on human health (as a proxy for environmental receptors). The model demonstrated that atmospheric emissions generated by MODU operations may increase ambient NO_2 concentrations by 1 µg/m³ (0.001 ppm) within 10 km of the source and 0.1 µg/m³ (0.0001 ppm) within 40 km of the source. This represents an increase of 2% over typical background concentrations within 40 km, with air quality remaining well below the WHO air quality guideline for NO_2 of 40 µg/m³ annual mean. As NO_2 is the main emission that poses a threat to receptor health, it is considered conservative to use the above studies to justify potential impacts to receptors. As such, studies into the attenuation of other gasses emitted are not evaluated.

Based on fuel consumption information from the DPS-1 MODU on previous Woodside drilling campaigns and the expected activity duration plus mobilisation, it is estimated that a Dynamically Positioned MODU will consume approximately 30,000 m³ of diesel fuel. Applying the appropriate diesel emission factor from the National Greenhouse and Energy Reporting Scheme (NGERS), it is estimated that this fuel combustion would generate approximately 80,000 tCO_2e of greenhouse gas emissions over the course of the activity due to fuel consumption.

Alternatively, if a moored MODU is used for the campaign then less fuel is needed for station keeping. Based on fuel consumption for the Ocean Apex (moored MODU) on previous drilling campaigns, and an extended duration per well to allow for mooring activities, it is estimated that a moored MODU would generate approximately 30,000 tCO_2e of greenhouse emissions over the activity due to fuel consumption.

Vessels will operate within the PAA, although emissions produced will be substantially less than that of the MODU. Using an estimated fuel use of 5 t/d for support vessels (Energy Institute 2000) and diesel emission factor from NGERS, approximately 30,000 tCO_2e of greenhouse gas will be emitted by vessels over the course of the activity.

Using an estimated fuel use of 600 L/r (Energy Institute 2000), and applying aviation fuel emissions factor from NGER, approximately 5000 tCO_2e will be generated by helicopters over the course of the activity.

Well Flowback (Flaring) and Contingency Activities (venting)

Well flowback may be undertaken following running and testing the upper completion and will result in flaring and/or venting of hydrocarbons. During well flowback, initial unloading of the well displaces the well fluids (i.e. suspension/completion brine). These unloaded completion fluids are treated and discharged overboard. Once the brines are unloaded, the gas stream is sent to flare via the production separator. If flow rate is not sufficient to sustain a flare for MODU operations, venting will occur. Depending on the process selected (flaring or venting), the emissions may vary from methane to carbon dioxide, NOx, etc.

The volumes of hydrocarbons flared during well flowback are typically no more than 50 Mscf per well. Up to 300 bbl of base oil may also be flared per well as part of flowback operations. Applying NGER emission factors for flaring during oil and gas exploration, the total estimated greenhouse emissions generated by flaring during flowback for 10 wells is approximately 35,000 tCO2e over the course of the activity.

The global warming potential of un-combusted methane, which is the greatest component of Scarborough reservoir gas, is significantly greater than that of burnt methane. Therefore, greenhouse gas emissions would be greater during contingency venting activity. However, as described above, venting will only occur in cases where flare rate is not sufficient to maintain a flame, which is not credible for flowback of an entire well. The estimate of 35,000 tCO2e generated by flowback flaring for ten wells includes an allowance for a period of venting, and for minor fugitive emissions which may be released from the well test package.

During drilling of the well, a kick may occur. A kick is an undesirable influx of formation fluid into the wellbore. The resultant effect would be a release of a small volume of greenhouse gases via the degasser to the atmosphere during well control operations, known as ‘venting’. Venting is required to ensure well integrity is maintained in the event of a kick thereby avoiding an emergency condition.

During the study undertaken by BP (2013), NO_2 emissions from flaring were modelled for clean-up flaring on MODUs at a rate of 250 MMscfd for up to two days. This model showed that short term concentrations of NO_2 from MODU flaring increased by up to about 60 µg/m³ (0.06 ppm) within 10 km of the source and increase of up to 20 µg/m³ (0.02 ppm) at about 40 km from the source. These levels are intermittent and temporary and do not result in exceedances above the WHO air quality guideline for NO_2 of 40 µg/m³ annual mean.

Mud Degassing

Methane emissions may be released during the period of intersection with the reservoir. Small amounts of gases such as methane may dissolve in drilling fluids and be released to the atmosphere as fluids are degassed and recirculated. These emissions have been estimated using American Petroleum Institute factors and are negligible over the activity.

Summary of GHG emissions

Based on the estimates provided above, the total greenhouse emissions over the course of the entire activity are estimated to be 150,000 tCO_2e. This is approximately 0.02% of the Scarborough project lifecycle GHG emissions as presented in the OPP, which were assessed as having a negligible impact significance level.

Table 6-4: Summary of estimated total greenhouse gas emissions over the Petroleum Activity Program

	Estimated GHG Emissions (tCO_2e)
MODU diesel combustion (DP)	80,000
Support vessel diesel combustion	30,000
Helicopter fuel combustion	5,000
Well flowback (unloading) flaring/venting	35,000
Total	150,000

Detailed Impact Assessment

Assessment of Potential Impacts

Air Quality (atmospheric pollutants)

Atmospheric emissions may result in a decline in local air quality, within the immediate vicinity of the emissions source. As described above, produced emissions throughout the project will include SO_2, NOx, ozone depleting substances, CO_2, particulates and VOCs. Emissions from engines, generators and deck equipment may be toxic, odoriferous or aesthetically unpleasing, and will result in a reduction in air quality.

Given the offshore location of the PAA, and the low volumes of atmospheric emission which will be generated, biodiversity, ecological integrity, social amenities and human health will not be impacted and any potential impact to air quality is slight.

Marine Fauna

Atmospheric emissions can cause direct impacts to fauna, if they are present in the immediate vicinity of significant releases. Birds, for example, have been shown to suffer respiratory distress and illness when subjected to extended duration exposure to air pollutants (Sanderfoot and Holloway, 2017). Given that fauna numbers will be low at the point of discharge, injury or mortality to fauna a result of atmospheric discharges is negligible.

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.

Given the distance from shore of the PAA (215 km), the potential for a change in air quality from atmospheric emissions resulting in a change to aesthetic value for tourism/recreation or settlements is not considered to be credible. As the PAA is not directly visible from the nearest landfall, the flare and potential smoke resulting from emissions will not impact visual amenity, and no impacts to visual amenity for settlements are expected. Therefore, a change in aesthetic value from atmospheric emissions associated with Petroleum Activities Program is negligible.

GHG Emissions

GHG emissions attributed to the MODU, vessels and helicopters contribute to global concentrations of GHG emissions. Cumulative increases in net global atmospheric GHG concentrations are considered to contribute to climate change. It is important to acknowledge that climate change impacts cannot be directly attributed to any one activity, as they are instead the result of global GHG, minus global GHG sinks, that have accumulated in the atmosphere since the industrial revolution.

The impact assessment of the potential impacts of climate change on sensitive receptors, within Australian jurisdictions is described in Section 7.1.3.8 of the Scarborough OPP (SA0006AF0000002, rev 5). More recent climate change reports have been published with updated projections of climate change, including the IPCC's Sixth Assessment Report (AR6) and the CSIRO and Bureau of Meteorology's State of the Climate 2020, which outlines the projected changes to Australia's climate. AR6 projects a slight increase in warming for similar emissions scenarios to AR5 (as presented in the Scarborough OPP), with a narrower range of uncertainty of these projections (higher confidence rates). The slight increase in warming is a result of a range of factors including the higher estimate of historical warming in AR6 and updated estimates of climate sensitivity (IPCC, 2020). The impact or risk evaluation described in Section 7.1.3.8 of the OPP does not change.

Summary of Assessment Outcomes				
Receptor	**Impact**	**Receptor Sensitivity Level**	**Magnitude**	**Impact Significance Level**
Air quality	Change in air quality	Low value (open water)	Slight	Negligible (F)
Overall Impact Significance Level: The overall impact significance level for routine atmospheric and GHG emissions is F based on a slight effect to air quality of the regional airshed and a low value receptor. The impact significance levels for individual receptors are consistent with the level in the OPP.				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Marine Order 97 (Marine pollution prevention – Air pollution).	F: Yes. CS: Minimal cost. Standard practice	Legislative requirements to be followed may slightly reduce the likelihood of air pollution.	Control based on legislative requirements – must be adopted.	Yes **C 2.1**
Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011: Accepted Well Operations Management Plan (WOMP) and application to drill.	F: Yes. CS: Minimal cost. Standard practice.	The accepted WOMP will manage the risk of well kicks, reducing the likelihood of occurrence. No reduction in consequence will occur.	Control based on legislative requirements – must be adopted	Yes **C 2.2**
As-built checks that shall be completed during well operations to establish a minimum acceptable standard of well integrity is achieved.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of occurrence. No reduction in consequence will occur.	Benefits outweigh cost/sacrifice.	Yes **C 2.3**
Burning and flaring during well unloading activities will be conducted using Woodside and Vendor approved TPS (Temporary Production System) Package.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of atmospheric emissions impacting air quality. Consequence remains unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 2.4**
Oil burner will operate efficiently to maximise combustion.	F: Yes. CS: Minimal cost. Standard practice.	This control results in a reduction on likelihood of atmospheric emissions impacting air quality, consequence remains unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 2.5**
Subsea BOP installed and tested during drilling operations.	F: Yes. CS: Standard practice. Required by Woodside standards.	BOP testing reduces the volume of gas vented in the event of a well kick.	Benefits outweigh cost/sacrifice.	Yes **C 2.6**
Process conducted to calculate, update and monitor kick tolerance for	F: Yes.	Processes will reduce the volume of gas	Benefits outweigh cost/sacrifice.	Yes **C 2.7**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
use in well design and while drilling.	CS: Minimal cost. Standard practice for Woodside activities.	vented in the event of a well kick.		
Well control bridging document for alignment of Woodside and the MODU Contractor in order to manage the equipment and procedures for preventing and handling a well kick.	F: Yes. CS: Minimal cost. Standard practice for Woodside activities.	Implementing equipment and procedures in the well control bridging document will reduce the volume of gas vented in the event of a well kick.	Benefits outweigh cost/sacrifice.	Yes **C 2.8**
Reporting of GHG emissions as required by regulatory requirements	F: Yes. CS: Minimal cost. Standard practice for Woodside activities.	Tracking and reporting of emissions gives visibility to performance and enables improvement opportunities to be identified. Reporting increases transparency and accountability which can also drive performance improvements.	Control based on legislative requirements – must be adopted	Yes **C 2.9**
Professional Judgement – Eliminate				
Do not combust fuel.	F: No. There are no MODUs or vessels that do not use internal combustion engines. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Do not vent during well kick.	F: No. Venting is a critical safety activity required in the event of a kick to reduce pressure build up. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Well unloading acceptance criteria that define the well objectives will be established.	F: Yes CS: Standard practice	Eliminates unnecessary flared volumes and corresponding emissions (light and GHG)	Benefits outweigh cost/sacrifice	Yes **C 1.2**
Assess opportunities to eliminate well flowback flaring to MODU. The assessment will consider factors such as: • HSE considerations • Well performance	F: To be decided on per well basis. The decision on whether to unload to the MODU or FPU will be based on technical study outcomes. CS: Cost effective but introduces additional	Minimises environmental impact through the reduction of GHG emissions Well flowback may be avoided entirely for some or all wells. In this case the wells are instead flowed	Benefits potentially outweigh cost/sacrifice	Yes **C 2.10**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
• Proof of completions success • Solids and liquids handling • Potential eventual other impacts to the topsides.	risks to the production facility (i.e. risk of equipment and subsea system failures due to solids)	back to the eventual host facility (the Scarborough Floating Production Unit), resulting in a small increase to expected bean-up flaring for each well but resulting in a net overall flaring decrease of up to 2000 tCO_2e per well. The decision on whether to unload to the FPU will be based on the outcome of ongoing studies and operational data gathered during the drilling activity.		
Reduce and optimise well count.	F: Yes CS: Cost effective	The operating mode for Scarborough includes less "redundancy" than usual. In addition well count has been reduced via well design, large bore and high operational flowrates. As the GHG emissions of the overall activity is highly sensitive to well count, a reduced well count minimises environmental impacts.	Cost effective. Number of wells drilled has been minimised to fewest possible to achieve operating philosophy.	Yes Has been applied in design phase
Professional Judgement - Substitute				
Preferentially utilise moored MODU rather than Dynamically Positioned	F: Yes CS: Costs and schedule implications of selecting moored MODU, rather than selecting a DP MODU due to anchor setting / handling requirements moving between wells (particularly during batch drilling).	If a moored MODU is used for the campaign then less fuel is needed for station keeping. Reducing fuel combustion reduces atmospheric emissions.	Sacrifice outweighs benefit – schedule, H&S and cost implications of using a Moored MODU are grossly disproportionate to potential environmental gains. The use of a moored MODU requires significant anchor handling to move between wells, impeding ability to implement a batch drilling	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
			schedule, materially increasing activity duration and associated exposure to H&S risks and impacts. DP MODUs also offer superior cyclone avoidance. Use of a moored MODU expected to add ~$50M to campaign costs.	
Capture and combust gas released from mud during reservoir intersection, rather than venting	F: Yes CS: Cost of additional equipment	Negligible reduction in GHG emissions	Sacrifice outweighs benefit. GHG emissions from methane dissolved in mud (degassing) have been estimated and are negligible. Addition of combustion system instead of safe vent location introduces process safety risk, and requires significant engineering such as control and safety system, ignition and flame maintenance infrastructure.	No
Professional Judgement – Engineered Solution				
Manage vessel speed to reduce fuel combustion	F: Yes CS: Standard practice	Reducing fuel combustion reduces atmospheric emissions.	Benefits outweigh cost/sacrifice	Yes **C 2.11**
Contracting strategy and evaluation for hire of support vessels includes consideration of vessel emissions parameters and low carbon / alternative fuels	F: Yes CS: Fuel cost over the contract is considered in evaluation of responses, allowing for competitive consideration of low carbon alternatives	Minimises cost and emissions through efficiency recognising cost of fuel and carbon emissions over the contract term	Control effectively allocates a cost to emissions to recognise that higher emitting fuel sources with other lower operating costs do not represent overall best value.	Yes **C 2.12**
Use more fuel efficient DP MODU	F: N CS: Significant additional cost to source alternative MODU or vessels not already in region	Minor/uncertain reduction in GHG emissions.	Analysis of fuel efficiency of DP MODUs for which Woodside has data indicates only minor variation among candidates.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
			Preferred MODU DPS-1 is considered to have better than average speed of well completion, shortening duration of activity and associated emissions. Additionally, DPS-1 will be travelling from a recent activity on North West Shelf, whereas transport emissions associated with bringing an alternative DP to location would erode any potential fuel efficiency benefits.	
Contractors will be engaged to identify additional GHG emissions reduction opportunities	F: Yes CS: Minimal – Good Practise	Woodside does not have operational control over drilling operations, however through sharing aspirations and collaborating new opportunities may be identified and implemented to further reduce emissions	Benefits outweigh cost/sacrifice	Yes **C 2.13**
Track and review emissions during the Petroleum Activities Program with the objective to identify further opportunities to improve efficiencies	F: Yes CS: Minimal	Tracking and reviewing allows interrogation of GHG emissions associated with the Petroleum Activities Program, particularly on a per-well basis. This may enable the identification further opportunities to reduce GHG emissions.	Benefits outweigh cost/sacrifice	Yes **C 2.14**
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls good oil-field practice, and appropriate to manage the impacts of fuel combustion, flaring, incineration and venting. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of the aspect and associated impacts assessed in this section are provided in Section 7.1.3.9 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to GHG emissions have been adopted. • There are no changes to internal/external context specific to this risk from the OPP however additional information related to climate change and energy emission outlooks has become available since the Scarborough OPP was accepted (February 2020). These have included: – Woodside setting clear targets, to reduce net equity scope 1 and 2 emissions below the gross 2016-2020 annual average by 15% in 2025 and 30% in 2030 on a pathway to our aspiration of net zero by 205030. These targets apply to emissions from the Scarborough Project. – Woodside will apply offsets (carbon credits) where necessary to meet its obligations under these corporate targets. – Australia's emissions projections demonstrate that it is on track to reduce emissions by up to 35% below 2005 levels by 2030 (UNFCCC, Australia's NDC 2021), in line with its NDC targets to reduce emissions by 26–28% below 2005 levels by 2030, under the Paris Agreement. – Australia has updated its Nationally Determined Contribution (NDC) under the Paris Agreement, to a reduction in greenhouse gas emissions by 43% below 2005 levels by 2030, on a path leading to net zero by 2050 – 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. – 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 Australia's first target milestone and are therefore consistent with Australia's targets. • Climate change was raised during consultation however feedback on climate change related more broadly to indirect emissions from gas production during Operations, which is not within the scope of this EP (See **Table 5-3** and **Section 6.5**). Feedback on GHG emission generated by the petroleum activities program was considered in the finalisation of the EP.
Acceptability Statement: The impact assessment has determined that, given the adopted controls, routine atmospheric emissions from fuel combustion, flaring, incineration, and venting 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. 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 atmospheric emissions to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 5 Undertake the Petroleum Activities	**C 2.1** Marine Order 97 (Marine Pollution Prevention – Air	**PS 2.1** MODU and project vessels compliant with Marine Order	**MC 2.1.1** Marine Assurance inspection records

[30] For Woodside's equity share of emissions from the facility (e.g. fuel use, flaring, production of natural occurring CO_2 from our petroleum reservoirs) and emissions associated with the generation of any power that we purchase.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
Program in a manner that will not result in a substantial change in air quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health. **EPO 6** Assess opportunities to improve energy efficiency and reduce GHG emissions from the Petroleum Activities Program.	Pollution) which detail requirements for: • International Air Pollution Prevention (IAPP) Certificate, required by vessel class • use of low sulphur fuel when available • Ship Energy Efficiency Management Plan (SEEMP), where required by vessel class • onboard incinerator complies with Marine Order 97.	97 (Marine Pollution Prevention – Air Pollution) to restrict emissions to those necessary to perform the activity. Vessel marine assurance process conducted prior to contracting vessels, to ensure suitability and compliance with vessel combustion certification/marine order requirements.	demonstrate compliance with Marine Order 97.
	C 2.2 Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011: accepted Well Operations Management Plan (WOMP), which describes the well design and barriers to be used to prevent a loss of well integrity, specifically: • all permeable zones penetrated by the well bore, containing hydrocarbons or over-pressured water, shall be isolated from the surface environment by a minimum of two barriers (primary and secondary) (a single fluid barrier may be implemented during the initial stages of well construction if appropriateness is confirmed by a shallow hazard study) • discrete hydrocarbon zones shall be isolated from each other (to prevent cross flow) by a minimum of one barrier where deemed required • all normally pressured permeable water-bearing formations shall be isolated from the surface by a minimum of one barrier. The barriers shall:	**PS 2.2.1** Wells drilled in compliance with the accepted WOMP, including implementation of barriers to prevent a loss of well integrity.	**MC 2.2.1** Acceptance letter from NOPSEMA demonstrates the WOMP and application to drill were accepted by NOPSEMA prior to the drilling activity commencing. **MC 2.2.2** Records demonstrate minimum of two verified barriers (a single fluid barrier may be implemented during the initial stages of well construction if appropriateness is confirmed by a shallow hazard study) were in place for all permeable zones penetrated by the wellbore. **MC 2.2.3** Records demonstrate composition and weight of drilling fluids were applicable to down hole conditions.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	• be effective over the lifetime of well construction • (fluid barriers) remain monitored and provide sufficient pressure to counter pore pressure during well construction • (cementing barriers, including conductor, casing and liners) conform to the relevant minimum standards set out in the Woodside Engineering Standard – Well Cementation. Verification: effectiveness of primary and secondary barriers shall be verified (physical evidence of the correct placement and performance) during the drilling of the well.		
	C 2.3 As-built checks shall be completed during well operations.	**PS 2.3.1** Achieve a minimum acceptable standard of well integrity.	**MC 2.3.1** Records show Well Acceptance criteria are developed for each well.
			MC 2.3.2 Records demonstrate Well Acceptance Criteria have been met.
	C 2.4 Burning and flaring during well unloading activities will be conducted using Woodside and Vendor approved TPS Package.	**PS 2.4.1** Maintain gas flare, air supply and oil burner to maximise efficiency of combustion and minimise venting.	**MC 2.4.1** Records demonstrate that a Woodside approved TPS package is in use during well unloading/ testing.
	C 2.5 Oil burner will operate efficiently to maximise combustion.	**PS 2.5.1** Oil burner will have combustion efficiency greater than 99%.	**MC 2.5.1** Records demonstrate that oil burner is greater than 99% efficient.
	C 2.6 Subsea BOP installed and tested during drilling operations. The BOP shall include: • one annular preventer • two pipe rams (excluding the test rams) • a minimum of two sets of shear rams, one of which must be capable of sealing	**PS 2.6.1** Subsea BOP specification, installation and testing compliant with internal Woodside Standards and international requirements (API Standard 53 5th Edition) as agreed by Woodside and MODU contractor.	**MC 2.6.1** Records demonstrate that BOP and BOP control system specifications and testing were in accordance with minimum standards for the expected drilling conditions as agreed by Woodside and MODU contractor.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	• deadman functionality • the capability of ROV intervention • independent power systems.		
	C 2.7 Process conducted to calculate, update and monitor kick tolerance for use in well design and while drilling, including: • The BOP shall be closed upon detecting a positive well influx. • The shut in procedure shall be according the rig contractor procedures or as the well conditions dictate. • Kick tolerance calculations will be made for drilling all hole sections based on the weakest known point in the well. Kick detection techniques will be adjusted based on the level of kick tolerance through a management of change (MOC). • The manual also includes requirements for kick tolerance management in the event of down-hole losses.	**PS 2.7.1** Kick tolerance is calculated, managed, monitored and updated while drilling.	**MC 2.7.1** Records demonstrates well kick tolerance is calculated, managed, monitored and updated while drilling.
			MC 2.7.2 Records demonstrate shut-in procedures followed in the event of a potential well kick.
	C 2.8 Well control bridging document for alignment of Woodside and the MODU Contractor in order to manage the equipment and procedures for preventing and handling a well kick.	**PS 2.8.1** Well is drilled in accordance with the contractor WCBD to reduce the likelihood of emissions to air from a well kick during drilling operations.	**MC 2.8.1** Records demonstrate well drilled in accordance with WCBD.
	C 2.9 Reporting of GHG emissions as required by regulatory requirements	**PS 2.9.1** GHG emission regulatory reporting undertaken as required	**MC 2.9.1** Records demonstrate required regulatory GHG emission reported
	C 2.10 Assess opportunity to eliminate well flowback flaring to MODU. The assessment will consider factors such as:	**PS 2.10.1** Study assessing unloading to MODU vs. FPU undertaken.	**MC 2.10.1** Records demonstrate study on unloading to MODU vs FPU undertaken.
		PS 2.10.2	**MC 2.10.2**

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	• HSE considerations • Well performance • Proof of completions success • Solids and liquids handling • Potential eventual other impacts to the topsides	No well unloading to the MODU, where considered technically feasible and ALARP	Records demonstrate no well unloading to the MODU, where considered feasible and ALARP.
	C 2.11 Manage vessel speed to reduce fuel combustion	**PS 2.11.1** Vessel speed will be managed to reduce fuel consumption where practicable.	**MC 2.11.1** Records demonstrate speed of support vessels managed
	C12.12 Contracting strategy and evaluation for hire of support vessels includes consideration of vessel emissions parameters and low carbon / alternative fuels	**PS 2.15** Evaluation of tenders of support vessels considers emissions parameters and low carbon / alternative fuels.	**MC 2.15.1** Records demonstrate that emission were considered in tender evaluations
	C 2.13 Contractors will be engaged to identify additional GHG emissions efficiencies	**PS 2.12.1** Contractors engaged prior to mobilisation on energy/ GHG emissions efficiencies.	**MC 2.12.1:** Minutes of meetings with contractor including any identified opportunities.
		PS 2.12.2 Opportunities identified implemented, where technically feasible and ALARP.	**MC 2.12.2** Records demonstrate that opportunities, if identified, to reduce GHG emissions have been implemented during the Petroleum Activities Program.
	C 2.14 Track and review emissions to identify further opportunities to improve efficiencies.	**PS: 2.13.1** Emissions tracked in D&C Well Construction CO_2 Dashboard	**MC 2.13.1** Emissions for each well are included in the Dashboard
		PS 2.13.2 GHG Emission performance reviewed periodically during the campaign (when data is available) for optimisation opportunities.	**MC 2.13.2** Records of review indicates that GHG emission performance was considered and opportunities for improvement documented/communicated if appropriate.
	C 1.2 Refer to **Section 6.7.1**	**PS 1.2.1** Refer to **Section 6.7.1**	**MC 1.2.1** Refer to **Section 6.7.1**

6.7.3 Routine Acoustic Emissions – Generation of Noise from MODU, Project Vessels and Positioning Equipment

Scarborough OPP – Relevant Impact Assessment Section

Section 7.1.4 (Routine Acoustic Emissions)

Context

Relevant Activities	Existing Environment	Consultation
Vessel Operations – **Section 3.9.2** MODU Operations – **Section 3.9.1** Contingency Activities – **Section 3.10**	Marine Regional Characteristics – **Section 4.2** Marine Fauna of Conservation Significance – **Section 4.6**	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 MODU, drilling and support vessels during normal operations						✓		A	E	-	-	PJ	Broadly Acceptable	EPO 3, 4, 8
Generation of acoustic signals from DP systems on MODU and support vessels						✓								
Generation of acoustic signals from positioning equipment (transponders)						✓								

Description of Source of Impact/Risk

The MODU and project vessels will generate noise both in the air and underwater, due to the operation of thrusters, engines, propeller cavitation, drilling operations etc. Vessels, including the MODU, may use Dynamic Positioning (DP) where propellers and thrusters are used to hold position, rather than anchoring. These noises will contribute to and have the potential to exceed ambient noise levels which range from around 90 dB re 1 µPa (root square mean sound pressure level [rms SPL]) under very calm, low wind conditions, to 120 dB re 1µPa (rms SPL) under windy conditions (McCauley, 2005).

MODU Operations (Excluding DP)

During drilling operations, the MODU will produce low-intensity continuous sound. Sound produced from an active MODU is predominantly below 2 kHz, with peak frequencies below 500 Hz. Measured frequencies for the West Aquarius MODU, which is expected to be similar to the MODU that will be contracted for the Scarborough drilling activity, recorded a peak frequency at 190 Hz (Martin et al.,2019). A range of broadband values, 59–185 dB re 1 µPa at 1 m (SPL), have been quoted for various MODUs (Simmonds et al., 2004). McCauley (1998) recorded source noise levels for moored MODUs from 149–154 dB re 1 µPa at 1 m while actively drilling (with support vessel on anchor) and Greene (1987) recorded source levels of two moored drillships from 145–158 dB re 1 µPa at 1 m during drilling (with support vessels idling nearby). An acoustic monitoring program commissioned by Santos was conducted during an exploratory drilling

program in 2003, which indicated that the drilling operation was not audible from between 8 and 28 km from the MODU (or beyond) (McCauley, 2005).

Project Vessels and Operation of 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, which is typically the dominant source of sound (Ross, 1987, 1993). Vessels in the 50–100 m size class (e.g. supply ships, crew boats, research vessels) produce broadband source levels in the 165–180 dB re 1 µPa SPL range (Gotz et al., 2009). In comparison, underwater sound levels generated by large ships can produce levels exceeding 190 dB re 1 µPa (Gotz et al., 2009), and small vessels up to the 20 m size class typically produce sound at source levels of 151–156 dB re 1µPa (Richardson et al., 1995).

McCauley (1998) measured underwater broadband noise equivalent to about 182 dB re 1 µPa at 1 m (RMS SPL) from a support vessel holding station in the Timor Sea; it is expected that similar noise levels will be generated by support vessels used for this Petroleum Activities Program.

DP MODU underwater noise measurements were taken for the West Aquarius MODU by JASCO on the Scotian Shelf in Canada, which is expected to have a similar thruster configuration to the MODU that will be contracted for the Scarborough drilling activity. The 90th percentile of the broadband radiated sound levels was 186.3 dB re 1 µPa (Martin et al., 2019). This is similar to measurements taken for the Maersk Discoverer drill rig on the North West Shelf (Woodside, 2011), where the system emitted tonal signals between 200 Hz to 1.2 kHz, at a source level between 176 and 185 dB re 1 µPa SPL @ 1 m.

Project vessels and the MODU are conservatively expected to have an overall combined source level of 192 dB re 1 µPa (rms SPL), which represents a doubling of sound pressure from the single loudest source (i.e. 186 dB + 6 dB). Cumulative noise from the MODU and/or multiple project vessels operating in the PAA may result in elevated noise levels, and will be assessed in subsequent EPs (i.e. for activities such as trunkline installation and the SURF scope).

Generation of Underwater Noise from Positioning Equipment

An array of long baseline (LBL) and/or ultra-short baseline (USBL) transponders may be installed on the seabed for metrology and positioning. An array of transponders is proposed within a radius of 500 m from the proposed location of the wells and will be in place for a period of about three months per well.

Transponders typically emit pulses (impulsive noise) of medium frequency sound, generally within the range 21 to 31 kHz. The estimated SPL would be 180–206 dB re 1 µPa at 1 m (Jiménez-Arranz et al., 2017). LBL will be used for rig activities, however the xmas tree deployment vessel will use USBL. Transmissions are not continuous but consist of short 'chirps' with a duration that ranges from 3–40 milliseconds. Transponders will not emit any sound when on standby and are planned to only actively emit sound for about six hours per well. When required for general positioning they will emit one chirp every five seconds (estimated to be required for four hours at a time). When required for precise positioning they will emit one chirp every second (estimated to be required for two hours at a time). For moored drilling transponders are expected to be only active at the commencement of the drilling where positioning is required. For DP MODU positioning an array of transponders will be active whilst the drill rig is on location.

Contingency Activities (Additional Development Well, Respud, Sidetrack)

Contingency activities which involve drilling, such as an additional development well, respud and sidetrack, will involve the use of a MODU and vessels, plus drilling operations. Any acoustic emissions generated will be the same as those expected from the planned activities described above.

Detailed Impact Assessment

Assessment of Potential Impacts

Receptors

The PAA is located in water depths of approximately 900–955 m (refer to **Section 3.4**). The fauna associated with this area will be predominantly pelagic species of fish, with migratory species such as cetaceans and marine turtles potentially occurring in the area seasonally (**Section 4.6**). Noise interference is a key threat to a number of migratory and threatened cetaceans and marine turtles identified as potentially occurring within the PAA, including the pygmy blue whale. Relevant actions included in recovery plans for these species are outlined in **Section 6.9.**

A pygmy blue whale migration BIA is located about 35 km east of the PAA (**Section 4.6.3**). Individual pygmy blue whales may occasionally transit the PAA during April to July and October to January during their seasonal migrations. A humpback whale migration BIA is located about 155 km south-east of the PAA, and migrating whales may be present between about May and November. Occasional individuals may transit through the PAA.

The nearest marine turtle internesting buffer BIA for the flatback turtle is located about 165 km east of the PAA at the Montebello Islands. Given the water depths and distance from shore, the PAA does not represent suitable foraging or internesting habitat and therefore, marine turtle presence within the PAA is expected to be infrequent.

<u>Potential Impact of Noise</u>

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); and
- through disturbance leading to behavioural changes or displacement from important areas (e.g. BIAs). The occurrence and intensity of disturbance is highly variable and depends on a range of factors relating to the animal and situation.

Sound Propagation

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

Cetaceans

Species Sensitivity and Thresholds

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

The thresholds that could result in a behavioural response, temporary threshold shift (TTS) and permanent threshold shift (PTS) for cetaceans as a result of continuous noise sources are presented in **Table 6-5**. These thresholds have been adopted by the United States National Oceanic and Atmospheric Administration (NOAA) (National Marine Fisheries Service [NMFS], 2014, 2018; Southall et al., 2019; NOAA, 2019).

Table 6-5: Thresholds for PTS, TTS and behavioural response onset for low-frequency (LF) and high-frequency (HF) cetaceans for continuous noise

Hearing group and generalised hearing range	PTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)	TTS onset thresholds: SEL_{24h} (dB re 1 µPa².s)	Behavioural response (dB re 1 µPa)
LF cetaceans	199	179	120
HF cetaceans	198	178	120

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

Impact Assessment

JASCO modelled underwater noise levels during the proposed construction and operation of the Scarborough Development, including noise from a support vessel (the Setouchi Surveyor), which operates on 4600 HP while producing a broadband source level of 186.1 dB re 1 re 1 μPa^2m^2 (McPherson et al. 2019). Maximum-over-depth horizontal distances to PTS thresholds for LF cetaceans as a result of the modelled support vessel was about 10 m from the source. TTS thresholds could be reached at up to 230 m from the source for the support vessel. PTS and TTS thresholds would therefore not be exceeded in the pygmy blue whale BIA. The predicted distances for PTS and TTS criteria exceedance are based upon exposure for 24-hours by a stationary receptor, which is not a realistic scenario. PTS and TTS thresholds are therefore not expected to be exceeded for cetaceans transiting through the PAA.

As described above, the MODU is expected to have a similar thruster configuration to the West Aquarius, which has been measured to have a source level of 186.3 dB 1 µPa. Based on an intermediate spreading equation to estimate sound propagation loss (15Log(R)), which is considered conservative for the water depths of the PAA), noise levels would drop below 120 dB re 1 µPa (behavioural response threshold; refer **Table 6-5**) within about 26 km. Modelling of propagation loss for the West Aquarius, conducted by JASCO in a water depth of 1137 m off the coast of Canada, predicted that noise levels would drop below 120 dB re 1 µPa within about 47 km (Matthews et al., 2017). While the sound speed profile of the water column and bathymetry may be different, the modelling provides a broad comparison to support that the estimated propagation loss is within the right order of magnitude. The modelling also predicted that underwater noise from the West Aquarius would drop below PTS thresholds within 230 m and a similar distance may be expected for the Petroleum Activities Program.

For an operating MODU with support vessel on standby with a combined source level of about 192 dB re 1 µPa (rms SPL), noise levels would drop below 120 dB re 1 µPa within about 64 km using the same intermediate spreading equation.

Given the sound propagation loss estimated above for an operating MODU and project vessels, there is no potential for injury (PTS or TTS) to pygmy blue whales migrating within the BIA (about 35 km from the PAA). Injury to other cetacean species is also not considered credible as individuals are not expected to spend long durations in close proximity to operations and are more likely to be transiting through the area.

It is reasonable to expect that cetaceans may demonstrate avoidance or attraction behaviour to the noise generated by the Petroleum Activities Program. For example, when transiting through the area, pygmy blue whales may deviate slightly from their migration route, but continue on their migration pathway. Considering proximity of the pygmy blue whale migration BIA to the PAA (about 35 km), it is likely that individuals may transit in and around the PAA during migratory periods; however, only transient individuals or small groups are expected. Further, the PAA is surrounded by open water, with no restrictions (e.g. shallow waters, embayments) to an animal's ability to avoid the activities.

Transponders used for positioning have the potential to cause some temporary behavioural disturbance to marine fauna; however, noise levels will be well below injury thresholds. Based on empirical spreading loss estimates measured by Warner and McCrodan (2011), received levels from USBL transponders are expected to exceed the cetacean behavioural response threshold for impulsive sources out to about 42 m. Given the short-duration chirps and the mid frequencies used by positioning equipment, the acoustic noise from a single transponder is unlikely to have any substantial effect on the behavioural patterns of marine fauna. Therefore, potential impacts from transponder noise are likely to be restricted to temporary and localised avoidance behaviour of individuals transiting through the PAA, and therefore are considered localised with no lasting effect.

Potential impacts from predicted noise levels from project vessels (including MODU and support vessels) and transponders are not considered to be ecologically significant at a population level.

Marine Turtles

Species Sensitivity and Thresholds

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

A Popper et al. (2014) review assessed thresholds for marine turtles and found qualitative results that TTS was only moderate for near field exposure, and low for both intermediate and far field exposure (Popper et al., 2014). McCauley et al. (2000) noted that sea turtles exhibit increased swimming activity at 166 dB re 1 µPa. No numerical thresholds have been developed for impacts of continuous sources (e.g. vessel noise) on marine turtles.

The thresholds listed in **Table 6-6** are considered appropriate for the assessment of impacts from continuous acoustic discharges to marine turtles from the Petroleum Activities Program.

Table 6-6: Impact thresholds to marine turtles for continuous noise

Receptor	Mortality and potential mortal injury	PTS	TTS	Masking	Behaviour
Marine turtles	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) High (I) Moderate (F) Low

Note: The sound units provided in the table above 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, 2017) notes there is limited information available on the impact of noise on marine turtles and that the impact of noise on turtle stocks may vary depending on whether exposure is short (acute) or long-term (chronic). However, given the thresholds outlined in **Table 6-6**, it is reasonable to expect that marine turtles may demonstrate avoidance or attraction behaviour to the noise generated by the Petroleum Activities Program.

There are no marine turtle BIAs or Habitat critical within 165 km of the PAA, and given the water depths and distance from shore, the PAA does not represent suitable foraging or internesting habitat. Marine turtle presence is expected to be infrequent, and potential impacts from predicted noise levels from the project vessels (including MODU and support vessels) are not considered to be ecologically significant at a population level.

Fish, Sharks and Rays

Species Sensitivity and Thresholds

Fish perceive sound through the ears and the lateral line, which are sensitive to vibration. Some species of teleost or bony fish (e.g. herring) have a structure linking the gas-filled swim bladder and ear, and these species usually have increased hearing sensitivity. These species are considered to be more sensitive to anthropogenic underwater noise sources than species such as cod (Gadus sp.), which do not possess a structure linking the swim bladder and inner ear. Fish species that either do not have a swim bladder (e.g. elasmobranchs (sharks and rays) and scombrid fish (mackerel and tunas)) or have a much-reduced swim bladder (e.g. flat fish) tend to have a relatively low auditory sensitivity.

Considering these differences in fish physiology, Popper et al. (2014) developed sound exposure guidelines for fish; these are presented in **Table 6-7** and are considered appropriate to assess continuous acoustic discharges to fish from the Petroleum Activities Program.

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

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

Note: The sound units provided in the table above include:

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

Source: Popper et al. (2014).

Impact Assessment

Maximum-over-depth horizontal distances to PTS and TTS thresholds for fish with a swim bladder involved in hearing as a result of underwater noise from a support vessel are approximately 10 m or less from the source based on modelling from JASCO for the Scarborough field (McPherson et al., 2019). For fish with a swim bladder not involved in hearing, and fish without a swim bladder (including whale sharks) the likelihood of PTS or TTS is low. Based on an intermediate spreading equation to estimate sound propagation loss from the MODU (15Log(R)), noise levels would drop below PTS and TTS thresholds for fish with a swim bladder involved in hearing within <15 m and 78 m respectively.

Given the thresholds outlined in **Table 6-7**, it is reasonable to expect that fish, sharks and rays may demonstrate avoidance or attraction behaviour to the noise generated by the Petroleum Activities Program. However, potential impacts from predicted noise levels from the project vessels (including MODU and support vessels) are not considered to be ecologically significant at a population level.

Cumulative Impacts

Cumulative impacts have been assessed above.

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level
Marine mammals	Change in fauna behaviour Injury / mortality to fauna	High value species (i.e. pygmy blue whale)	No lasting effect	Slight (E)
Marine reptiles	Change in fauna behaviour Injury / mortality to fauna	High value species (i.e. flatback, green, hawksbill or loggerhead turtles)	No lasting effect	Slight (E)
Fish	Change in fauna behaviour Injury / mortality to fauna	High value species	No lasting effect	Slight (E)

Overall Impact Significance Level: The overall impact significance level for routine acoustic emissions is E based on no lasting effect to the high value receptors (marine mammals, reptiles and fish). The impact significance levels for individual receptors are consistent with the level in the OPP.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation Codes and Standards				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[31]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • Project vessels will not approach closer than 50 m for a dolphin ~~or~~ and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of controls for reduced vessel speed around cetaceans can potentially reduce the underwater noise footprint of a vessel and lower the likelihood of interaction above significant thresholds	Controls based on legislative requirements – must be adopted.	Yes **C 3.1**
Good Practice				
Project vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark[32]	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	F: Yes.	F: Yes. **C 3.5**
Vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a	F: Yes. CS: Minimal cost. Standard practice	Implementation of controls for reduced vessel speed around turtles can potentially reduce the underwater noise footprint of a vessel	F: Yes.	F: Yes. **C 3.6**

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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
constant speed of less than 6 knots[33].				
Implement adaptive management procedure prior to and during MODU /installation vessel moves to the next well location, during daylight hours. Adaptive management procedure to include: • Use of trained crew (both MODU and installation vessel) • Monitoring 30 minutes prior to move and during the transit to the new well location • MODU / installation vessel will not approach within 500 m of any pygmy blue whales and humpback whales Where pygmy blue whale or humpback whale presence has been observed the area will not be approached, within 500 m, until there has been a period of 30 minutes with no pygmy blue whale(s) or humpback whale recorded	F: Yes CS: Time / Cost associated with person used for observations. Schedule delays associated with waiting on pygmy blue whale and humpback whale activity to cease / move on.	Detecting pygmy blue whale and humpback whale activity in the area before MODU / installation vessel moves allows distance to be maintained and reduces the likelihood of impact or influence on pygmy blue whale or humpback whale activity.	Benefits outweigh cost/sacrifice.	Yes **C 3.2**
Collect data on opportunistic sightings of pygmy blue whales to gauge presence and behaviour	F: Yes CS: Time / Cost associated with person used for observations and in data collection	Collecting data on pygmy blue whale presence and behaviour may assist in increasing understanding of their activity in the PAA to inform future activities.	Benefits outweigh cost/sacrifice.	Yes **C 3.3**
Use of aircraft to carry out visual observations for pygmy blue whale foraging activity (Aerial Survey).	F: Yes CS: Time / cost associated with chartering aircraft and use of dedicated MFO's Due to WA-61-L distance offshore actual observation times are limited by fuel availability - larger fuel capacity associated with larger aircraft	Aerial Surveys could assist in identifying pygmy blue whale foraging activity over a larger monitoring zone.	Cost/sacrifice outweighs benefit. Due to distance of PAA from pygmy blue whale migration and foraging BIA's, presence of PBW's carrying out opportunistic foraging activities in the area is expected to be low. Adequate	No.

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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	increases cost of the exercise		observations are able to be made from the MODU Bridge due to height and surveillance by trained crew. It is not expected that an aircraft would add significantly more value than this, to warrant deployment.	
Professional Judgement – Eliminate				
Remove support vessel on standby at the Petroleum Activities Program location.	F: No. Activity support vessel required as per MODU Safety Case, particularly for maintaining the 500 m petroleum safety zone around the MODU/ installation vessel. CS: Introduces unacceptable safety risk.	Not considered – control not feasible.	Not considered – control not feasible.	No
Only use Moored MODU (no DP thruster noise).	F: Yes, it would be feasible to use a Moored MODU. CS: Costs and schedule implications of waiting for a Moored MODU to be available, rather than selecting a DP MODU.	Eliminates DP thruster noise from the MODU	Cost/sacrifice outweighs benefit. Woodside plans to use a DP MODU for technical capability, efficiency, and cost reasons. Cost and schedule implications of using a Moored MODU are grossly disproportionate to potential environmental gains given distance to Migratory BIA for PBW and low likelihood of presence of opportunistic foraging in PAA.	No
Eliminate generation of noise from the MODU, installation vessel, support vessels or survey positioning 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	Not considered – control not feasible.	Not considered – control not feasible.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	Program. Loss of project.			
Move support vessel(s) away from MODU (>2 km) if pygmy blue whale or humpback whale observed within 500 m – when support vessel is not being used to perform functionality as required by Safety Case	F: Yes CS: Time / Cost associated with vessel moving and delay to activities which cannot be carried out without support vessel present and at required standby distance	Can reduce cumulative noise and potential reduction in likelihood of impact to pygmy blue whales and humpback whales	Benefits outweigh cost/sacrifice	Yes **C 3.4**
Professional Judgement – Substitute				
Management of vessel noise by varying the timing of the Petroleum Activities Program to avoid migration periods.	F: Not feasible due to total length of drilling campaign, planned batch drilling sequence and successive activities dependent upon completion timing of D&C campaign execution CS: Significant cost and schedule impacts deeming the project unviable if activities avoid specific timeframes.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Engineered Solution				
Drone surveys to identify cetacean activities prior to well moves (during batch drilling) or initial entry into the Project Activity Area	F: Yes CS: Cost of drone, pilot and other equipment required. Standby time for MODU or Installation vessel if cetaceans present.	Can reduce likelihood of encountering PBWs at a distance that may cause injury/impact or behavioural response. Could give more reliability on whales and whether they are foraging	Cost/sacrifice outweighs benefit. Due to distance of PAA from PBW migration and foraging BIA's, presence of PBW's carrying out opportunistic foraging activities in the area is low. Adequate observations are able to be made from the MODU Bridge due to height and surveillance by a trained MFO. It is not expected that a drone would add significantly more value than this, to warrant deployment.	No
Passive Acoustic Monitoring (PAM)	F: No. PAM has limited ability to detect calls from baleen whales	Not considered – control not feasible.	Not considered – control not feasible.	No.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	such as the Pygmy Blue Whale, particularly with added background noise from drilling/ installation vessel activities and known reliability and practicality limitations of the technology. CS: Costs associated with PAM technology acquisition and implementation.			
Use of thermal imaging equipment at night or periods of low visibility to identify cetacean presence.	F: Yes. Feasible to install on support vessel CS: Costs associated with infrared technology acquisition and implementation.	Can increase likelihood of identifying cetacean presence however limitations on detection distance/depth, interpretation of data (identification of cetacean type for example) and practicality.	Cost/sacrifice outweighs benefit. Lack of proven application in detection of cetaceans in deep water environment and limitations of the technology reduce potential benefit gained when compared with low likelihood of expected cetacean activity and low likelihood of MODU/ installation vessel movement at night.	No
Use of Autonomous Underwater Vehicle (AUV) to monitor for presence of pygmy blue whales using detection of their vocalisations.	F: Yes. Could be deployed from support vessel CS: Costs associated with obtaining and operating the technology. Schedule delays while data is 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. Due to distance of PAA from PBW migration and foraging BIA's, presence of PBW's carrying out opportunistic foraging activities in the area is expected to be low. Adequate observations are able to be made from the MODU Bridge due to height and surveillance by a trained crew. It is not expected that an AUV would add significantly more value than this, to warrant deployment.	No.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***

ALARP Statement:

As identified in the DAWE 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 (**C3.2**) 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.

On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the potential impacts from noise emissions. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.

Demonstration of Acceptability
Acceptability Criteria and Assessment

Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.4.3 of the Scarborough OPP (SA0006AF0000002, Rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:**

- Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP.
- EPOs and controls in the OPP that are relevant to routine acoustic emissions have been adopted.
- Additional guidance on key terms within the Conservation Management Plan for the Blue Whale (the CMP) was issued in September 2021 and these were considered in the assessment against relevant actions in the CMP. The Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.
- There are no changes to internal context specific to this risk from the OPP.
- Impacts from routine acoustic emissions was raised during consultation (**Appendix F, Table 1**) and this feedback was considered in the finalisation of the EP.

Acceptability Statement:

The impact assessment has determined that the generation of noise from project vessels, MODU, and positioning equipment is unlikely to result in an impact significance level greater than slight. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice (**Section 6.9**).

The 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.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 3 Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an	**C 3.1** EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[34]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean (caution	**PS 3.1.1** Compliance with EPBC Regulations 2000 – Part 8 Division 8.1 (Regulation 8.05 and 8.06) Interacting with cetaceans	**MC 3.1.1** Records demonstrate no breaches with EPBC Regulations 2000 – Part 8 Division 8.1

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

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
ecologically significant proportion of the population of a migratory species. **EPO 4** Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population. **EPO 8** 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.	zone) and not approach closer than 100 m from a whale. • Project vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots. • .		Interacting with cetaceans.
	C 3.2 Implement adaptive management procedure prior to and during MODU /installation vessel moves to the next well location, during daylight hours. Adaptive management procedure to include: • Use of trained crew (both MODU and installation vessel) • Monitoring 30 minutes prior to move and during the transit to the new well location • MODU / installation vessel will not approach within 500 m of any pygmy blue whales and humpback whales • Where pygmy blue whale or humpback whale presence has been observed the area will not be approached, within 500 m, until there has been a period of 30 minutes with no pygmy blue whale(s) or humpback whale(s) recorded	**PS 3.2.1** During moves to the next well location MODU or installation vessel will not approach within 500 m of pygmy blue whales or humpback whale(s) or an area where pygmy blue whales or humpback whale(s) were observed within the previous 30 minutes.	**MC 3.2.1** Records demonstrate trained MODU/vessel crew on watch prior to moving to next well location **MC 3.2.2** Records demonstrate when PBW or humpback whale presence detected the MODU or installation vessel did not approach within 500 m.
	C 3.3 Collect data on opportunistic sightings of Pygmy Blue Whales to gauge presence and behaviour	**PS 3.3.1** Process developed for collecting PBW sighting data PBW sighting data sent to relevant organisations as required (i.e. Australian Marine Mammal Centre [AMMC])	**MC 3.3.1** Records demonstrate process developed and communicated to crew for collection of Pygmy Blue Whale siting data
	C 3.4 Move support vessel(s) away from MODU (>2 km) if pygmy blue whale(s) or humpback whale(s) observed within 500 m – when	**PS 3.4.1** Support vessels relocate, where safety allows, from vicinity of the MODU when pygmy blue whale(s) or	**MC 3.4.1** Records demonstrate support vessels relocated from

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	support vessel is not being used to perform functionality as required by Safety Case	humpback whale(s) are observed within 500 m of the MODU.	MODU vicinity when cetacean activity identified.
	C 3.5 Project vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark[35]	**PS 3.5.1** When within 250 m of a whale shark vessels will not travel greater than 6 knots and vessels will not approach closer than 30 m to a whale shark	**MC 3.5.1** Records demonstrate no breaches of speed requirements when within 250 m of a whale shark
	C 3.6 Vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots[35].	**C 3.6.1** When within 300 m of a turtle, vessels will not travel greater than 6 knots.	**MC 3.6.1** Records demonstrate no breaches of speed requirements when within 300 m of a turtle

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

6.7.4 Physical Presence – Interaction with Other marine Users

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.4 (Physical Presence – Displacement of Other Users)		
Context		
Relevant Activities Installation of Subsea Infrastructure – **Section 3.8.10** Vessel Operations – **Section 3.9.2** MODU Operations – **Section 3.9.1** Helicopter Operations – **Section 3.9.3** Wellhead Assembly Left In-situ – **Section 3.10.8**	**Existing Environment** Socio-economic Values – **Section 4.9**	**Consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Interaction with other marine users – proximity of MODU and project vessels interfering with or displacing third party vessels (commercial fishing and commercial shipping)							✓	A	E	-	-	LCS GP PJ	Broadly Acceptable	EPO .9, 10
Presence of subsea infrastructure interfering with or displacing third party vessels (commercial fishing)							✓							

Description of Source of Impact/Risk

MODU and Vessel Operations

The movement of vessels within the PAA, and the physical presence of the MODU and vessels, have the potential to displace other marine users.

The MODU will have a 500 m safety exclusion zone within the PAA for the duration of the Petroleum Activities Program. Woodside proposes to drill up to ten new development wells (two of which are contingency). Inspection, monitoring, maintenance and repair activities may also be conducted on any of the proposed new development wells within Permit Area WA-61-L. While wells may be batch drilled, only one well will be drilled at any given time. Drilling operations for the development wells is expected to take approximately 60 days per well to complete, including mobilisation, demobilisation and contingency. This is equivalent to 480 days for the eight planned wells (with an additional 120 days as required for the two contingent wells).

Subsea xmas trees are expected to be installed after completing the relevant sections of the well while the MODU is still in the field. Installation of subsea xmas trees is expected to have a cumulative duration of about 14 days (including mobilisation, demobilisation, and contingency).

The eight planned wells are currently scheduled to be drilled in a consecutive batch-drill sequence as described in **Section 3**. However, to allow flexibility in the execution of the Petroleum Activities Program, it has been assumed for the purposes of assessment that the MODU, subsea installation vessel and other vessels may be present at any time during the five-year approval period of the EP, for a combined period as described above.

Other vessels may also be required during the activities, including subsea support vessel for light well intervention (LWI) and other support vessels. Some vessels will need to transit in and out of the PAA to port for emergency and routine operations.

Physical presence of subsea infrastructure

The subsea xmas trees and wellheads will be located within the PAA. The physical presence of this infrastructure will remain for the duration of field life. Wellheads and xmas trees take up a small area on the seabed and will rise several metres above the seabed.

As described in **Section 3.10.2** wells may need to be abandoned if a respud is required. This is considered a contingent activity and if a well is abandoned due to respud, a reasonable attempt to remove the wellhead(s) will be made. Wellhead assemblies may be left in-situ if these reasonable attempts are unsuccessful. If a wellhead is left in-situ, it could potentially interfere with third-party activities (commercial fishing).

Detailed Impact Assessment

Assessment of Potential Impacts

Interaction with other marine users due to the physical presence of in the Petroleum Activities Program may result in the following impact:

- Localised changes to the functions, interests or activities of other users.

The duration of change will be for the period of the Petroleum Activities Program.

Commonwealth and State Managed Fisheries

Four Commonwealth managed fisheries and six State managed fisheries overlap the PAA. Potential impacts to commercial fishers depend on the use of the area by fishers, in addition to the temporal and spatial extent of the presence of vessels and facilities/infrastructure.

Potential impacts to commercial fisheries include damage to fishing and loss of commercial catch due to displacement from fishing grounds. Damage to trawl nets could occur if they catch or snag on subsea infrastructure or wellhead assemblies. However, such infrastructure occupies a small area within the PAA only. One trawl fishery, the Western Deepwater Fishery overlaps the PAA. Trawl frequency assessment has shown that fishing activity occurs further south of the PAA, on the western edge of the 200 m isobath between Shark Bay and Ningaloo. Therefore, trawl activity within the PAA is not expected.

The presence of vessels (and MODU) in the PAA will present a surface hazard to fishing vessels and potentially result in a temporary exclusion from a small area as during:

drilling a 500 m safety exclusion zone will be required around the MODU

during xmas tree installation a 500 m exclusion zone will also be implemented for the installation vessel.

Given the distance offshore, the PAA is not an area of high commercial fishing activity. Furthermore, the 500 m temporary exclusion zones around the MODU and installation vessel comprises a relatively small area when compared to the extent of the individual fishery boundaries that overlap. As such, any displacement of commercial fisheries due to activities in the PAA are not expected to impact commercial fishing activities or the economic viability of the fisheries.

The magnitude of potential impacts to commercial fisheries from activities associated with the Petroleum Activities Program are assessed as having no lasting effect, as impacts will be temporary.

Tourism and Recreation

Tourism and recreation within the PAA are expected to be limited by the distance offshore and water depths. Consultation did not identify any key recreational fishing activity within the PAA. Given the location, and the short-term nature of activities, impacts to tourism and recreational activities are not expected, and have not been evaluated further.

Shipping

Shipping activity in the PAA is low, with no shipping fairways located within the PAA. Vessel traffic data shows that the majority of vessel movements occur to the south-east of the PAA. Given the short-term nature of the activities and the low level of shipping activity within the PAA, impacts to shipping are unlikely.

Industry

The NWS is an area of active oil and gas exploration and production. The closest facility to the PAA is the Woodside Pluto facility (approximately 160 km to the east). Displacement of, or interference with, other oil and gas activities are not expected within the PAA. Impacts to industry are therefore unlikely.

Defence

Defence activities in the vicinity of the PAA may include Naval vessel traffic and Air Force training exercises. Neither of these types of activities are expected to be a consistent presence in the area. The PAA is on the outer extent of the training area associated with the Learmonth Air Force Base. Department of Defence was notified, and no known

defence activities are planned (**Section 5**). Any potential interaction is expected to be minimal and not significantly different from interaction with other facilities within the northwest region.

Summary of Assessment Outcomes				
Receptor	**Impact**	**Receptor Sensitivity Level**	**Magnitude**	**Impact Significance Level**
Commonwealth Managed Fisheries	Changes to the function interests or activities of others	High value marine user	No Lasting Effect	Slight (E)
State Managed Fisheries		High value marine user	No Lasting Effect	Slight (E)
Overall Impact Significance Level: The overall impact significance level for Interaction with other marine users is slight based on no lasting effect to the high value receptor (commercial fisheries). The impact significance levels for individual receptors are consistent with the levels in the OPP.				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Vessels to adhere to the navigation safety requirements including the *Navigation Act 2012* and any subsequent Marine Orders.	F: Yes. CS: Minimal cost. Standard practice.	The act regulates ship related activities and invokes certain requirements of MARPOL. Vessels (relevant to class) will adhere to requirements.	Benefits outweigh cost/sacrifice. Control is also Standard Practice	Yes **C 4.1**
Establishment of a 500 m petroleum safety zone around MODU and 500 m exclusion zone around the installation vessel.	F: Yes. CS: Minimal cost. Standard practice.	Establishment of a 500 m petroleum safety zone around MODU and installation vessel reduces the likelihood of interaction with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice	Yes **C 4.2**
Reasonable attempts at removal of wellhead(s) will be made in the event of a respud.	F: Yes. CS: Additional cost.	In accordance with OPGGS Act Section 572	Benefits outweigh cost/sacrifice.	Yes **C 4.6**
Good Practice				
Australian Hydrographic Office (AHO) will be notified of activities and movements no less than four working weeks prior to commencement of the Petroleum Activities Program.	F: Yes. CS: Minimal cost. Standard practice.	Notification of AHO will enable them to update maritime charts thereby reducing the likelihood of interaction with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 4.3**
Notify relevant government departments, fishing industry	F: Yes.	Communication of the Petroleum Activities	Benefits outweigh cost/sacrifice.	Yes **C 4.4**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
representative bodies and licence holders of activities prior to commencement and upon completion of activities.	CS: Minimal cost. Standard practice.	Programme to other marine users ensures they are informed and aware, thereby reducing the likelihood of interference with other marine users.	Control is also Standard Practice.	
Notify AMSA Joint Rescue Coordination Centre (JRCC) of activities and movements 24–48 hours before operations commence.	F: Yes. CS: Minimal cost. Standard practice.	Communication of the Petroleum Activities Programme to other marine users ensures they are informed and aware, thereby reducing the likelihood of interference with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 4.5**
Notify relevant persons and/ or organisations for activities within the Petroleum Activities Program that commence more than a year after EP acceptance.	F: Yes CS: Minimal cost. Standard Practice	Communicating the Petroleum Activities Program to other marine users ensures they are informed and aware, thereby reducing the likelihood of interfering with other marine users.	Benefits outweigh cost/sacrifice. Control is also Standard Practice	Yes **C 4.7**
Notify Defence of activities no less than five weeks before the scheduled activity commencement date	F: Yes CS: Minimal cost. Standard Practice	Communicating the Petroleum Activities Program to other marine users ensures they are informed and aware, thereby reducing the likelihood of interfering with other marine users.	Benefits outweigh cost/sacrifice.	Yes **C 4.8**
Professional Judgement – Eliminate				
Limit drilling activities to avoid peak shipping and commercial fishing activities.	F: No. Shipping occurs year-round and cannot be avoided. SIMOPS with fishing seasons cannot be eliminated as exact timings for all activities are not confirmed. CS: Not considered – control not feasible	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Over-trawl protection on subsea infrastructure.	F: Yes. Over-trawl protection could mitigate against the potential for commercial fishing trawl gear to damage subsea infrastructure and/or result in loss of trawl gear. CS: Significant additional cost.	Reduce the potential for snagging of trawl nets if a wellhead is left in situ following abandonment during drilling. However, given the low level of trawling activity occurring in the PAA, the benefit is low.	Disproportionate. Significant additional costs.	No
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A; **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the impacts of the physical presence of the Petroleum Activities Program on other users. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.5.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to the interaction with other users have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during consultation.
Acceptability Statement: The impact assessment has determined that, given the adopted controls, the Petroleum Activities Program is unlikely to result in an impact significance level greater than Slight. The adopted controls are considered consistent with industry good practice and professional judgement and meet the requirements and expectations of Australian Marine Orders, AMSA, DPIRD, DOD and AHO identified during impact assessment and consultation. Further opportunities to reduce the impacts have been investigated above. The potential impacts are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts from the physical of the Petroleum Activities Program to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 9 Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on the sustainability of commercial fishing.	**C 4.1** Vessels to adhere to the navigation safety requirements including the *Navigation Act 2012* and any subsequent Marine Orders.	**PS 4.1** Activity support vessels and MODU compliant with Navigation Act and Marine Order 21 (Safety of navigation and emergency procedures) 2012	**MC 4.1.1** Marine assurance inspection records demonstrate compliance with standard maritime safety procedures

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 10 Undertake the Petroleum Activities Program in a manner that does not interfere with other marine users to a greater extent than is necessary for the exercise of right conferred by the titles granted.	**C 4.2** Establishment of a 500 m petroleum safety zone around MODU and installation vessel and communicated to marine users.	**PS 4.2** No entry of unauthorised vessels within the 500 m safety exclusion zone.	**MC 4.2.1** Records demonstrate breaches by unauthorised vessels within the petroleum safety zone are recorded.
			MC 4.2.2 Consultation records demonstrate that AHO has been notified prior to commencement of the activity to allow generation of navigation warnings (Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) (including AUSCOAST warnings where relevant)), which communicate safety exclusion zones to marine users.
	C 4.3 Notify AHO of activities and movements no less than four working weeks prior to commencement of the Petroleum Activities Program.	**PS 4.3** Notification to AHO of activities and movements to allow generation of navigation warnings (Maritime Safety Information Notifications (MSIN) and Notice to Mariners (NTM) (including AUSCOAST warnings where relevant)).	**MC 4.2.2** **See above**
	C 4.4 Notify relevant government departments, fishing industry representative bodies and licence holders of activities prior to commencement and following completion of activities.	**PS 4.4** Notification to AFMA, CFA, DAFF (fisheries), DPIRD, WAFIC, Recfishwest, individual relevant fishery licence holders (in the operational area) and other O&G operators (if agreed during consultation – refer to **Table 7-2**) ten days before activity commences, and following completion of activities.	**MC 4.4.1** Consultation records demonstrate that relevant government departments, fishing industry representative bodies and licence holders have been notified prior to commencement and following completion of drilling.
	C 4.5 Notify AMSA JRCC of activities and movements 24–48 hours before operations commence.	**PS 4.5** Notification to AMSA JRCC to prevent activities interfering with other marine users. AMSA's JRCC will require the MODU's details (including name, callsign and Maritime Mobile Service Identity (MMSI)), satellite	**MC 4.5.1** Consultation records demonstrate that AMSA JRCC has been notified prior to commencement of the activity within required timeframes.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
		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.	
	C 4.6 Reasonable attempt at removal of wellheads will be undertaken in the event of a respud.	**PS 4.6** Removal of wellheads attempted during the Petroleum Activity Program in the event of a respud.	**MC 4.6.1** Records demonstrate reasonable attempts at wellhead removal were made.
	C 4.7 Notify relevant persons and/ or organisations for activities within the Petroleum Activities Program that commence more than a year after EP acceptance.	**PS 4.7** Relevant persons and/ or organisations will be notified no less than four working weeks prior to scheduled activity commencement date.	**MC 4.7.1** Records demonstrate relevant persons and/ or organisations have been consulted.
	C 4.8 Notify Defence of activities no less than five weeks before the scheduled activity commencement date.	**PS 4.8** Notification to Defence five weeks prior to the scheduled commencement date.	**MC 4.8** Records demonstrate that Defence has been notified prior to commencement of the Petroleum Activities Program within the required timeframes.

6.7.5 Physical Presence – Disturbance to Benthic Habitat from MODU Anchoring, Drilling Operations, Subsea Installation and ROV Operations

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.6		
Context		
Relevant Activities Mooring Installation and Anchor Hold Testing – **Section 3.9.2.4** Drilling Operations – **Section 3.8.1** Installation of Subsea Infrastructure – **Section 3.8.10** MODU Operations – **Section 3.9.1** ROV Operations – **Section 3.9.4** Subsea IMMR Activities – **Section 3.7** Contingency Activities – **Section 3.10**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Physical Environment – **Section 4.3** Habitats and Biological Communities – **Section 4.5**	**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**
Disturbance to seabed from drilling operations		✓	✓		✓			A	D	-	-	GP PJ	Broadly Acceptable	EPO 1,11, 28
Mooring installation and anchor hold testing (moored MODU only)		✓	✓		✓									
Placement and retrieval of seabed transponders (DP MODU and installation vessel)		✓	✓		✓									
Installation of the subsea infrastructure and subsea IMR activities		✓	✓		✓									
ROV operations near the seabed (including localised sediment relocation)		✓	✓		✓									
Wellhead assembly left in-situ in event of respud		✓	✓		✓									
Removal of marine growth from infrastructure.		✓	✓		✓									

Description of Source of Impact/Risk

Drilling and MODU Operations

The proposed development wells are planned to be drilled using a DP MODU; however, a moored MODU may be used as a contingency.

Dynamic positioning of the MODU uses satellite navigation and long baseline (LBL) transponders in conjunction with thrusters to maintain the position of the MODU at the required location. An array of transponders is proposed within a radius of 500 m from the proposed location of the wells and will be in place for a period of about three months per well. Transponders may be moored to the seabed either by a clump weight or mounted on a seabed frame. A typical seabed frame is 1.5 m × 1.5 m × 1.5 m in dimension. On completion of the positioning operation, the array transponders moored by clump weight will be recovered by means of a hydrostatic release and the clump weights removed from the seabed. The transponders mounted on seabed frames will be removed by ROV.

If a moored MODU is used, seabed disturbance will result from the MODU anchor mooring system and anchor hold testing, including placement of anchors and chain/wire on the seabed, potential dragging during tensioning, and recovery of anchors. Mooring may require an 8- to 12-point pre-laid mooring system at each well location, depending on the time of year. Suction piling may be required for installing the anchors.

Although the exact anchoring configurations are currently unknown, a conservative radius of 4000 m has been assessed, a semi-submersible MODU with an 8- to 12-point anchoring system could disturb up to 0.013 km^2 per well (13,000 m^2), allowing for anchor footprint and disturbance from anchor chains (NERA, 2018). For ten wells, this gives a total footprint of 0.13 km^2.

Drilling activities may result in intermittent or discontinuous direct physical or mechanical disturbance to the seabed up to an approximate 10 m radial distance around each new well location due to the installation of the BOP and conductor. Cementing of the conductor is carried out to secure the conductor in place and achieve adhesion between the conductor and subsurface. During this process cement is pumped into the space between the conductor and substrate until there is cement expression at seabed, to achieve acceptance criteria for the cement job and ensure adequate fatigue and structural support. The cement patio or excess cement at seabed is typically no more than 5 m radius, however disturbance to seabed has conservatively been calculated based on 10 m radius to account for general seabed disturbance in the vicinity of the wellhead from Petroleum Activities Program activities. Cement to seabed is minimised to ensure cement integrity down-well is maintained and reduce wastage / physical disturbance. There are no benefits to pumping excess cement to seabed. Disturbance to the seabed up to an approximate 10 m radial distance around each new well location due to the installation of the blow out preventor (BOP) and conductor (including cementing as described in **Section 3.8.1.2**), equates to around 314 m^2 per well, with a total of 3,140 m^2 (.00314 km^2) (based on 10 wells).

The generation and discharge of cuttings and drilling fluids are not considered in this section; refer to **Section 6.7.7** for an assessment of drill cuttings and drilling fluids.

The planned anchoring activities will be within the parameters defined in the *Anchoring of Vessels and Floating Facilities Environment Plan Reference Case* (Department of Industry, Innovation and Science, undated) for all anchoring activities undertaken by vessels and floating facilities (excluding FPSOs and FLNGs) while undertaking petroleum activities including:

- locations of water depth greater than 70 m; this boundary is set to exclude areas of sensitive marine primary producer habitats (e.g. corals, seagrass) that occur in shallower waters
- installation of moorings, buoys, equipment or other infrastructure for a period of up to two years
- wet storage on seabed of anchor chains, etc. during activities up to two years.

Installation of the Subsea Infrastructure

When the wells are completed, a subsea xmas tree will be installed onto each wellhead to prepare the wells for production. Xmas trees are planned to be vertically suspended approximately 10 m above the wellheads, and therefore should not contact the seabed. During xmas tree installation activities USBL may be installed on the seabed or mounted to the wellhead as required by the sub-sea installation activities.

IMR Activities

The subsea infrastructure will be inspected and maintained, and intervention may be required to repair identified issues. Subsea activities are typically performed from a relevant support vessel via an ROV or divers, and often require deployment of frames/baskets that are temporarily placed on the seabed. Typically, these have a perforated base with a seabed footprint of about 15 m^2. They are recovered to the vessel at the end of the activity.

Excess marine growth may need to be removed before undertaking subsea IMR activities and/or following return to wells after a period of suspended drilling. Removing marine growth is undertaken via a high-pressure water and/or brushes or acid, by ROV.

ROV Operations

The use of an ROV during activities as described may result in temporary seabed disturbance and suspension of sediment as a result of working close to, or occasionally on, the seabed. ROV use close to or on the seabed is limited to that required for effective and safe subsea activities. The footprint of a typical ROV is about 2.5 m × 1.7 m (4.25 m^2).

Contingency Activities

Woodside may need to intervene, workover or re-drill the proposed development wells within Permit Area WA-61-L. Any seabed disturbance would be the same as those described for Drilling Operations and MODU Operations. In

addition, in the event of a respud the base case would be to remove the wellhead infrastructure. However if reasonable attempts at wellhead removal are unsuccessful, a wellhead may remain in situ until the end of field life.

The ROV may be used to relocate sediment material around the well location (known as jetting) to help manage cement or cuttings flow.

Detailed Impact Assessment

Assessment of Potential Impacts

Epifauna and Infauna

Marine life such as deep water benthic communities epifauna and infauna (living on and in the sediment dominated habitat), may be impacted from the permanent placement of infrastructure (i.e. wellheads), or placement of temporary infrastructure (anchors, ROV) on the seabed. Disturbance to the seabed can alter the physical seabed habitat conditions, resulting in epifauna and infauna community changes (Newell et al., 1998). Subsea well installations are permanent for the duration of field life and will result in the displacement and/or permanent loss of epifauna and infauna within the physical footprint.

The seabed of the PAA is characterised by sparse marine life dominated by mobile organisms (ERM, 2013). The benthic biota are predominately deposit feeders such as epifauna (living on the seabed): shrimp (crustaceans) and sea cucumbers (echinoderms), and infauna (living within the surface sediments) small, burrowing worms (polychaetes) and crustaceans (ERM, 2013) (**Section 4.5**).

Habitat modification as a result of seabed disturbance could occur within a radius of up to 10 m from each well (10 wells in total). In proximity to this area benthic communities may be reduced or altered, leading to a highly localised impact to any epifauna and infauna benthic communities present. Potential impacts include; burial or smothering of benthic biota from localised sediment deposition, particularly to sessile epifauna such as sea pens and infauna (polychaetes), and sediment coating resulting from elevated turbidity/TSS potentially causing clogging or damage to the physiological functioning of certain biota (sea pens, polychaetes) reliant on external respiratory and feeding structures. Elevations in turbidity will be intermittent and temporary in nature depending on the phase of the activity (e.g., during installation, and/or ROV use etc.), and are not expected throughout the full 60 day campaign for each well. Further the sediment dispersed during these activities is naturally occurring and will settle under existing hydrodynamic conditions.

The deep-water environment is not oxygen saturated and oxygen levels in the water column at depth are substantially reduced as compared to the upper surface layers. Deep water benthic biota are adapted to such conditions which also include zero light and reduced temperature. Changes in oxygen levels resulting from the seabed infrastructure installation will be of short duration and temporary, furthermore, sediment quality sampling indicated low organic content (**Section 4.4**) and further depletion of oxygen levels due to organically rich sediment disturbance is not predicted. The seabed sediments of the PAA contain low levels of contaminants such as metals and no hydrocarbons (**Section 4.4**) so no toxicological impacts to benthic biota from disturbed sediments is predicted. The scale and magnitude of potential impacts will be limited to the offshore seabed infrastructure physical footprint area, representing a small proportion of the total area of deep water habitat and associated benthic communities of the PAA, that are known to be present in the wider region.

In the unlikely event that a wellhead cannot be removed following well abandonment (if required due to a respud), over time the cement surrounding the wellhead will likely become buried in sediment as a result of prevailing ocean currents. The steel wellhead structure is expected to accumulate marine growth, whereby a marine life structure may remain above the seafloor. If the wellhead remains in-situ, it is expected to have a localised impact not significant to environment receptors. No further impacts to benthic habitats are likely.

The use of water jetting to remove marine growth on subsea infrastructure will result in temporary suspension of organic matter and localised increase in turbidity. Water jetting will be limited to what is necessary to clean infrastructure for inspection, drilling or other activities to take place. No threatened or migratory species, or ecological communities (as defined under the EPBC Act), were identified in the benthic communities during studies completed in the PAA (ERM, 2013). The epifauna and infauna benthic communities known to exist in the PAA are likely to be well represented elsewhere in the region, with impacts restricted to a highly localised proportion of benthic communities.

The PAA is not located within or adjacent to an AMP.

KEFs

The Exmouth Plateau KEF overlaps the PAA and seabed disturbance may lead to a highly localised change in habitat and water quality, which will be short-term, associated with the temporal extent of drilling and installation activities (approximately 60 days per well). These potential short term impacts are unlikely to impact on the ecological value of the KEF.

The magnitude of potential impacts to epifauna and infauna from seabed disturbance during activities associated with the Petroleum Activities Program is Slight.

Summary of Assessment Outcomes				
Receptor	**Impact**	**Receptor Sensitivity Level**	**Magnitude**	**Impact Significance Level**
Epifauna and Infauna	Injury/mortality to fauna	Low value	Slight	Negligible (F)
KEFs	Change in habitat	High value habitat	Slight	Minor (D)
Overall Impact Significance Level: The overall impact significance level for disturbance to benthic habitat from MODU station keeping, drilling operations, subsea installation, ROV operations and contingency activities is D based on a slight impact to the high value receptor (KEFs). The impact significance levels for individual receptors are consistent with the level in the OPP.				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Reasonable attempt(s) at removal of wellheads will be undertaken in the event of a respud.	F: Yes CS: Additional cost. Standard Practice.	In accordance with OPGGS Act Section 572	Benefits outweigh cost/sacrifice.	Yes **C 4.6**
Mooring systems (chains/wires and anchors) will be removed.	F: Yes CS: Additional cost. Standard Practice.	In accordance with OPGGS Act Section 572	Benefits outweigh cost/sacrifice.	Yes **C 5.1**
Good Practice				
Subsea infrastructure will be positioned within the planned footprint to reduce seabed disturbance.	F: Yes. CS: Standard practice.	Ensures risks appropriately addressed for seabed disturbance.	Benefits outweigh cost/sacrifice.	Yes **C 5.2**
Project-specific Basis of Well Design, which includes an assessment of seabed sensitivity.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of anchoring occurring in areas of high sensitivity. Assessment of seabed topography reduces the likelihood of anchor drag leading to seabed disturbance.	Benefits outweigh cost/sacrifice.	Yes **C 5.3**
Project-specific Mooring Design Analysis (for anchored MODU).	F: Yes. CS: Additional costs associated with upgraded MODU mooring design.	The mooring design analysis determines the number and spread of anchors required based on sediment type and seabed topography, reducing the likelihood of anchor drag leading to seabed disturbance.	Benefits outweigh cost/sacrifice.	Yes **C 5.4**
Positioning technology used to place seabed infrastructure within the	F: Yes.	Use of positioning technology to position infrastructure on the	Benefits outweigh cost/sacrifice.	Yes **C 5.5**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
design footprint to reduce seabed disturbance	CS: Minimal cost. Standard practice.	seabed with accuracy will reduce seabed disturbance.		
Environmental monitoring of the seabed prior to, and following the Petroleum Activities Program to assess any impacts to seabed.	F: Yes. CS: Significant. Monitoring of the seabed, particularly the deep waters of the PAA, would have significant additional costs to obtain and analyse data with the spatial resolution to accurately assess changes to the seabed habitat.	Environmental monitoring would not result in any additional information of the seabed above the WLSADS and mooring design analysis. Therefore, no additional reductions in likelihood or consequence would occur.	Control grossly disproportionate. Monitoring will not reduce the consequence or likelihood of any impacts to the seabed, and the cost associated with the level of monitoring required to accurately assess any impacts greatly outweighs the benefits gained.	No
Unexpected finds of potential Underwater Cultural Heritage[36] sites / features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure set out in **Section 7.4**	F: Yes CS: Costs of implementation	Allows management of new finds in accordance with legislative requirements, expert advice and community expectations.	Benefits outweigh cost/sacrifice.	Yes **C 5.6**
Relevant vessel and MODU crew will be advised in an induction of the potential to encounter UCH, and of their requirement to follow the Unexpected Finds Procedure (C 5.6)	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 **C 5.7**
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 **C 5.8**
Professional Judgement – Eliminate				

[36] 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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Only use DP MODU (no anchoring required).	F: Yes, it would be feasible to use a DP MODU. CS: Costs and schedule implications of waiting for a DP MODU to be available, rather than selecting a moored MODU.	Eliminates seabed disturbance and associated impacts to benthic communities from anchor placement and movement.	Cost/sacrifice outweigh benefit. Control would eliminate environmental impact from anchoring, however impacts are assessed as having a low consequence. While Woodside plans to use a DP MODU, flexibility is required to meet potential contractual and operational constraints. Costs of implementation are disproportionately higher than the environmental gains	No
Do not use ROV close to, or on, the seabed.	F: No. The use of ROVs (including work close to or occasionally landed on the seabed) is critical as the ROV is the main tool used to guide and manipulate equipment during drilling. ROV usage is already limited to only that required to conduct the work effectively and safely. Due to visibility and operational issues ROV work on or close to the seabed is avoided unless necessary. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the impacts of seabed disturbance from activities associated with the Petroleum Activities Program. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.6.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance levels for individual receptors are consistent with the levels rated in the OPP. • EPOs and controls in the OPP that are relevant to disturbance to benthic habitats have been adopted. • There are no changes to internal context specific to this risk from the OPP • Impacts to seabed disturbance was raised during consultation (**Appendix F, Table 1**) and this feedback was considered in the finalisation of the EP.
Acceptability Statement: The impact assessment has determined that, given the adopted controls, the Petroleum Activities Program is unlikely to result in an impact significance level greater than Minor. Further opportunities to reduce the impacts have been investigated above. The adopted controls are considered consistent with industry good practice and meet the requirements of Woodside relevant systems and procedures. The potential impacts are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of disturbance to benthic habitat to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	**Adopted Control(s)**	**EPS**	**MC**
EPO 1 Undertake the Petroleum Activities Program in a manner that will not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity results. **EPO 11** Undertake the Petroleum Activities Program in a manner that prevents a substantial change to water quality that may adversely impact on biodiversity, ecological integrity, social amenity or human health. **EPO 28** No adverse impact to unexpected finds of Underwater Cultural	**C 5.1** Mooring systems (chains/wires and anchors) will be removed	**PS 5.1** Mooring systems (chains/wires and anchors) removed during the Petroleum Activity Program	**MC 5.1** Records demonstrate mooring systems removed.
	C 5.2 Seabed infrastructure will be positioned within the planned footprint to reduce seabed disturbance.	**PS 5.2** All infrastructure will be placed within the PAA.	**MC 5.2.1** As built surveys verify location installation of equipment within the PAA.
	C 5.3 Project- specific Basis of Well Design, which includes an assessment of seabed sensitivity.	**PS 5.3** MODU/installation vessel well site locations consider seabed sensitivities.	**MC 5.3.1** Records that Basis of Well Design includes the assessment of seabed sensitivities.
	C 5.4 Project-specific Mooring Design Analysis (for anchored MODU).	**PS 5.4** Seabed disturbance from MODU mooring limited to that required to ensure adequate MODU station holding capacity.	**MC 5.4.1** Records demonstrate Mooring Design Analysis completed and implemented during anchor deployment.
	C 5.5 Positioning technology used to place seabed infrastructure within the design footprint to reduce seabed disturbance.	**PS 5.5.1** Infrastructure will be positioned in the planned location[38] where impacts have been assessed.	**MC 5.5.1** As-built surveys verify installation of equipment within acceptable tolerance[5].
		PS 5.5.2	**MC 5.5.2**

[38] Acceptable tolerance is considered to be ±150 m, given the homogenous and low sensitivity habitat.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	**Adopted Control(s)**	**EPS**	**MC**
Heritage without a permit[37].		Transponder equipment, including clump weights/frames, will be removed at the end of the Petroleum Activity Program.	Records demonstrate removal of transponder equipment.
	C 4.6 Reasonable attempt(s) at removal of wellheads will be undertaken in the event of a respud.	**PS 4.6.1** Refer **Section 6.7.4**	**MC 4.6.1** Refer **Section 6.7.4**
	C 5.6 Unexpected finds of potential Underwater Cultural Heritage[39] sites / features, including first nations UCH are managed in accordance with the Unexpected Finds Procedure set out in **Section 7.4**	**PS 5.6** In the event that an underwater cultural heritage site or feature is identified implement the Unexpected Finds Procedure set out in **Section 7.4**.	**MC 5.6.1** No non-compliance with the Unexpected Finds Procedure.
	C 5.7 Relevant vessel and MODU crew will be advised in an induction of the potential to encounter UCH, and of their requirement to follow the Unexpected Finds Procedure (C 5.6)	**PS 5.7** Relevant vessel and MODU crew are made aware of the requirements of the Unexpected Finds Procedure (C 5.6) through an induction.	**MC 5.7.1** Records demonstrate vessel crew are made aware of potential to encounter UCH.
	C 5.8 Report any potential UCH finds to relevant stakeholders and authorities in accordance with the Unexpected Finds Procedure, *Underwater Cultural Heritage Act 2018* and the ATSIHP Act	**PS 5.8** Report any finds of potential UCH in accordance with the Unexpected Finds Procedure (**Section 7.4**) including to: • WA Museum as requested during EP consultation • Australasian Underwater Cultural Heritage Database	**MC 5.8.1** Records of potential UCH finds reported to relevant authorities and stakeholders.

[37]Permit for Entry into a Protected Zone or to Impact Underwater Cultural Heritage would be acquired under the UCH Act.
[39] 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

6.7.6 Routine and Non-Routine Discharges: MODU and Project Vessels

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.7 (Routine and Non-Routine Discharges: Sewage and Greywater) Section 7.1.8 (Routine and Non-Routine Discharges: Food Waste) Section 7.1.9 (Routine and Non-Routine Discharges: Chemicals and Deck Drainage) Section 7.1.10 (Routine and Non-Routine Discharges: Brine and Cooling Water)		
Context		
Relevant Activities Subsea Equipment Preservation – **Section 3.8.7** Maintenance and Repair – **Section 3.8** Vessel Operations – **Section 3.9.2** MODU Operations – **Section 3.9.1**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Habitats and Biological Communities – **Section 4.5**	**Consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Routine discharge of sewage, grey water and putrescible wastes to marine environment from MODU and project vessels			✓			✓		A	E	-	-	LCS GP PJ	Broadly Acceptable	EPO 11, 12, 13
Routine discharge of deck and bilge water to marine environment from MODU and project vessels			✓			✓		A	E	-	-			
Routine discharge of brine or cooling water to the marine environment from MODU and project vessels.			✓			✓		A	F	-	-			

Description of Source of Impact/Risk

Vessel and MODU Operations

Sewage, grey water and putrescible wastes

The MODU and project vessels routinely generate/discharge small volumes of treated sewage, putrescible wastes and grey water to the marine environment (impact assessment based on approximate discharge of 15 m^3 per vessel/MODU per day), using an average volume of 75 L/person/day and a maximum of 200 persons on board. However, it is noted that vessels such as support vessels will have considerably less persons on board.

Deck and bilge water

The MODU and project vessels routinely generate/discharge:

- Routine/periodic discharge of relatively small volumes of bilge water. Bilge tanks receive fluids from many parts of the project vessels or MODU. Bilge water can contain water, oil, detergents, solvents, chemicals, particles, biocides and other liquids, solids or chemicals.
- Variable water discharge from MODU/vessel decks directly overboard or via deck drainage systems. Sources could include rainfall events and/or deck activities such as cleaning/wash-down of equipment/decks.

Brine

Reverse osmosis (RO), distillation or desalination plants on board vessels and the MODU use seawater to produce potable and demineralised water; resulting in reject brine (i.e. hypersaline water) that is discharged to the marine environment. The potable water produced is stored in tanks on board.

During the distillation process, relatively small volumes of reject brine is produced and discharged. Reject brine discharge is typically 20–50% higher in salinity than the intake seawater (depending on the desalination process used) and may contain low concentrations of scale inhibitors and biocides, which are used to avoid fouling of pipework (Woodside, 2014).

Models developed by the US EPA (Frick et al., 2001) for temporary brine discharges from vessels assuming no ocean current (i.e. 0 m/s) found that brine discharges from the surface dilute 40–fold at 4 m from the source. This modelling can be used as an indicator for predicting horizontal attenuation and diffusion of reject brine; and suggests that the salinity concentration drops below environmental impact thresholds within 4 m of the discharge point.

Cooling Water

Seawater is used as a heat exchange medium for cooling machinery engines and other equipment. Seawater is drawn up from the ocean, where it is subsequently de-oxygenated and sterilised by electrolysis (by release of chlorine from the salt solution) and then circulated as coolant for various equipment through the heat exchangers (in the process transferring heat from the machinery), prior to discharge to the ocean. Upon discharge, it will be warmer than the ambient water temperature. Cooling water is often treated with additives including scale inhibitors and biocide to avoid fouling of pipework. Scale inhibitors and biocide are usually used at low dosages, and are usually consumed in the inhibition process, so there is little or no residual chemical concentration remaining upon discharge.

In some instances, fresh water or central cooling systems may be fitted. In these systems, fresh water is used in a closed circuit to cool down the engine room machinery, and then further cooled by sea water in a seawater cooler.

Seawater used for cooling purposes will be routinely discharged at a temperature expected to be less than 70 °C and rates ~50 m³/d.

Environmental risks relating to the unplanned disposal/discharges are addressed in **Section 6.8.4** and **6.8.6.**

Detailed Impact Assessment

Assessment of Potential Impacts

Water Quality

Sewage, grey water and putrescible wastes

The principal environmental impact associated with ocean disposal of sewage and other organic wastes (i.e. putrescible waste) is eutrophication. Eutrophication occurs when the addition of nutrients, such as nitrates and phosphates, causes adverse changes to the ecosystem, such as oxygen depletion and phytoplankton blooms. Other contaminants of concern occurring in these discharges may include ammonia, E. coli, faecal coliform, volatile and semi-volatile organic compounds, phenol, hydrogen sulphide, metals, surfactants and phthalates.

Woodside conducted monitoring of sewage discharges at its Torosa-4 Appraisal Drilling campaign which demonstrated that a 10 m³ sewage discharge reduced to about 1% of its original concentration within 50 m of the discharge location. In addition to this, monitoring at distances 50 m, 100 m and 200 m downstream of the platform and at five different water depths confirmed that discharges were rapidly diluted; no elevations in water quality monitoring parameters (e.g. total nitrogen, total phosphorous and selected metals) were recorded above background levels at any station (Woodside, 2011). Mixing and dispersion would be further facilitated in deep offshore waters, consistent with the location of the PAA, through regional wind and large scale current patterns resulting in the rapid mixing of surface and near surface waters where sewage discharges may occur. Studies investigating the effects of nutrient enrichment from offshore sewage discharges indicate that the influence of nutrients in open marine areas is much less significant than that experienced in enclosed areas (McIntyre and Johnston, 1975).

Given the offshore location, any routine and non-routine discharges of sewage and greywater and putrescible wastes from activities associated with the Petroleum Activities Program will result in no lasting change to water quality.

Activities associated with the Petroleum Activities Program will occur over a period of five years (2022-2027), however actual project activities are expected to take up to approximately 600 days in total, therefore project vessels and the MODU will not be continuously in the PAA during this time. Vessels will also be moving (i.e. not in a single location for an extended period of time). Rather, these routine discharges are expected to be intermittent in nature for the duration

of the Petroleum Activities Program. Therefore, impacts to water quality within the PAA are expected to be localised with no lasting effect.

Deck and bilge water

Deck drainage and treated bilge may contain a range of chemicals, oil, grease and solid material. This particulate matter can cause an increase in the turbidity of the receiving waters close to the point of discharge. The addition of these substances into the marine environment will result in a change ambient water quality; however, these discharges are expected to rapidly dilute in the water column (Shell, 2010). Discharges will disperse and dilute rapidly, with concentrations significantly dropping with distance from the discharge point.

Bilge water and deck drainage discharges, which may include non-organic contaminants, will rapidly dilute. As such, no significant impacts from the planned routine discharges are anticipated, because of the minor quantities involved, the expected localised mixing zone and high level of dilution into the open water marine environment of the PAA. The involved is located more than 12 nm from land, which exceeds the exclusion zones required by Marine Order 96 (Marine pollution prevention – sewage) 2018 and Marine Order 95 (Marine pollution prevention – garbage) 2013.

Based on the detailed evaluation, the magnitude of potential impact of a change in water quality is no lasting effects.

Brine or cooling water

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.

Reject brine water is typically 20 to 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.

Woodside undertook modelling of continuous wastewater discharges (including cooling water) for its Torosa South-1 drilling program in the Scott Reef complex (Woodside, 2014). This study predicted that discharge water temperature decreases quickly as it mixes with the receiving waters, with the discharge water temperature being <1 °C above ambient within 100 m (horizontally) of the discharge point, and 10 m vertically (Woodside, 2014).

As such, any potential impacts to water quality are expected to be limited to 100 m of the source of the discharge where concentrations are highest.

Based on the detailed risk evaluation, the magnitude of the potential impact of a change in water quality from routine and non-routine brine and cooling water discharges is assessed as no lasting effect.

Seabirds and Migratory Shorebirds, Fish, Marine Reptiles and Marine Mammals

It is possible that marine fauna transiting the localised area may come into contact with these discharges (e.g. marine turtles, humpback whales, whale sharks; **Section 4.6**) as they traverse the PAA. However, given the localised extent of cumulative impacts from multiple vessel discharges and limited exposure, within the PAA, significant impacts to marine fauna are not expected.

Plankton

Research suggests that zooplankton composition and distribution are not affected in areas associated with sewage dumping grounds (McIntyre and Johnston, 1975). Plankton communities are expected to rapidly recover from any such short term, localised impact, as they are known to have naturally high levels of mortality and a rapid replacement rate.

Discharged brine sinks through the water column where it is rapidly mixed with receiving waters and dispersed by ocean currents. As such, any potential impacts are expected to be limited to the source of the discharge where concentrations are highest. 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).

Planktonic productivity in the NWMR is low. No significant impacts from the planned routine discharges are expected, because of the minor quantities involved, the expected localised mixing zone and high level of dilution into the open water marine environment of the PAA. The PAA is located more than 12 nm from land, which exceeds the exclusion zones required by Marine Order 96 (Marine pollution prevention – sewage) 2018 and Marine Order 95 (Marine pollution prevention – garbage) 2013.

Based on the impact assessment, the magnitude of the potential impacts on plankton from routine and non-routine brine and cooling water discharges is assessed as no lasting effect.

Summary of Assessment Outcomes				
Receptor	**Impact**	**Receptor Sensitivity Level**	**Magnitude**	**Impact Significance Level**
Water quality	Change in water quality	Low value (open water)	No lasting effect	Negligible (F)
Migratory Shorebirds and Seabirds	Injury/mortality to fauna	High value species	No lasting effect	Slight (E)
Fish		High value species	No lasting effect	Slight (E)
Marine Mammals		High value species	No lasting effect	Slight (E)
Marine Reptiles		High value species	No lasting effect	Slight (E)
Plankton		Low value (open water)	No lasting effect	Negligible (F)
Overall Impact Significance Level: The overall impact significance level for routine and non-routine discharges is E based on no lasting effect to the high value receptors (marine fauna). The impact significance level for water quality is consistent with the level in the OPP. Potential impacts to migratory shorebirds and seabirds have been additionally assessed in this EP and there is no change in magnitude of impact (no lasting effect).				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class) which include the following requirements: • a valid International Sewage Pollution Prevention (ISPP) Certificate, as required by vessel class • an AMSA-approved sewage treatment plant • a sewage comminuting and disinfecting system • a sewage holding tank sized appropriately to contain all generated waste (black and grey water); • discharge of sewage which is not comminuted or disinfected will only occur at a distance of	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes **C 6.1**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
more than 12 nm from the nearest land • discharge of sewage which is comminuted or disinfected using a certified approved sewage treatment plant will only occur at a distance of more than 3 nm from the nearest land • discharge of sewage will occur at a moderate rate while support vessel is proceeding (more than 4 knots), to avoid discharges in environmentally sensitive areas.				
Marine Order 95 – Pollution prevention – Garbage (as appropriate to vessel class) which requires putrescible waste and food scraps are passed through a macerator so that it is capable of passing through a screen with no opening wider than 25 mm.	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes **C 6.2**
Where there is potential for loss of primary containment of oil and chemicals on the MODU, deck drainage must be collected via a closed drainage system. E.g. drill floor.	F: Yes. CS: Minimal cost. Standard practice.	Requirements for deck drainage and management of oily water would reduce the likelihood of contaminated deck drainage water being discharged to the marine environment. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 6.3**
Marine Order 91 – Oil (as relevant to vessel class) requirements, which include mandatory measures for the processing of oily water prior to discharge: • Machinery space bilge/oily water shall have International Maritime Organisation (IMO) approved oil filtering equipment (oil/water separator) with an on-line monitoring device to	F: Yes. CS: Minimal cost. Standard practice.	No reduction in likelihood or consequence would result.	Controls based on legislative requirements – must be adopted.	Yes **C 6.4**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
measure Oil in Water (OIW) content to be less than 15 ppm prior to discharge. • IMO approved oil filtering equipment shall also have an alarm and an automatic stopping device or be capably of recirculating in the event that OIW concentration exceeds 15 ppm. • A deck drainage system shall be capable of controlling the content of discharges for areas of high risk of fuel/oil/grease or hazardous chemical contamination. • There shall be a waste oil storage tank available, to restrict oil discharges. • In the event that machinery space bilge discharges cannot meet the oil content standard of <15 ppm without dilution or be treated by an IMO approved oil/water separator, they will be contained on-board and disposed of onshore. • Valid International Oil Pollution Prevention Certificate.				
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 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 safely executing activities; therefore, no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes **C 6.5**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Good Practice				
No additional controls identified.				
Professional Judgement – Eliminate				
No additional controls identified.				
Professional Judgement – Substitute				
Storage, transport and treatment/disposal onshore of sewage, greywater and putrescible waste.	F: Not feasible. Would present additional safety and hygiene hazards resulting from the storage, loading and transport of the waste material. Distance of activity offshore also makes the implementation of this control not feasible. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Engineered Solution				
No additional controls identified.				
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the impacts of planned (routine and non-routine) discharges from MODU/vessels. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts are considered ALARP.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.7.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to routine discharges have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during consultation.
Acceptability Statement: The impact assessment has determined that, given the adopted controls, routine and non-routine discharges from the MODU and project vessels are unlikely to result in an impact significance level greater than slight. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. The 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.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 11 Undertake the Petroleum Activities Program in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health. **EPO 12** Undertake Scarborough activities in a manner that prevents a substantial adverse effect on a population of plankton including its life cycle and spatial distribution. **EPO 13** Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in an area defined as a Key Ecological Feature.	**C 6.1** Marine Order 96 - pollution prevention – sewage (as appropriate to vessel class) which include the following requirements: • a valid International Sewage Pollution Prevention (ISPP) Certificate, as required by vessel class • an AMSA-approved sewage treatment plant • a sewage comminuting and disinfecting system • a sewage holding tank sized appropriately to contain all generated waste (black and grey water) • discharge of sewage which is not comminuted or disinfected will only occur at a distance of more than 12 nm from the nearest land • discharge of sewage which is comminuted or disinfected using a certified approved sewage treatment plant will only occur at a distance of more than 3 nm from the nearest land • discharge of sewage will occur at a moderate rate while support vessel is proceeding (more than 4 knots), to avoid discharges in environmentally sensitive areas.	**PS 6.1** MODU and project vessels compliant with Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class).	**MC 6.1.1** Records demonstrate MODU and project vessels are compliant with Marine Order 96 – Pollution prevention – Sewage (as appropriate to vessel class).
	C 6.2 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	**PS 6.2** MODU and project vessels compliant with Marine Order 95 – Pollution prevention – Garbage.	**MC 6.2.1** Records demonstrate MODU and project vessels are compliant with Marine Order 95 – Pollution prevention (as appropriate to vessel class).

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	a screen with no opening wider than 25 mm.		
	C 6.3 Where there is potential for loss of primary containment of oil and chemicals on the MODU, deck drainage must be collected via a closed drainage system. E.g. drill floor.	**PS 6.3** Contaminated drainage contained, treated and/or separated prior to discharge.	**MC 6.3.1** Records demonstrate MODU has a functioning bilge/oily water management system.
	C 6.4 Marine Order 91 – oil (as relevant to vessel class) requirements, which include mandatory measures for the processing of oily water prior to discharge: • Machinery space bilge/oily water shall have International Maritime Organisation (IMO) approved oil filtering equipment (oil/water separator) with an on-line monitoring device to measure Oil in Water (OIW) content to be less than 15 ppm prior to discharge. • IMO approved oil filtering equipment shall also have an alarm and an automatic stopping device or be capably of recirculating in the event that OIW concentration exceeds 15 ppm. • A deck drainage system shall be capable of controlling the content of discharges for areas of high risk of fuel/oil/grease or hazardous chemical contamination. • There shall be a waste oil storage tank available, to restrict oil discharges. • In the event that machinery space bilge discharges cannot meet the oil content	**PS 6.4** Discharge of machinery space bilge/oily water will meet oil content standard of <15 ppm without dilution.	**MC 6.4.1** Records demonstrate discharge specification met for MODU and project vessels.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	standard of less than 15 ppm without dilution or be treated by an IMO approved oil/water separator, they will be contained on-board and disposed of onshore. • Valid International Oil Pollution Prevention Certificate.		
	C 6.5 Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.	**PS 6.5** Reduces to ALARP the impact potential of all chemicals intended or likely to be discharged into the marine environment	**MC 6.5.1** Records demonstrate chemical selection, assessment and approval process for selected chemicals is followed.

6.7.7 Routine and Non-Routine Discharges: Drill Cuttings and Drilling Fluids

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.12 (Routine and Non-Routine Discharges: Drilling)		
Context		
Relevant Activities Drilling Activities – **Section 3.8** Contingency Activities – **Section 3.10**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6**	**Consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***								***Evaluation***					
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Routine discharge of WBM drill cuttings to the seabed and the marine environment		✓	✓		✓			A	D	-	-	LCS GP PJ	Broadly Acceptable	EPO 1, 11, 12, 13, 14, 15
Routine discharge of treated NWBM drill cuttings to the marine environment		✓	✓		✓									
Routine discharge of drilling muds (WBM) to the seabed and the marine environment		✓	✓		✓									
Non-routine discharge of wash water from mud pits and vessel tank wash fluids		✓	✓		✓									
Routine discharge of well clean-out fluids		✓	✓		✓									
Non-routine discharge of well annular fluids		✓	✓		✓									

Description of Source of Impact/Risk

Drilling Operations

Up to ten development wells (two of which are a contingency) are planned to be drilled during the Petroleum Activities Program, which will result in the same number of discharge locations. Each well is expected to take approximately 60 days to drill. Drilling activities generate drill cuttings, require cementing of the casing, and require the use of a range of fluids. Throughout the drilling program several different fluids are to be run through the closed circulation system including, but not limited to, drilling fluids (water-based muds and non water-based muds), sea water, and kill-weight brine. It is noted that non water-based muds will be used as a contingency only.

Routine drilling discharges will include:

- drill cuttings
- drilling fluids (direct to seabed [WBMs only], retained on cuttings and bulk discharge of mud pits [WBMs only])

Non-routine drilling discharges may include:

- drill cuttings and fluids generated due to respud or side tracking
- well intervention and use of fluids (subsea control, completions and well annular fluids).

Drill Cuttings and Fluids

The primary discharges used as the basis of the impact assessment for this Petroleum Activities Program are as follows:

- Drill cuttings: drilling generates drill cuttings due to the breakup of solid material from within the borehole. The resultant drill cuttings are basically rock particles of various shapes, with sizes typically ranging from very fine to very coarse.
- Drilling fluids: serve many purposes including maintaining borehole stability and hydrostatic pressure, reducing friction and cleaning/ cooling of the drill bit, in addition to acting as a medium to carry cuttings from the well bore and return them to the surface at seabed or on the MODU. There are two main types of drilling fluids as follows:
  - Water based muds (WBMs) consists mainly of fresh water or seawater with the addition of chemical and mineral additives to aid in its function. Drilling additives typically used may include chlorides (e.g. sodium, potassium), bentonite (clay), cellulose polymers, guar gum, barite or calcium carbonate. These additives are either completely inert in the marine environment, naturally occurring benign materials, or readily biodegradable organic polymers with a very fast rate of biodegradation in the marine environment. Bentonite and guar gum are listed as 'E' category fluids under the OCNS and is included on the Oslo Paris (OSPAR) Commission PLONOR (chemicals that 'pose little or no risk to the environment') list (OSPAR Commission, 2019). WBMs can be discharged to sea as fluids retained on cuttings and as bulk discharge from mud pits.
  - Non-water based muds (NWBMs) refers to drill fluids that are hydrocarbon rather than water based fluid. NWBM may contain a range of synthetic hydrocarbons, such as paraffins and olefins; however, such additives are designed to be low in toxicity and biodegradable, as well as not being readily bioavailable or likely to bioaccumulate, particularly in deeper water areas. No bulk discharge of NWBMs will occur offshore, only NWBMs retained on cuttings can be discharged from the MODU. If a NWBM system is required to drill a well section, the cuttings from the NWBM drilling fluid system will pass through the SCE (centrifuge and dryers) to reduce the average residual oil on cuttings (OOC). An OOC discharge limit of 6.9% wt/wt or less on wet cuttings will be averaged over well sections drilled with NWBM for the well. It is noted that microbial biodegradation can result in oxygen reduction within sediments, however Nedwed et al. (2006) found that depth is an important factor for residual concentrations of NWBF once they reach the seabed, suggesting that loss of base fluid during settling acted to significantly reduce chemical effects from discharges. It is also noted that NWBM cuttings tend to clump and settle to the seabed rapidly adding to the cuttings pile in proximity to the well site.

Drill cuttings and unrecoverable WBMs are discharged at the seabed at each well site for the top-hole sections, which are drilled riserless (i.e. no closed loop with the MODU). This results in a localised area of sediment deposition (known as a cuttings pile) around and in proximity to the well site influenced by prevailing seabed currents.

Once the top-hole sections are complete, installation of the riser and BOP provides a conduit back to the MODU, forming a closed circulating system. The bottom hole sections will be drilled with a marine riser in place that enables cuttings and drilling fluids to be circulated back to the MODU, where the cuttings are separated from the drilling fluids by the solids control equipment (SCE) and typically re-used in the closed loop system between the well bore and the MODU. The cuttings (with adhered residual fluids) are, in typical circumstances, discharged below the water line, with their fate and dispersion determined by cuttings particle size and the density of the unrecoverable fluids. In contrast the fluids are recirculated into the fluid system where there are a number of mud pits (tanks) on the MODU that provide a capacity to mix, maintain and store fluids required for drilling activities. The mud pits form part of the drilling fluid circulating system and may be discharged at the end of specific well sections, where there is a requirement to change the drilling fluid system or the drilling fluid cannot be re-used (due to deterioration/contamination). Bulk discharge of this type is only permitted for WBMs.

For the purposes of this impact assessment, the indicative dimensions, discharge locations and approximate drill cuttings and drilling fluid volumes provided in **Table** represent the worst case for a single section, taking into account each well to be drilled during the Petroleum Activities Program.

Table 6-8: Indicative drill cuttings and fluid volumes for an example Scarborough development well

Well Section	Discharge Point	Drilling Fluid Type	Approx. Interval Length (m)	Approx. Cuttings Volume Discharged (m^3)	Approx. Fluid Volume (m^3)
42″ Conductor Hole	Seabed	Seawater (SW) / pre-hydrated	72	65	880

		bentonite sweeps (PHB)			
26″ Surface Hole	Seabed	SW / PHB / WBM / PAD	744	255	2800**
17½″ Hole	Surface (-1 m MSL)	WBM	396	62	1450
12¼″ Hole	Surface (-1 m MSL)	WBM	573	44	1020
8½″ x 9 7/8″ Open Hole	Surface (-1 m MSL)	WBM	336	17	970
Total per well				**443**	**7120**
Contingency Side Track				*121*	*2000*

*** Includes drilling 60 m with PAD*

MSL – metres below sea below.

Not all fluid will be discharged after each section – options for reuse during batch drilling will be explored

Subsea – Displacement, Completion and Well-bore Cleanout Fluids

Completion fluids are usually brines (i.e. a mixture of seawater or formation water) with additives that can include:

- chlorides (often sodium, potassium or calcium)
- bromides
- hydrate inhibitor (MEG)
- biocide
- oxygen scavenger.

They are designed to have the proper density and flow characteristics to be compatible with the reservoir formation. Completion fluids are used to run well completions, and during wellbore clean up and flowback during drilling.

Wellbore and casing clean-up are required at various stages of the drilling operations to ensure the contents of the well are free of contaminants before the next stage of drilling. A chemical wellbore cleanout fluid train may be used to remove residual fluids (including NWBM, if used) from the wellbore. The wellbore cleanout fluid is usually brine (similar to completion fluid) that can include several chemicals, such as biocide and surfactant. During the clean-up process, fluids are circulated back to the MODU.

Cleanout fluids and completion brine will be captured and stored on the MODU and discharged if oil concentration is less than 1% by volume or returned to shore if discharge requirements cannot be met. Discharge volume would be ~400 m^3.

Contingent Drilling Activities

Respud

It is unlikely that a well would be required to respud. If required, the most likely scenario is that the decision to respud is made during drilling of the top hole section of a well; therefore, the incremental increase in cuttings and fluids discharges is associated with the repeat drilling of the same top hole sections for the respudded well with the same associated discharges. A respud once drilling of the bottom hole sections has commenced is far less likely, given the time and effort already committed to the well. However, if this was to occur, the associated discharges would also be a repeat of the discharges as per **Table** to re-drill the same sections of the respudded well.

Sidetrack

The option of a sidetrack instead of a respud may be determined, if operational issues are encountered. Should a sidetrack be required, it will result in an increase in the volume of cuttings generated and a potential increase in the use of NWBM. Additional drill cuttings volumes are estimated in **Table** .

Well Annular Fluids

Well annular fluids refer to the fluids that remain in the wellbore, or annular spaces between the casing. It may consist of weighted drilling fluid and cement-contaminated mud, seawater, barite, cement polymer, and may include small amounts of hydrocarbon.

If a well is underperforming, or surveillance indicates debris is contained within the well, the contents of the wellbore may be flowed to a MODU. This displaces the well fluids (i.e. suspension/completion fluids). These are discharged overboard, as potential gas content makes it too dangerous to personnel to filter or treat them.

In the event a wellhead is removed due to the requirement to respud, small volumes (~1.5 m^3) of fluid exchange between the annular spaces and the ocean may occur. The exchange will not be instantaneous as the annular spaces

are small and the fluids are typically heavier than seawater. In the unlikely event routine wellhead removal techniques are unsuccessful, this fluid exchange is expected to occur over time following sufficient corrosion of the wellhead.

The small volumes and non-instantaneous nature of the release of the well annular fluids is expected to result in rapid dilution to a no-effect concentration within metres of the release location.

Detailed Impact Assessment

Assessment of Potential Impacts

Routine and non-routine drilling-related discharges may result in the following impacts:

- change in water quality
- change in seabed sediment quality
- change in seabed habitat
- injury/mortality to marine fauna (benthic communities).

Some fluids are discharged at the sea surface (or just below); and some are discharged at the seabed. Due to water depth in the PAA (900–955 m), this will determine the exposure pathway, and hence potential impacts and receptors.

Drill Cuttings and Retained Fluids

Water Quality and Planktonic Communities

Drill cuttings and retained drilling fluid discharges are expected to increase turbidity and TSS levels above ambient concentrations above the seabed (top-hole well sections) or in the upper surface layers (bottom-hole well sections with discharge below the water line from the MODU). Drill cuttings discharge will be generally intermittent and of short duration (over a total period of about 60 days per well) during the drilling of a well.

Top-hole well section drill cuttings and drilling fluids (WBM) will be discharged at the seabed. The coarser material (drill cuttings) will deposit on the seabed and the finer sediment material (the WBM) will cause localised elevated TSS in the water column above the seabed surrounding the well. This reduction in water quality will be temporary (limited to the operational discharges during drilling) and subject to rapid dispersion and dilution by prevailing seabed currents.

During bottom-hole well sections, when drill cuttings with retained drilling fluids (WBM or NWBM) are discharged below the water line (from the MODU), the larger particles, representing about 90% of the mass of the solids, form a plume that drops out of suspension in the water column rapidly and, deposits on the seabed. About 10% of the mass of the solids (the fines predominately composed of drilling fluid) form a plume in the upper surface layer (depending on the depth of discharge from the MODU) that will be transported by prevailing currents away from the MODU and is diluted rapidly in the receiving waters (Neff 2005, 2010). There is a large body of knowledge indicating a discharge of cuttings with adhered fluids diluting rapidly. These studies have found that within 100 m of the discharge point, a drilling cuttings and fluid plume released at the surface will have diluted by a factor of at least 10,000. Further to that, Neff (2005) states that in well mixed oceans waters, the plume is diluted by more than 100-fold within 10 m of the discharge site.

Dispersion of the cuttings plume is influenced by a number of factors: particle sized distribution of the cuttings and fluids, operational discharge events and rates and metocean conditions such as ocean current speed. The case studies described in Neff (2005) used WBMs and surface current speeds of 0.15–0.3 m/s. As currents in the PAA are ~0.25 m/s at the surface, and WBMs (bulk discharge) will contribute the largest input to elevated TSS/turbidity during drilling discharges, the dispersion extent as determined by Neff (2005) is considered representative for the Scarborough drilling program.

Using the widely-accepted dilution factor of 10,000 (Neff, 2005), cuttings (and adhered fluids) are expected to reach 100 mg/L TSS within 100 m of the MODU. Using a conservative ocean current speed of 0.1 m/s (which is below average current speeds in the PAA), these discharges are expected to disperse to 100 mg/L within ~16 minutes.

Given the generally low concentration of TSS outside the immediate vicinity of the discharge point, due to rapid dispersion of sediment and the short period of intermittent discharge, the plume is not expected to have more than a very highly localised reduction in water quality and area of potential ecological impact. It is not predicted to impact productivity of the water column.

The combination of low toxicity and rapid dilution of unrecoverable NWBMs discharged in association with drill cuttings are of little risk of direct toxicity to water-column biota (Neff et al., 2000).

Injury/mortality to planktonic species may occur due to a change in water quality following discharges of drill cuttings and fluids. Impacts to these organisms can be as a product of both physical and chemical alterations of water quality, predominantly in the water column.

As outlined above, using the widely-accepted dilution factor of 10,000 (Neff, 2005), cuttings (and adhered fluids) are expected to reach 100 mg/L TSS within 100 m of the MODU over a period of ~16 minutes. Minimal impact to plankton (phytoplankton, zooplankton and meroplankton (larvae of invertebrates and fish) is therefore expected from the discharge of drill cuttings. Neff (2010) explains that the lack of toxicity and low bioaccumulation potential of the drilling muds means that the effects of the discharges are highly localised and are not expected to spread through the food web (of which planktonic species are the basis).

Impacts to zooplankton from turbidity are associated with variations in predator prey dynamics, which favours planktonic feeders over visual feeders (Gophen, 2015), while impacts to phytoplankton occur due to decreases in available light, therefore reducing productivity (Dokulil, 1994). Surveys completed by ERM (2013) during the wet and dry season within the Exmouth Plateau in the vicinity of the PAA found that there is generally very low planktonic productivity in the region, with areas of periodic upwelling that induce greater productivity.

Jenkins and McKinnon (2006) reported that levels of suspended sediments greater than 500 mg/L are likely to produce a measurable impact upon larvae of most fish species, and that levels of 100 mg/L will affect the larvae of some species if exposed for periods greater than 96 hours. Jenkins and McKinnon (2006) also indicated that levels of 100 mg/L may affect the larvae of several marine invertebrate species, and that fish eggs and larvae are more vulnerable to suspended sediments than older life stages. However, dilution estimates (e.g. Hinwood et al., 1994; Neff, 2005) suggest suspended sediment concentrations caused by the discharge of drill cuttings will be well below the levels required to cause an effect on fish or invertebrate larvae (i.e. predicted levels are well below a 96-hour exposure at 100 mg/L, or instantaneous 500 mg/L exposure), beyond the immediate vicinity of the discharge.

Due to the low levels of planktonic productivity in the offshore area, plankton populations on a regional scale are not expected to be affected by drilling operations. In addition, due to the open nature of the marine environment of the PAA and associated environmental conditions (i.e. windy, strong currents, etc.), the content and dispersive nature of drilling muds within the marine environment and the high population replenishment of these organisms, it is expected that impacts to plankton species will be limited to within tens of metres of the discharge point and return to previous conditions within a relatively short period of time. On this basis, the impacts to plankton from routine and non-routine discharges during drilling activities is slight.

Sediment Quality and Benthic Communities

Accumulation of drill cuttings on the seabed causes changes in the physical properties of the seabed sediment such as the particle size distribution (PSD), the introduction of contaminants (metals such as barium) from retained drilling fluids (WBM), introduction of forms of petroleum hydrocarbons (from retained NWBM on cuttings) and associated ecological effects.

The discharge of drill cuttings and unrecoverable fluids at the seabed during riserless top hole drilling results in a localised area of sediment deposition (known as a cuttings pile) surrounding the well site. The cuttings pile distribution may reflect prevailing seabed currents and spread predominately downstream of the well site but overall extent from the well site is typically tens of metres. The dimensions of the cuttings pile depend on several factors, including volume (approximately 320 m^3 of top hole cuttings per well; **Table**) and composition of cuttings, and oceanographic conditions at the discharge location. The top-hole well section drill cuttings and retained drilling fluids (WBM) to seabed have the greatest impact to sediment quality and modification of the habitat in proximity to the well, as the solids tend to clump and settle rapidly around the discharge point (Neff, 2010).

Indicative components of the WBM system outlined in **Section 3.8.1.6** have a low toxicity. Bentonite and chemicals from the family of XC polymers (Xanthan Gum or similar) are listed as 'E' category fluids under the OCNS and considered to 'pose little or no risk to the environment'. Metals such as barium from these additives will be present in the drilling fluid, primarily as insoluble mineralised salts, and consequently are not released in significant amounts to the pore water of marine sediments and have low bioavailability to those benthic fauna which may come into contact with the discharged barite (Crecelius et al., 2007; Neff, 2008). The XC polymer and bentonite sweeps have very low toxicities and are considered by OSPAR to pose little or no risk to the environment.

As described above, the bottom hole sections are drilled after the riser is fitted. Cuttings and unrecoverable fluids are discharged below the water line at the MODU site, resulting in drill cuttings and retained drilling fluids rapidly dispersing through the water column. The larger cuttings particles will drop out of suspension and deposit in proximity to the well site (tens to hundreds of metres distance) with potential for localised spreading downstream, while the finer fluid particles will remain in suspension and will be transported further away from the well site, rapidly diluting and eventually depositing over a larger area (hundreds of metres to several kilometres) downstream of the well site. Drill cuttings from the bottom-hole sections will be smaller in volume (approximately 122 m^3 per well; **Table**) and as determined by surface discharge, depth of seabed and time to reach seabed, result in an extended area of deposition, but a much thinner cuttings pile depth (IOGP, 2016). The fines associated with the retained drilling fluids or mud pit bulk discharge of WBM will settle over a greater extended distance as a thin, undetectable veneer on the seabed. Predicted impacts for bottom hole cuttings are generally confined to a maximum of 500 m from the discharge point (IOGP, 2016). However, when discharged in deeper waters (>400 m), WBM/NWBM cuttings may be deposited over a much larger area, to a horizontal distance of 500–1000 m from the discharge site (with concentrations decreasing with increasing distance) (IOGP, 2016). The final deposition of drill cuttings and drilling fluids is largely determined by seabed depth and the time to drop out of suspension within the water column and deposit on the seabed. This leads to the coarser cuttings material being deposited at a location offset but closest to the well site in an area downstream and a distance up to of several hundreds of metres, with associated ecological effects within this area and the fines (predominately drilling fluids) dispersed over a greater distance from the discharge site, typically several kilometres but with no associated ecological effects.

Base fluids for NWBM are assessed in accordance with Woodside's Chemical Selection and Assessment Environment Guideline. They are designed to be biodegradable in offshore marine sediments. Biodegradation can result in a low oxygen (anoxic) environment resulting in changes in benthic community structure. Species sensitive to

anoxic environments are eliminated and replaced by tolerant and opportunistic species, resulting in decreased species diversity, but the number of individuals often increases (Neff et al., 2000). NWBMs are designed to be low in toxicity and are not readily bioavailable to benthic fauna due to their physical/chemical properties. Nedwed et al. (2006) found that depth is an important factor for concentrations of NWBM on cuttings, where cuttings which had a great distance to reach the seabed (950 m) had significantly lower concentrations, suggesting that loss of base fluid during settling acted to significantly reduce chemical effects from discharges. The study concluded that NWBM discharged in deep water posed very limited environmental impacts (from analysis of difference in benthic fauna between pre- and post-drilling samples, Nedwed et al., 2006). This discharge is expected to dilute rapidly, with a potential impact to the environment considered to be a local, temporary decrease in water quality (as discussed above).

Benthic organisms below the cuttings pile will be buried and smothered; however, the cuttings piles are expected to be recolonised over time. Ecological impacts to benthic biota are predicted when sediment deposition is equal to or greater than 6.5 mm in thickness (IOGP, 2016). This amount of sediment deposition from top hole and bottom hole cuttings is expected to be confined to within a few hundred metres around the well location, although this depends on the nature of the cuttings, the water depth and currents of the receiving environment (IOGP, 2016). A conservative radius of 500 m representing a zone of potential ecological impact has been applied to each well location for this impact assessment. Mobile benthic fauna, such as demersal fish, may be temporarily displaced from areas where cuttings discharges accumulate. Furthermore, ecological impacts are not expected for mobile benthic fauna such as crabs and shrimps or pelagic and demersal fish, given their mobility (IOGP, 2016). Balcom et al., (2012) concluded that impacts associated with discharging cuttings and base fluids (including NWBMs) are minimal, with impacts highly localised to the area of the discharge deposition on the seabed. Changes to benthic communities are normally not severe. Organic enrichment can occur, leading to anoxic conditions in the surface sediments and a loss of infauna species that have a low tolerance to low oxygen concentrations, and to a lesser extent chemical toxicity near the well location. These impacts are highly localised with short-term recovery that may include changes in community composition with the replacement of infauna species that are hypoxia-tolerant (IOGP, 2016). Recovery of affected benthic infauna, epifauna and demersal communities is expected to occur, given the short duration of sediment deposition and the widely represented benthic and demersal community composition. The zone of potential ecological impact for each well is conservatively estimated to be 0.8 km^2 and the total area of potential ecological impact for the ten wells (two of which are contingency) is conservatively estimated to be 8 km^2.

It is acknowledged that transport of fines (associated with the drilling fluids) will disperse beyond the zone of potential ecological impact but there are no associated ecological effects expected beyond this zone (500 m distance from the well sites). Low levels of sediment deposition away from the immediate area of the well site would represent a thin layer of settled drill cuttings and drilling fluids, which will likely be naturally reworked into surface sediment layers through bioturbation (US Environmental Protection Agency, 2000). Metals such as barium from the drilling fluid additives are used as a tracer of dispersion and are typically detected beyond the zone of ecological impact but as discussed for sediment quality (above), the insoluble mineralised salts (the source of barium) have low bioavailability to benthic biota.

Impacts associated with routine and non-routine drilling discharges will be largely limited to an area surrounding the well locations, which are in 900–955 m water depth, in the offshore, open water environment and >215 km from the nearest shore. The low sensitivity of the benthic communities/habitats within and in the vicinity of the PAA, combined with the low toxicity of WBMs and residual NWBMs, no bulk discharges of NWBM and the highly localised nature and scale of predicted physical impacts to seabed biota, affirm that any predicted impact is considered likely but of a minor environmental consequence.

KEFs

Potential impacts to the Exmouth Plateau KEF, which overlaps the PAA, relate to ecological impacts to the seabed habitat and benthic communities. As described above, the sediment deposition from the discharge of drill cuttings and drilling fluids will be highly localised around each well location. Within the conservatively applied zone of potential ecological impact (500 m radius per well) epifauna and infauna will be buried or smothered, particularly, in close proximity to the wellheads. Mobile epifauna and demersal fish are more likely to be displaced from the zone of potential ecological impact. Recovery of affected benthic infauna, epifauna and demersal fish communities is expected to occur, given the short duration of sediment deposition and the widely represented benthic and demersal community composition. The total percentage area of the Exmouth Plateau seabed habitat and benthic communities affected is conservatively estimated to be 0.01%. The extremely small portion of the overall KEF area predicted to be impacted in combination with the predicted recovery of the affected benthic communities, affirms that any predicted impact is considered likely but of a slight environmental consequence.

Drilling Fluids (Bulk Discharge)

WBM may be bulk discharged at the end of specific well sections, as described above, where there is a requirement to change the drilling fluid system or the drilling fluid cannot be re-used (due to deterioration/contamination). A small quantity of WBM and NWBM residue (<1%) may also be discharged at the sea surface while cleaning the mud pits, typically at the conclusion of drilling activities or when changing between mud types.

Discharge of WBM will result in a buoyant plume of fine materials that will rapidly dilute and decrease in turbidity levels immediately away from the discharge point. WBM samples collected by Jones et al. (2021) from the mud pits

just before discharge during the Greater Western Flank-2 drilling campaign were ~90% silt sized (<62.5 µm) with a mean diameter of 12 µm (gel-polymer) and 33 µm (KCl-polymer). Total suspended solid (TSS) levels in the gel-polymer mud and KCl-polymer mud were 257 g/L and 245 g/L respectively. Jones et al. (2021) used an ROV to observe mud pit discharges and reported the discharge to exit the discharge outlet as a jet of material in a distinctive cloud-like plume descending rapidly to the seabed and growing in diameter with increasing depth.

The subsea plume can be expected to disperse over a wide area (up to several kilometres), with no discernible sediment deposition on the seabed and no physical or biological impacts, particularly given the water depth of the PAA (900–955 m). Impacts beyond the 500 m zone of ecological impact for each well as described for drill cuttings and retained fluids discharge is not expected.

Subsea – Displacement, Completion and Well-bore Cleanout Fluids

Discharges such as displacement, completion and wellbore cleanout fluids are typically inert and of low-toxicity. These fluids are mostly brine, with a small proportion of chemical additives such as surfactants, biocide, corrosion inhibitor, oxygen scavenger, MEG and guar gum. The volume of one wellbore and subsequent discharge volume would be ~400 m^3. Any change to water quality is expected to be localised and temporary. As this is an intermittent batch discharge, any change in water quality will be short term as discharges are discrete and of short duration. Rapid dilution due to prevailing ocean currents in the open water environment would lead to any changes in water quality such as low toxicity contaminants being temporary (only for the duration of the discharge) and reducing water quality within a short distance of the discharge location.

Cumulative Impacts

Given the Petroleum Activities Program includes the drilling of up to 10 development wells, there is the potential for cumulative disturbance to marine sediment quality and benthic communities to occur. The cuttings and drilling fluids discharged from each of the wells will accumulate within the receiving environment. Given that the distances between some of the proposed wells are within 100 m, overlap may occur. When considering deposition of sediments from each drilling activity, deposition at a thickness of greater than 6.5 mm is limited to within a distance of a few hundred metres, although this is dependent on the nature of the cuttings, and the water depth and currents of the receiving environment (IOGP, 2016). If the area of drill cuttings and drilling fluids deposition from the wells overlap, impacts are anticipated to be minimal, considering the observed limited benthic biota within the PAA.

No cumulative impacts to water quality are expected to occur since discharged sediments are predicted to settle in between the drilling activities for each well and no concurrent drilling will occur.

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level
Sediment Quality	Change in sediment quality	Low value (open water)	Minor	Slight (E)
Water Quality	Change in water quality	Low value (open water)	Slight	Negligible (F)
Plankton	Injury/ mortality to fauna	Low value (open water)	Slight	Negligible (F)
Epifauna and Infauna	Injury/ mortality to fauna	Low value	Minor	Slight (E)
KEFs	Change in habitat	High value habitat	Slight	Minor (D)

Overall Impact Significance Level: The overall impact significance level for routine and non-routine drilling discharges is D based on slight impact to the high value receptors (KEFs). Further review on the potential recovery time of sediment quality and epifauna/Infauna receptors has increased the significance level from the OPP, but the overall impact significance level (D) is consistent with the level in the OPP.

Demonstration of ALARP

Control Considered	*Control Feasibility (F) and Cost/Sacrifice (CS)*	*Benefit in Impact/Risk Reduction*	*Proportionality*	*Control Adopted*
Legislation, Codes and Standards				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Sampling/analysis of stock barite to ensure acceptable levels of heavy metals (Cadmium and Mercury).	F: Yes. CS: Minimal cost. Standard practice.	Ensures heavy metal concentrations in stock barite are at acceptable levels to reduce the consequence of discharges to the marine environment.	Benefits outweigh cost/sacrifice.	Yes **C 7.14**
		Good Practice		
Drilling and completions fluids will have an environmental assessment completed prior to use.	F: Yes. CS: Minimal cost. Standard practice.	Environmental assessment of chemicals will reduce the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes **C 7.1**
For drilling and completion fluids, periodic chemical reviews are performed.	F: Yes. CS: Minimal cost. Standard practice.	Regular reviews will ensure chemicals selected for drilling and completions fluids remain ALARP.	Benefits outweigh cost/sacrifice.	Yes **C 7.2**
Written NWBM justification process followed.	F: Yes. CS: Minimal cost. Standard practice.	The written justification takes onboard the technical need for NWBM use, receiving environment, cost and additional controls that may be required. By undertaking formal assessment, the potential impacts are well understood allowing for development of control measures to reduce the consequence of NWBM use. This provides an overall environmental benefit.	Benefits outweigh cost/sacrifice.	Yes **C 7.3**
NWBM base oils selected based on expected toxicity.	F: Yes. CS: Minimal cost.	By selecting a base oil with lower toxicity, the consequence of the release on the environment is reduced.	Benefits outweigh cost/sacrifice	Yes **C 7.4**
Backload bulk NWBM or maintain on rig for re-use	F: Yes. CS: Minimal cost. Standard practice.	By restricting the volume of NWBM for overboard discharge, the consequence of the release on the environment is reduced. Although no change in likelihood is provided, the decrease in consequence results in an environmental benefit.	Benefits outweigh cost/sacrifice.	Yes **C 7.5**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Bulk operational discharges conducted under MODU's Permit to Work (PTW) system (to operate discharge valves/pumps).	F: Yes. CS: Minimal cost. Standard practice.	The MODU's PTW may slightly reduce the volumes of bulk discharges occurring, but it is unlikely to be significant given that bulk discharges are often operationally required and cannot be eliminated.	Benefits outweigh cost/sacrifice.	Yes **C 7.6**
Displacement, brine, workover or intervention fluids contaminated with hydrocarbons will be treated prior to discharge or contained. If discharge specification not met the fluid will be returned to shore.	F: Yes. CS: Minimal cost. Standard practice.	Ensuring <1% oil content will provide a small reduction in consequence when fluids are discharged to the environment.	Benefits outweigh cost/sacrifice.	Yes **C 7.7**
SCE used to treat NWBM cuttings prior to discharge.	F: Yes. CS: Minimal – more frequent cuttings sampling and testing.	Achieving average oil on cuttings (sections using NWBM only) discharge limit of 6.9% or less oil on wet cuttings will have a small reduction in consequence.	Benefits outweigh cost/sacrifice.	Yes **C 7.9**
In event of SCE failure (including auger) while drilling with NWBM, the initial action will be to cease drilling and determine whether to repair SCE or drill ahead until next practicable opportunity to trip out of the hole. If cuttings are discharged during dryer or auger failure, measurement of OOC to occur more frequently from shakers.	F: Yes. CS: Cost and schedule implications due to cessation of drilling.	Ceasing of drilling in the event of equipment failure will allow for time to assess feasibility of drilling ahead while still meeting residual OOC discharge requirements.	Benefits outweigh cost/sacrifice.	Yes **C 7.10**
Professional Judgement – Eliminate				
No additional controls identified.				
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
Mud pit wash residue will be measured for oil content prior to discharge.	F: Yes. CS: Minimal cost. Standard practice.	Ensuring <1% oil content will provide a small reduction in consequence when residue is discharged to the environment.	Benefits outweigh cost/sacrifice.	Yes **C 7.11**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
WBM drill cuttings returned to the MODU will be processed using SCE equipment.	F: Yes. CS: Minimal cost. Standard practice.	Limiting the discharge of WBMs through reuse will reduce the consequence of the using WBM.	Benefits outweigh cost/sacrifice.	Yes **C 7.12**
Drill cuttings returned to the MODU will be discharged below the water line.	F: Yes. CS: Minimal cost. Standard practice.	Discharge of drill cuttings below the water line will reduce carriage and dispersion of cuttings thereby reducing the consequence of cuttings discharges during the Petroleum Activities Programme.	Benefits outweigh cost/sacrifice.	Yes **C 7.13**
Cuttings reinjection into formation. Cuttings are crushed, slurrified and pumped to a desired geological structure with a suitable seal, below the seabed through an annulus or tubing.	F: No. No concurrent drilling or direct sequential drilling planned which would require cuttings to be stored prior to re-injection. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Riserless Mud Recovery (RMR) system to return top-hole cuttings/mud from the riserless section of the well to the MODU prior to treatment onboard and discharge from the MODU (below the water line) for all wells.	F: Not technically feasible due to water depth. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Riserless Mud Recovery (RMR) system to return top hole cuttings from the riserless section of the well to the MODU prior to transport to an alternative discharge location or back to shore for disposal.	F: Not technically feasible due to water depth. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Return riser-in-place cuttings for disposal at another marine location or onshore for processing and land disposal (skip and ship) for whole well to reduce risk of benthic disturbance. OR Return riser-in-place cuttings for all sections	F: Yes. CS: Primary cost/sacrifice of this option is the additional handling required in transporting cuttings to alternative disposal location. Particularly the health and safety risks associated with high frequency of	Compared to adopted control, return riser in place cuttings would achieve a reduction in cuttings/mud discharged (although discharge would still occur during riserless drilling on the basis this control is not adopted) at each well location; however, given current impact assessment and controls adopted, this would not result	Disproportionate. Given the adopted controls and low current risk rating, the high cost/sacrifice outweighs the benefit gained over the duration of the Petroleum	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
drilled with NWBM for disposal onshore (to reduce potential residual oil on cuttings to environment).	support vessel activity alongside the rig and the amount of crane lifting required if a cuttings skip/drilling waste container system were employed. Other cost/sacrifice elements which are considered include: • Further treatment of cuttings onshore is required to ensure a standard suitable for landfill. Class II disposed locally (e.g. Karratha). Class III landfill requires transport to Geraldton or Perth • Increased risk of unplanned vessel collision or loss of cuttings during transfer activities • Environmental impact (suspended sediment/sedimentation) of discharging cuttings at new location and other regulatory approvals may also be required (e.g. sea dumping permit). • Potential halt to drilling activity if transfer operations are delayed due to weather or operational issues • Additional environmental impact incurred (air emissions) from vessel use	in a significant reduction on consequence.	Activities Program. Impact assessment has determined no sensitive benthic receptors in the vicinity and a low level of impact potential from overall cuttings/mud discharge therefore benefit to be gained from cuttings/mud recovery is disproportionate to the risks introduced by cuttings relocation (including if an alternative system which doesn't use transport containers was implemented).	

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	and onshore trucking for transportation of cuttings. Disposal via landfill and/or treatment does not eliminate an environmental impact. These options have their own impacts and therefore disadvantages if implemented.			
Reduce total drill cuttings by implementing slim well design.	F: No. Slim well design is not considered feasible based on the following factors: • The well design is optimised to minimise the size of hole drilled while still being able to reach the targets and meet development objectives safely. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Water quality and/or sediment monitoring of drill cuttings or drilling fluids to verify impact during activity.	F: Yes. CS: • For in-water sampling utilising ROV - Time and logistics for tool change out from operational tools to specialised scientific sampling tools. • Additional personnel on board to operate ROV and coordinate sampling program. • Low ROV availability due to operations can limit time to perform environment monitoring.	No environmental benefit would be gained by implementation of monitoring during the activity. Monitoring could be used to inform additional control measures in future drilling activities; however, there is a considerable body of existing scientific literature on potential impacts of drill cuttings and impacts are generally well understood. Furthermore, it is not guaranteed that additional controls would be feasible, or if they would provide any environmental benefit.	Disproportionate Cost/sacrifice outweigh benefit to be gained in the context of existing environment (deep water, open ocean communities with no proximity to sensitive benthic communities or receptors). Although adoption of this control could be used to verify EPOs associated with drilling mud and cutting discharge, alternative controls identified	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	• If additional ROV is required on the MODU, deck space and resources to run/store/service ROV. • Resources for sample processing (space/ equipment/ personnel).		achieve an appropriate outcome.	
Use SCE with secondary treatment for NWBM: Thermomechanical systems (to achieve <1% average oil on cuttings).	F: Yes – with associated infrastructure including vessels for offline storage and delivery to thermomechanical dryer. CS: The primary cost/sacrifice of this option is the monetary outlay for acquisition and implementation which is estimated at $800,000 to mobilise, install and demobilise, along with a running cost of about $32,000/day. Other factors considered include: • It is estimated that it would take a minimum of seven months to mobilise, install and commission the system on to the MODU. • Complex and unfamiliar system to integrate with the rig systems. • Increased health and safety exposure due to: – crew of nine engineers and technicians required to run the plant.	A reduction in consequence would be achieved by reducing the average oil on cuttings discharged.	Disproportionate. Cost/sacrifice outweighs benefit to be gained in the context of existing environment and drilling campaign as the use of NWBM is a contingent activity and is not planned.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	– multiple crane lifting operations, during installation, operations and demobilisation. – rotating machinery – heat illness – deck congestion due to large footprint of the plant.			
Time restricted discharge of WBM and/or cuttings to align with tide/current or other oceanographic events.	F: Yes. CS: Disruption to drilling operations in having to stop drilling at time when discharge of WBM and/or cuttings might not be permitted. Additional mud storage volume required.	Given the offshore location, oceanographic changes are unlikely to significantly affect the dispersion of cuttings and therefore no environmental benefit would be gained.	Disproportionate. The cost/sacrifice outweighs the benefit gained – No hard coral or other photo-sensitive benthic communities in the vicinity of wells to rationalise phased/ timed discharge.	No

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 drill cuttings and drilling fluids (WBM and NWBM). As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts and risks are considered ALARP.

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.13.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to routine drilling discharges have been adopted. • There are no changes to internal context specific to this risk from the OPP. • Potential impacts from drill cuttings and drilling fluids was raised during consultation (**Appendix F, Table 1**) and this feedback was considered in the finalisation of the EP.
Acceptability Statement:

Demonstration of Acceptability
The impact assessment has determined that, given the adopted controls, routine and non-routine drilling discharges are unlikely to result in an impact greater than minor. Further opportunities to reduce the impacts have been investigated above. The adopted controls are considered good oil-field practice/industry good practice to prevent the generation of significant volumes of drill cuttings and to manage the discharge of drill cuttings and fluids. 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.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 1 Undertake Petroleum Activities Program in a manner that 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 results. **EPO 11** Undertake Petroleum Activities Program in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health. **EPO 12** Undertake Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of plankton including its life cycle and spatial distribution. **EPO 13** Undertake Petroleum Activities Program in a manner that will not	**C 7.1** Drilling and completions fluids will have an environmental assessment completed prior to use.	**PS 7.1** All chemicals intended or likely to be discharged into the marine environment reduced to ALARP using the chemical assessment process.	**MC 7.1.1** Records demonstrate chemical selection, assessment and approval process for selected chemicals is followed.
	C 7.2 For drilling and completion fluids, periodic chemical reviews are performed.	**PS 7.2** Acceptability of previously approved chemicals are re-evaluated to ensure ALARP and alternatives are considered.	**MC 7.2.1** Records confirm periodic reviews have taken place, and any actions/changes are being tracked to closure.
	C 7.3 Written NWBM justification process followed.	**PS 7.3** NWBMs only used where written justification process has been followed.	**MC 7.3.1** Records show NWBM justification process has been followed and NWBM only used where technically required.
	C 7.4 NWBM base oils selected based on expected toxicity.	**PS 7.4** Group III base oils used in NWBM.	**MC 7.4.1** Records demonstrate that only Group III base oils used in NWBM.
	C 7.5 Backload bulk NWBM or maintain on rig for re-use	**PS 7.5** No overboard disposal of bulk NWBM	**MC 7.5.1** Incident reports of any unplanned discharges of NWBM
	C 7.6 Bulk operational discharges conducted under MODU's permit to Work (PTW) system (to operate discharge valves/pumps).	**PS 7.6** Increased level of assurance and verification on bulk operational discharges.	**MC 7.6.1** Records demonstrate that bulk discharges are conducted under the MODU PTW system.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in an area defined as a Key Ecological Feature. **EPO 14** Undertake Petroleum Activities Program in a manner that prevents substantial change in sediment quality, which may adversely impact biodiversity, ecological integrity, social amenity or human. **EPO 15** Undertake Petroleum Activities Program in a manner that prevents significant impacts on the values of the Exmouth Plateau KEF.	**C 7.7** Displacement, brine, workover or intervention fluids contaminated with hydrocarbons will be treated prior to discharge or contained. If discharge specification not met the fluid will be returned to shore.	**PS 7.7** Achieve oil concentration <1% by volume prior to discharge.	**MC 7.7.1** Records demonstrate that discharge criteria were met prior to discharge or was taken onshore.
	C 7.9 SCE used to treat NWBM cuttings prior to discharge.	**PS 7.9** Average OOC (sections using NWBM only) discharge limit of 6.9% or less oil on wet cuttings is achieved.	**MC 7.9.1** Records confirm the average OOC for the entire well (sections using NWBM only) do not exceed limit.
	C 7.10 In event of SCE failure (including auger) while drilling with NWBM, the initial action will be to cease drilling and determine whether to repair SCE or drill ahead until next practicable opportunity to trip out of the hole. If cuttings are discharged during dryer or auger failure, measurement of OOC to occur more frequently from shakers	**PS 7.10** The decision whether to repair SCE or drill ahead has considered the estimated time for repairs and the amount of drilling until next planned trip out of hole, to ensure the OOC limit is not exceeded.	**MC 7.10.1** Records demonstrate that in the event of auger or cuttings dryer failure (where no redundancy is available), active drilling is initially stopped as soon as safe to do so. Evidence of assessment to drill ahead with failed SCE can be produced.
	C 7.11 Mud pit wash residue will be measured for oil content prior to discharge.	**PS 7.11** Achieve less than 1% by volume oil content before discharge	**MC 7.11.1** Records after pit clean out (for pits potentially contaminated with base oil) demonstrate mud pit wash residue was less than 1% by volume oil content before discharge.
	C 7.12 WBM drill cuttings that are returned to the MODU will be processed (using SCE equipment).	**PS 7.12** WBM drill cuttings that are returned to the MODU processed using SCE equipment allowing reuse of mud prior to discharge.	**MC 7.12.1** Records demonstrate that operational SCE is in use.
	C 7.13 Drill cuttings returned to the MODU will be discharged below the water line.	**PS 7.13** Cuttings discharged below the water line	**MC 7.13.1** Records confirm cuttings discharge chute/line below the water line.
	C 7.14 Sampling/analysis of stock barite to ensure acceptable	**PS 7.14** Sampling/analysis of stock barite to ensure that heavy	**MC 7.14.1** Records demonstrate that concentrations of heavy

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	levels of heavy metals (Cadmium and Mercury).	metals of concern (cadmium and mercury) are within limits prescribed by API standards: • Mercury (Hg): max 1 mg/kg (<1ppm) dry weight in stock barite • Cadmium (cd): max 3 mg/kg (<3ppm) dry weight in stock barite	metals within stock barite used during the activity are within acceptable levels.

6.7.8 Routine and Non-Routine Discharges: Cement, Cementing Fluids, Subsea Well Fluids, Produced Water and Unused Bulk Product

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.1.12 (Routine and Non-Routine Discharges: Drilling)		
Context		
Relevant Activities Drilling Activities – **Section 3.8** Contingency Activities – **Section 3.10**	**Existing Environment** Marine Regional Characteristics – **Section 4.2** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6**	**consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	Environmental Value Potentially Impacted							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Routine discharge of cement and cementing fluids, to the seabed and the marine environment.		✓	✓		✓			A	D	-	-	LCS GP PJ	Broadly Acceptable	EPO 1, 11, 12, 14, 15
Routine discharge of subsea well fluids (inc. BOP and well construction activity control fluids); completion fluids, produced water and well intervention/ workover fluids.		✓	✓		✓			A	D	-	-			
Non-routine discharge of unused bulk products		✓	✓		✓			A	D	-	-			

Description of Source of Impact/Risk

Cement, Cementing Fluids, Grout, Subsea Well Fluids and Unused Bulk Products

Cementing Fluids, Cement and Grout

Cementing fluids, including cementing mix water, may require discharge to the marine environment under various scenarios.

At the commencement of the drilling campaign there may be a requirement to run a cement unit test to ensure the functionality of the cement unit and the cement bulk delivery system prior to performing an actual cement job. This test would result in a small volume of approximately 10 m^3 of cement slurry being discharged at the sea surface. The slurry is usually a mix of cement and water however may contain stabilisers or chemical additives.

When cementing the conductor and surface casings after top hole sections of the well have been drilled, cement must be circulated to the seabed to ensure structural integrity of the well. Excess cement is pumped to ensure structural integrity is achieved. If the hole is completely in-gauge and there are no downhole losses while pumping the cement, a

maximum volume of 80 m³ per well is estimated to be circulated to the seabed at the well location, which forms a thin concrete film on the seabed in close proximity to the well.

Wherever possible, the cement line flush volumes are included in the planned cement jobs. After each cement job, leftover cement slurry in the cement pump unit and the surface lines is flushed and discharged to the sea to prevent clogging of the lines and equipment. This is estimated at about 44 m³ per well (based on up to four cement jobs per well x 11 m³ discharged per job). In the unlikely event a respud event is required it would result in additional cement jobs. Also, in the rare event that the cement products become contaminated, the entire volume (~180 m³ per well) may need to be discharged to sea.

Cement spacers can be used as part of the cementing process, within the well casing, to assist with cleaning of the casing sections prior to cement flow through. The spacers may consist of either seawater or a mixture of seawater and dye. The dye is used to provide a pre-indicator of cement overflow to the seabed surface, to ensure adequate cement height.

Excess cement (dry bulk, after well operations are completed) will either be: used for subsequent wells; provided to the next operator at the end of the drilling program (as it remains on the rig); or if these options are not practicable, discharged to the marine environment as dry bulk or as a slurry. The process that will be followed to determine discharge is the last option is presented in **Figure 6-1**.

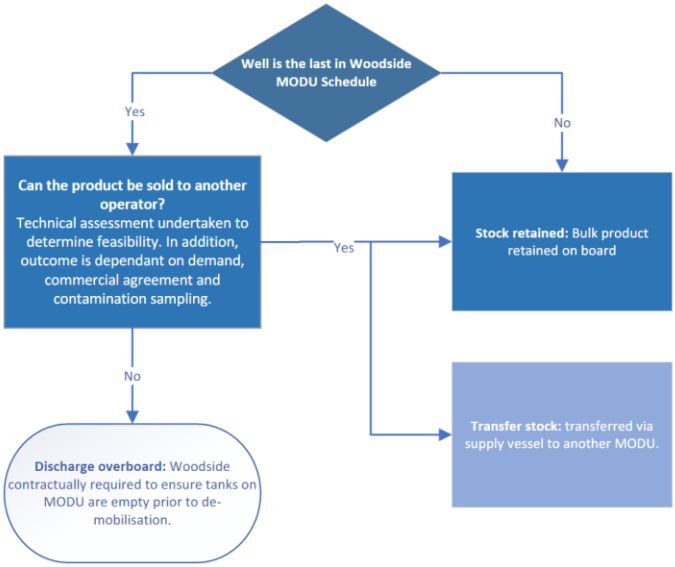


Figure 6-1: Management process for excess bulk product

Subsea Fluids – Blow Out Preventors (BOP) and Well Construction Activity Control Fluids

Subsea fluids are likely to be released during drilling, completions and xmas tree installation, including the release of BOP control fluids. Subsea control fluids are water-based hydraulic control fluids used in control systems on the subsea trees and BOPs. The BOP is required, by legislation, to be regularly function tested when subsea.

Subsea control fluids will be discharged during:

- installation of the subsea trees (~10 L per well)
- function testing of the subsea tree (~30 L per test)
- function testing of the BOP on installation and pressure testing

The BOP is function tested during assembly and maintenance and during operation on the seabed as described in **Section 3.8.1.3**. As part of this testing, small volumes of BOP control fluid (generally consisting of water mixed with a glycol based detergent or equivalent water-based anti-corrosive additive) are released to the marine environment.

Each time a pressure and function test is undertaken approximately 3620 L of water-based fluid is released to the marine environment, of this approximately 4% is control fluid additive. BOP operation includes function and pressure testing approximately every 21 days, and a function test (approx. 2665 L) approximately every seven days, excluding the week a pressure test is conducted.

Functioning and testing of the subsea xmas trees will result in the discharge of small volumes of water and glycol based control fluid.

Subsea Fluids – Well Intervention and Workover Fluids

A workover or intervention may be performed on any wells in the Petroleum Activities Program. If the well has been flowed previously, or if down-hole hydrocarbons remain in the well (e.g. reservoir fluid or if base oil has been left in the well), there is potential that the intervention/workover fluids will be contaminated with hydrocarbons. If hydrocarbon contamination of the intervention/workover fluids has occurred, the fluid will need to be treated on the MODU, to ensure hydrocarbon content prior to discharge, is <1% by volume, or returned to shore if discharge requirements cannot be met.

It may be necessary to remove marine growth from subsea infrastructure using acid (typicallt sulphamic acid) to aid visual inspection and operation of valves and other mechanisms. This will be done using ROV tooling and possibly acid.

Produced Water

During well flowback and completion activities, completion fluids and produced water will be discharged to the marine environment via the well test water filtration treatment package. The well test water filtration treatment package will be used to treat produced water that cannot be flared before discharge. Prior to discharge, the fluids are cycled through a water filtration system consistent with solids and polishing. Approximately 100 bbl (16 m^3) of produced water may be generated per well, which may be discharged via the well test water treatment package.

Other unused bulk products

Additional products such as barite and bentonite may be discharged in bulk during or at the end of the activity if they cannot be reused or taken back to shore (refer to the process that will be followed to determine discharge is the last option is presented in **Figure 6-1**). Use and discharge of all chemicals and products will be conducted in line with Woodside's internal guidelines (**Section 7.2.1**). Discharge may be in the form of dry bulk or as a slurry; however, discharges will not be contaminated with hydrocarbons. Discharges may be ~75 tonnes of cement, 150 tonnes of barite and 100 tonnes of bentonite. However, these volumes are conservative (50% greater than the minimum required storage volumes) and discharge volumes (if required) are likely to be much smaller.

Other Contingency Activities

Well Intervention

At some point in the life of all oil and gas wells, parts may require maintenance, repair or replacement. Well intervention activities generally occur within the wellbore and may include the following activities, as well as any other drilling activities described in **Section 3.8**:

- well logging activities (slickline, wireline, coil tubing)
- well testing and flowback
- well intervention and workovers.

Relevant discharge types generated from these activities may include the following:

- subsea control fluid (control of subsea tree)
- completions fluids
- well annular fluids.

These discharges are not expected to be different from those described above under the associated headings.

Well annular fluids may also be discharged during well intervention.

Kill-weight brine may also be used during well suspension or well abandonment, which is a brine (e.g. sodium chloride) of adequate density to control formation pressure.

Detailed Impact Assessment

Assessment of Potential Impacts

Benthic habitats and communities in the PAA are considered to be of low sensitivity and reflective of the wider NWMR. No known regionally significant benthic or infauna habitat occur in the area. The Exmouth Plateau KEF overlaps the PAA, (**Section 4.7**), however the impacts to values and sensitivities of this KEF are not expected due to the highly localised and small physical footprint of the discharges, coupled with the low toxicity of cementing fluids used for the PAA. The likelihood of any significant impact to marine biota is subsequently considered to be low.

Cementing Fluids, Cement and Grout

Impacts of cement on the marine environment are predominantly associated with localised burial of benthic biota in the direct physical footprint of deposition. Cement operations during drilling involve routine and non-routine discharges that can result in turbidity in the water column. Reduction in water quality will be temporary (limited to the cement operational discharges during drilling) and subject to rapid dispersion and dilution by prevailing currents. Modelling of cement discharges for another offshore project (BP Azerbaijan, 2013) was used because it provides an appropriate, but conservative, comparison of the potential extent of exposure from this activity. In this study, two hours after the start of discharge, plume concentrations were determined to be between 5 and 50 ppm with the horizontal and vertical

extents of the plume ~150 m and 10 m, respectively (BP Azerbaijan, 2013). Five hours after ceasing the discharge, modelling indicates that the plume will have dispersed to concentrations <5 ppm.

Cement is the most common material currently used in artificial reefs around the world and is inert. The potential for toxicity is associated with chemical additives that may be added to cement mixtures. Therefore, the toxicity associated with the discharge of cement is limited to the subsurface release of cement (not discharge of slurrified or dry cement). 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. Most cement discharges that will occur during the drilling activities will be at the seabed during cementing of the casing. Once overspill from cementing activities hardens, the physical sediment properties of the area directly adjacent to the well (10–50 m) will be permanently altered (Terrens et.al., 1998). The potential disturbance area is an estimated 0.007 km² per well; giving a total potential disturbance footprint of ~0.21 km² for the proposed wells. Cement discharges at the seabed will overlap with the highest deposition of drill cuttings and drilling fluids. The highly localised physical footprint at the well site 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 significantly less, 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.

Subsea Control Fluids

Subsea control fluids are water-based hydraulic fluids containing ~3% active ingredients. Modelling undertaken for another offshore drilling project indicates that a release of subsea control fluids during function testing is expected to reach a dilution of 3000 times within a maximum displacement of the plume within 98 m distance from the release site (BP Azerbaijan, 2013). Based on this information, concentrations of subsea control fluid are expected to be ~10 ppm within 100 m of the well BOP. Using a conservative ocean current speed of 0.1 m/s, fluids would be expected to travel 100 m (and thus reach concentrations of 10 ppm) in ~16 minutes. Changes in water quality, would comprise the presence of low toxicity contaminants for a short duration and extent in the water column above the seabed.

Given the small volumes associated with this discharge and limited exposure times due to rapid dilution, any potential impact to this aspect is expected to be localised and short term. There is potential for some toxins in the control fluid to accumulate in the sediment, but due to the very small volumes and rapid dispersal, it is considered negligible.

Produced Water

As described above, during well unloading and completion activities about 100 bbl (16 m^3) of produced water will be yielded per well, which may be discharged via the well test water treatment package. Discharge will be instantaneous and of short duration, and will be rapidly dispersed and diluted with negligible impact to water quality.

Subsea – Well Intervention Fluids

Well intervention fluids are typically inert and of low-toxicity. These fluids may include subsea control fluid, completions fluids and well annular fluids. Any change to water quality is expected to be localised and temporary as discharges would be discrete and of short duration. Rapid dilution due to prevailing ocean currents in the open water environment would lead to any changes in water quality such as low toxicity contaminants being temporary (only for the duration of the discharge) and reducing water quality within a short distance of the discharge location.

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity Level	Magnitude	Impact Significance Level
Sediment Quality	Change in sediment quality	Low value (open water)	Minor	Slight (E)
Water Quality	Change in water quality	Low value (open water)	Slight	Negligible (F)
Plankton	Injury/ mortality to fauna	Low value (open water)	Slight	Negligible (F)
Epifauna and Infauna	Injury/ mortality to fauna	Low value	Minor	Slight (E)
KEFs	Change in habitat	High value habitat	Slight	Minor (D)

Overall Impact Significance Level: The overall impact significance level for routine and non-routine discharges of cement, cementing fluids, subsea well fluids, produced water and unused bulk product is D based on Minor impact to the high value receptors (KEFs). Further review on the potential recovery time of sediment quality and

Epifauna/Infauna receptors has increased the significance level from the OPP, but the overall impact significance level (D) is consistent with the level in the OPP.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
No additional controls identified.				
Good Practice				
Subsea control and cementing fluids and additives will have an environmental assessment completed prior to use.	F: Yes. CS: Minimal cost. Standard practice.	Environmental assessment of chemicals will reduce the consequence of impacts resulting from discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for the safe execution of activities and therefore no reduction in likelihood can occur.	Benefits outweigh cost/sacrifice.	Yes **C 8.1**
For drilling and completion fluids, chemical reviews are performed.	F: Yes. CS: Minimal cost. Standard practice.	Regular reviews will ensure chemicals selected for drilling and completions fluids remain ALARP.	Benefits outweigh cost/sacrifice.	Yes **C 7.2**
Bulk operational discharges conducted under MODU's Permit to Work (PTW) system (to operate discharge valves/pumps).	F: Yes. CS: Minimal cost. Standard practice.	The MODU's PTW may slightly reduce the volumes of bulk discharges occurring, but it is unlikely to be significant given that bulk discharges are often operationally required and cannot be eliminated.	Benefits outweigh cost/sacrifice.	Yes **C 7.6**
Displacement, brine, workover or intervention fluids contaminated with hydrocarbons will be treated prior to discharge or contained. If discharge specification not met the fluid will be returned to shore.	F: Yes. CS: Minimal cost. Standard practice.	Ensuring <1% oil content will provide a small reduction in consequence when fluids are discharged to the environment.	Benefits outweigh cost/sacrifice.	Yes **C 7.7**
During well unloading and completion activities, if produced water is not flared, it will be processed through the well test water treatment package	F: Yes. CS: Minimal cost. Standard practice.	Reduced toxicity to the marine environment when discharged.	Benefits outweigh cost/sacrifice.	Yes **C 8.3**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
prior to discharge to the environment.				
Professional Judgement – Eliminate				
Do not use BOP/Xmas tree control fluids.	F: No. BOP and Xmas tree control fluids are critical to the operation of the BOP and Xmas trees. CS: Not considered, control not feasible.	Not considered, control not feasible.	Not considered, control not feasible.	No
Return bulk cement, barite and bentonite for onshore disposal	F: No. The technical requirements to be able to undertake this safely are unresolved due to: • significant risks with tank high pressure differentials to transfer material onshore • high risk with the vessel to waste truck transfer due to tank corrosion concerns and pressure relief valve issues. CS: Not considered. Control not feasible.	Not considered, control not feasible.	Not considered, control not feasible.	No
Options for use of excess bulk cement, bentonite and barite will be managed as per **Figure 6-1** and only discharged to the marine environment as a last option.	F: Yes. However, the cement may not meet the required technical specifications, and hence not be usable. CS: Minor.	Using excess bulk cement for subsequent wells would eliminate the bulk discharge of cement to the marine environment and eliminate the consequence of impacts from such activities.	Benefits outweigh cost/sacrifice	Yes **C 8.4**
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
ALARP Statement: On the basis of the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the impacts of cement, cementing fluids, subsea well fluids and unused bulk products. As no reasonable additional/alternative controls were identified that would further reduce the impacts without grossly disproportionate sacrifice, the impacts and risks are considered ALARP.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.1.13.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall impact significance levels for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to routine and non-routine discharges of cement, cementing fluids, subsea well fluids, produced water and unused bulk product have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during consultation.
Acceptability Statement: The impact assessment has determined that, given the adopted controls, cement, cementing fluids, subsea well fluids and unused bulk products discharges are unlikely to result in an impact greater than minor. Further opportunities to reduce the impacts have been investigated above. The adopted controls are considered good practice. The potential impacts are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the impacts of these discharges to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 1 Undertake Petroleum Activities Program in a manner that 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 results. **EPO 11** Undertake Petroleum Activities Program in a manner that does not result in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health. **EPO 12** Undertake Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of plankton including its life cycle and spatial distribution. **EPO 13**	**C 8.1** Subsea control and cementing fluids and additives will have an environmental assessment completed prior to use.	**PS 7.1** All chemicals intended or likely to be discharge into the marine environment reduced to ALARP using the chemical assessment process.	**MC 7.1.1** Records demonstrate chemical selection, assessment and approval process for selected chemicals is followed.
	C 7.2 See **Section 6.7.7**	**PS 7.2** See **Section 6.7.7**	**MC 7.2.1** See **Section 6.7.7**
	C 7.6 See **Section 6.7.7**	**PS 7.6** See **Section 6.7.7**	**MC 8.2.1** See **Section 6.7.7**
	C 7.7 See **Section 6.7.7**	**PS 7.5** See **Section 6.7.7**	**MC 7.5.1** See **Section 6.7.7**
	C 8.3 During well unloading and completion activities, if produced water is not flared, it will be processed through the well test water filtration treatment package prior to discharge to the environment.	**PS 8.3** Produced water discharged to the marine environment achieves discharge specification of <30 ppm	**MC 8.3.1** Records demonstrate that formation water met discharge specification.
	C 8.4 Options for use of excess bulk cement, bentonite and barite will be managed as per **Figure 6-1** and only discharged to the marine	**PS 8.4** No bulk cement, bentonite or barite discharged without documented ALARP assessment	**MC 8.4.1** Records demonstrate that, prior to discharge of excess bulk cement, bentonite or barite options for use were assessed.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
Undertake 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 in an area defined as a Key Ecological Feature. **EPO 14** Undertake Petroleum Activities Program in a manner that prevents substantial change in sediment quality, which may adversely impact biodiversity, ecological integrity, social amenity or human. **EPO 15** Undertake Petroleum Activities Program in a manner that prevents significant impacts on the values of the Exmouth Plateau KEF.	environment as a last option.		

6.8 Unplanned Activities (Accidents, Incidents, Emergency Situations)

6.8.1 Quantitative Spill Risk Assessment Methodology

6.8.1.1 Quantitative Hydrocarbon Spill Modelling

Quantitative hydrocarbon spill modelling was performed by RPS, on behalf of Woodside, using a three-dimensional hydrocarbon spill trajectory and weathering model, SIMAP (Spill Impact Mapping and Analysis Program). The model is designed to simulate the transport, spreading and weathering of specific hydrocarbon types under different environmental conditions (both meteorological and oceanographic). Near-field subsurface discharge modelling was performed using OILMAP, which predicts the droplet sizes that are generated by the turbulence of the discharge as well as the centreline velocity, buoyancy, width and trapping depth (if any) of the rising gas and oil plumes. The OILMAP output parameters were used as input into SIMAP.

The algorithms in the SIMAP model are based on the best available scientific knowledge and are updated when necessary in response to significant advances in knowledge. Recent improvements have been implemented to the entrainment algorithm, which have been adjusted to implement the findings of published data based on field research performed during the Macondo spill event in the Gulf of Mexico (Spaulding et al., 2017; Li et al., 2017; French McCay et al., 2018).

Stochastic modelling was conducted for this study, which compiled data from 200 hypothetical spills under different environmental conditions to determine the widest extent of possible oil dispersion. The environmental conditions for each of the hypothetical spills were selected randomly from an historic time-series of wind and current data representative of the study area. Results of the replicate simulations were then statistically analysed and mapped to define contours of percentage probability of contact at identified thresholds around the hydrocarbon release point. The simulations that show something unusual or unexpected make an important contribution to the overall outcomes and fate of the hydrocarbon.

The model simulates surface releases and uses the unique physical and chemical properties of a representative hydrocarbon type to calculate rates of evaporation and viscosity change, including the tendency to form oil-in-water emulsions. Moreover, the unique transport and dispersion of surface slicks and in-water components (entrained and dissolved) are modelled separately. Thus, the model can be used to understand the wider potential consequences of a spill, including direct contact of hydrocarbons due to surface slicks (floating hydrocarbon) and exposure of organisms to entrained and dissolved aromatic hydrocarbons in the water column. The model also calculates the accumulation of hydrocarbon mass that arrives on each section of shoreline over time, taking into account any mass that is lost to evaporation and/or subsequent removal by current and wind forces.

All hydrocarbons spill modelling assessments performed by RPS undergo initial sensitivity modelling to determine appropriate time to add to the simulation after the cessation of the spill. The amount of time following the spill is based on the time required for the modelled concentrations to practically drop below threshold concentrations anywhere in the model domain in the test cases.

6.8.1.2 Worst-case Scenario

In assessing the potential impacts of an unplanned hydrocarbon release, representative worst-case scenarios (in terms of volume and location) were assessed. A summary of the credible hydrocarbon spill scenarios that could occur during Scarborough drilling are provided in **Table 6-9**.

Table 6-9: Credible hydrocarbon spill scenarios

Scenario	Hydrocarbon type	Maximum credible volume	Location
Vessel collision resulting in rupture of a tank	MDO	250 m^3	Within PAA

Scenario	Hydrocarbon type	Maximum credible volume	Location
Loss of well integrity	Dry gas	No or negligible liquid hydrocarbon	Well locations
Loss of containment during bunkering	MDO	50 m^3	MODU location

For the Petroleum Activities Program, the worst-case scenario was identified to be an instantaneous surface release of 250 m^3 of MDO, representing loss of vessel fuel tank integrity following a collision. As the worst-case scenario, the following assessment of impacts will also address the potential impacts of other credible lesser releases.

6.8.1.3 Environment that May Be Affected and Hydrocarbon Contact Thresholds

The outputs of the quantitative hydrocarbon spill modelling are used to assess the environmental risk, if a credible hydrocarbon spill scenario occurred, by delineating which areas of the marine environment could be exposed to hydrocarbon levels exceeding hydrocarbon threshold concentrations. The summary of all the locations where hydrocarbon thresholds could be exceeded by any of the simulations modelled is defined as the 'environment that may be affected' (EMBA), which is driven by the worst-case credible hydrocarbon spill scenario, which, in this instance, is the loss of 250 m^2 in the event of a vessel collision resulting in a fuel tank rupture.

As the weathering of different fates of hydrocarbons (surface, entrained and dissolved) differs due to the influence of the metocean mechanism of transportation, the EMBA combines the potential spatial extent of the different fates.

The EMBA covers a larger area than the area that is likely to be affected during any single spill event, as the model was run for a variety of weather and metocean conditions. The EMBA therefore represents the total extent of all the locations where hydrocarbon thresholds could be exceeded from all modelling runs.

Surface and accumulated shoreline hydrocarbon concentrations are expressed as grams per square metre (g/m^2), with entrained and dissolved aromatic hydrocarbon concentrations expressed as parts per billion (ppb). A conservative approach adopting accepted contact thresholds that are documented to impact the marine environment are used to define the EMBA. These hydrocarbon thresholds are presented in **Table 6-10** and described in the following subsections.

Woodside recognises that hydrocarbons may be present beyond the ecological impact EMBA at low concentrations that may be visible but are not expected to cause ecological impacts. The threshold for visible surface oil (1 g/m^2) has therefore been used to define an additional boundary within which socio-cultural impacts to the visual amenity of the marine environment may occur. This area is referred to as the socio-cultural EMBA. Any ecological impacts from dissolved and entrained hydrocarbons above prescribed thresholds, as in **Table 6-10**, may also result in socio-cultural impacts. Potential impacts to socio-cultural values assessed within these EMBAs include:

- protected areas
- national and Commonwealth Heritage Listed places
- tourism and recreation
- fisheries.

Table 6-10:Summary of environmental impact thresholds applied to the quantitative hydrocarbon spill risk modelling results

Hydrocarbon Type	EMBA				Socio-cultural EMBA
	Surface Hydrocarbon (g/m^2)	Entrained hydrocarbon (ppb)	Dissolved aromatic hydrocarbon (ppb)	Accumulated hydrocarbons (g/m^2)	Surface Hydrocarbon (g/m^2)
Diesel	10	100	50	100	1

6.8.1.4 Surface Hydrocarbon Threshold Concentrations

The spill modelling outputs defined the EMBA for surface hydrocarbons resulting from a spill (contact on surface waters) using a threshold of ≥10 g/m² for diesel. This threshold is used to define an area within which ecological impacts to the marine environment may occur from surface hydrocarbons. It represents the minimum oil thickness (0.01 mm) at which ecological impacts (e.g. to birds and marine mammals) are expected to occur.

Thresholds for registering biological impacts resulting from contact of surface slicks have been estimated by different researchers at about 10–25 g/m² (French et al., 1999; Koops et al., 2004; National Oceanic and Atmospheric Administration, 1996). Potential impacts of surface slick concentrations in this range for floating hydrocarbons may include harm to seabirds through ingestion from preening of contaminated feathers, or the loss of the thermal protection of their feathers. The 10 g/m² threshold is the reported level of oiling to instigate impacts to seabirds and is also applied to other wildlife, though it is recognised that 'unfurred' animals, where hydrocarbon adherence is less, may be less vulnerable. 'Oiling' at this threshold is taken to be of a magnitude that can cause a response from the most vulnerable wildlife such as seabirds. Due to weathering processes, surface hydrocarbons will have a lower toxicity due to change in their composition over time. Potential impacts to shoreline sensitive receptors may be markedly reduced in instances where there is extended duration until contact.

A surface threshold of 10 g/m² represents a 'dull metallic colour' (Bonn Agreement, 2015) (**Table 6-11**). A lower concentration of 1 g/m^2 is used to define an area within which social-cultural impacts to the visual amenity of the marine environment may occur. The surface threshold of ≥1 g/m² is based on the relationship between film thickness and appearance (Bonn Agreement oil appearance code, 2015), and represents a 'rainbow sheen' appearance. This threshold is considered below levels which would cause ecological impacts, and instead represents potential for visual amenity impacts. This threshold area is referred to as the 'socio-cultural EMBA'.

Table 6-11: The Bonn Agreement oil appearance code

Appearance (following Bonn visibility descriptors)	Mass per area (g/m^2)	Thickness (µm)	Volume per area (L/km^2)
Discontinuous true oil colours	50 to 200	50 to 200	50,000 to 200,000
Dull metallic colours	5 to 50	5 to 50	5000 to 50,000
Rainbow sheen	0.30 to 5.00	0.30 to 5.00	300 to 5000
Silver sheen	0.04 to 0.30	0.04 to 0.30	40 to 300

6.8.1.5 Accumulated Hydrocarbon Threshold Concentrations

Owens and Sergy (1994) define accumulated hydrocarbon <100 g/m² to have an appearance of a stain on shorelines. French-McCay (2009) defines accumulated hydrocarbons ≥100 g/m² to be the threshold that could impact the survival and reproductive capacity of benthic epifaunal invertebrates

living in intertidal habitat. A threshold of ≥100 g/m² has been adopted as the threshold for shoreline accumulation and has been included in the EMBA. Further, any ecological impacts at the shoreline accumulation threshold may also result in socio-cultural impacts.

6.8.1.6 Dissolved Aromatic Hydrocarbon Threshold Concentrations

Dissolved hydrocarbons present a narcotic effect resulting from uptake into the tissues of marine organisms. This effect is additive, increasing with exposure concentration or with time of exposure (French-McCay, 2002; NRC, 2005). The dissolved aromatic threshold of 50 ppb has been selected as a medium level threshold to approximate the potential toxic effects, particularly sublethal effects to sensitive species, as consistent with the NOPSEMA Oil Spill Modelling Guidance Bulletin (NOPSEMA, 2019).

6.8.1.7 Entrained Hydrocarbon Threshold Concentrations

This threshold is used to define an area within which ecological impacts to the marine environment may occur from entrained hydrocarbons. Therefore, it may also be associated with socio-cultural impacts.

Entrained hydrocarbons present a number of possible mechanisms for toxic exposure to marine organisms. The entrained hydrocarbon droplets may contain soluble compounds, hence have the potential for generating elevated concentrations of dissolved aromatic hydrocarbons (e.g. if mixed by breaking waves against a shoreline). Physical and chemical effects of the entrained hydrocarbon droplets have also been demonstrated through direct contact with organisms; for example, through physical coating of gills and body surfaces, and accidental ingestion (National Research Council, 2005).

The entrained threshold has been selected to be consistent with the NOPSEMA Oil Spill Modelling Guidance Bulletin (NOPSEMA, 2019). An entrained threshold of 100 ppb is considered to be appropriate given the oil characteristics for informing potential impacts to receptors.

6.8.1.8 Scientific Monitoring

A planning area for scientific monitoring is also described in Section 5.6 of the Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**). This planning area has been set with reference to the low exposure entrained value of 10 ppb detailed in NOPSEMA Bulletin #1 Oil Spill Modelling (2019).

A scientific monitoring program would be activated following a Level 2 or 3 unplanned hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors. This would consider receptors at risk (ecological and socio-economic) for the entire predicted EMBA and in particular, any identified Pre-emptive Baseline Areas (PBAs) for the worst-case credible spill scenario(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

Relevant Activities	Existing Environment	Consultation
Vessel Operations – **Section 3.9.2** MODU Operations – **Section 3.9.1**	Physical Environment – **Section 4.2** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6** Protected Places – **Section 4.8** Socio-economic Environment – **Section 4.9**	Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Loss of hydrocarbons to marine environment due to a vessel collision (e.g. project vessels or other marine users)			X		X	X	X	A	D	1	M	LCS GP PJ	Broadly Acceptable	EPO 16

Description of Source of Impact/Risk

Background

The temporary presence of the MODU and project vessels in the PAA will result in a navigational hazard for commercial shipping within the immediate area (as discussed in **Section 6.7.4**). This navigational hazard could result in a third party vessel colliding with the MODU or a project vessel which could release hydrocarbons.

A MODU will have a total marine diesel capacity of approximately 966 to 1400 m^3 (up to 3640 m^3 for DP MODU), that is distributed through a number of isolated tanks. MODU fuel tanks are located in the MODU pontoons, typically located on the inner sides of pontoons and can be over 10 m below the waterline.

A typical project vessel (e.g. an installation or subsea support vessel) is likely to have multiple isolated marine diesel tanks distributed throughout the hull of the vessel. The marine diesel storage capacity of a support vessel can be in the order of 1000 m^3 (total) that is distributed through multiple isolated tanks typically located mid-ships and can range in typical size from 22 to 105 m^3. Subsea installation vessels can have fuel tank sizes ranging from 111 m^3–247 m^3.

In the unlikely event of a vessel collision involving a project vessel during the Petroleum Activities Program, the vessel will have the capability to pump marine diesel from a ruptured tank to a tank with spare volume in order to reduce the potential volume of fuel released to the environment. A volume of 250 m^3 of MDO is considered an appropriate worst-case for a single fuel tank, based on existing facilities.

Industry Experience

Registered vessels or foreign flag vessels in Australian waters are required to report events to the Australian Transport Safety Bureau (ATSB), AMSA or Australian Search and Rescue (AusSAR).

From a review of the ATSB marine safety and investigation reports, one vessel collision occurred in 2011/12 that resulted in a spill of 25–30 L of oil into the marine environment as a result of a collision between a tug and support vessel off Barrow Island. Two other vessel collisions occurred in 2010, one in the port of Dampier, where a support vessel collided

with a barge being towed. Minor damage was reported and no significant injury to personnel or pollution occurred. The second 2010 vessel collision involved a vessel under pilot control in port connecting with a vessel alongside a wharf, causing it to sink. No reported pollution resulted from the sunken vessel. These incidents demonstrate the likelihood of only minor volumes of hydrocarbons being released during the highly unlikely event of a vessel collision.

From 2010 to 2011, the ATSB's annual publication defines the individual safety action factors identified in marine accidents and incidents: 42% related to navigation action (2011). Of those, 15% related to poor communication and 42% related to poor monitoring, checking and documentation (ATSB, 2011). The majority of these related to the grounding instances.

Credible Scenario

For a vessel collision to result in the worst-case scenario of a hydrocarbon spill potentially impacting an environmental receptor, several factors must align as follows:

- The identified causes of vessel interaction must result in a collision.
- The collision must have enough force to penetrate the vessel hull.
- The collision must be in the exact location of the fuel tank.
- The fuel tank must be full, or at least of volume which is higher than the point of penetration.

The environmental risk analysis and evaluation identified and assessed a range of potential scenarios that could result in a loss of vessel structural integrity, resulting in damage to fuel storage tank(s) and a loss of marine diesel to the marine environment (**Table 6-12**). The scenarios considered damage to single and multiple fuel storage tanks in a project vessel and MODU due to dropped objects and various combinations of vessel to vessel and vessel to MODU collisions. In summary:

- It is not a credible scenario that the total storage volume of the MODU would be lost, as fuel is stored in more than one tank.
- It is not a credible scenario that a storage tank on the MODU would be damaged due to the location of the tanks within the hull, behind the bilge tanks, below the waterline.
- It is not a credible scenario that a collision between the support vessel and MODU would damage any storage tanks, due to the location of the tanks on both vessel types and secondary containment.
- It is highly unlikely that the full volume of the largest storage tank on a support vessel would be lost.

The last scenario considered was a collision between the support vessel or installation vessel with a third-party vessel (i.e. commercial shipping, other petroleum related vessels and commercial fishing vessels). This was assessed as being credible but highly unlikely, given the standard vessel operations and equipment in place to prevent collision at sea, the standby role of a support vessel (low vessel speed) and its operation in close proximity to the MODU (exclusion areas), and the construction and placement of storage tanks. Potential spill volumes for these scenarios are summarised in the **Table 6-12.**

Given the offshore location of the PAA, vessel grounding is not considered a credible risk.

Table 6-12: Summary of credible hydrocarbon spill scenario as a result of vessel collision

Scenario	Hydrocarbon Volumes	Preventative and Mitigation Controls	Credibility
Breach of MODU fuel tanks due to vessel collision.	MODU has a fuel oil storage capacity of about 966 to 1400 m^3 (up to 3640 m^3 for DP MODU), distributed through multiple tanks.	Fuel tanks are located on the inside of pontoons and protected by location below water line, protection from other tanks, e.g. bilge tanks. The draught of vessel and location of tanks in terms of water line prevent the tanks from being breached.	Not credible Due to location of tanks.
Breach of support vessel fuel tanks due to collision with MODU.	Activity support vessel has multiple marine diesel tanks typically ranging between 22 to 105 m^3 each.	Typically, double wall tanks that are located mid ship (not bow or stern). Slow support vessel speeds when in proximity to MODU.	Not credible Collision with MODU at slow speeds is highly unlikely and, if it did occur, is highly unlikely to result in a breach of support vessel (low energy contact from slow moving vessel).

Breach of installation vessel fuel tanks due to collision with third-party vessel, including commercial shipping and fishing.	Largest volume of a single tank is likely to be <250 m^3.	Tank locations midship (not bow or stern).	Credible Installation vessel – third-party vessel collision could potentially result in the release from a fuel tank.
Breach of project support vessel fuel tanks due to support vessel – other vessel collision including commercial shipping/fisheries.	Activity support vessel has multiple marine diesel tanks typically ranging between 22 to 105 m^3 each.	Typically, double wall tanks that are located midship (not bow or stern). Vessels are not anchored and steam at low speeds when relocating within the PAA or providing stand-by cover. Normal maritime procedures would apply during such vessel movements.	Credible Activity support vessel – other vessel collision could potentially result in the release from a fuel tank.

Quantitative Hydrocarbon Risk Assessment

To inform the impact assessment, quantitative hydrocarbon spill modelling was undertaken for the worst-case hydrocarbon release scenario (RPS, 2019). It is not practicable for spill modelling to be undertaken at every potential spill location within the PAA. The release location was selected by considering locations that would:

- have the greatest potential environmental consequence to the receiving environment (closest to sensitive receptors)
- be considered at greater risk of a spill event.

Accordingly, existing modelling for a spill of MDO within WA-61-L at the approximate location of the proposed FPU (the installation and operation of the FPU is outside the scope of this Activity). The FPU location is considered conservative, as it is located closer to shoreline receptors than the wells. The coordinates of the location are detailed in **Table 6-13**.

Table 6-13: Spill release locations for 250 m^3 MDO spill

Location	Coordinates
Location of the FPU	19° 55'33.60'' S 113° 14' 31.20''E

Hydrocarbon Characteristics

MDO is a non-persistent fuel oil and contains a small proportion of heavy components (or low volatile components) that tend to physically entrain into the upper water column in the presence of moderate winds (i.e. >12 knots) and breaking waves but may re-float to the surface if these conditions abate. In the event of a substantial spill, the heavier components can remain entrained or remain on the sea surface for an extended period. The characteristics of the marine diesel are given in **Table 6-14**.

When spilt 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).

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 6-2** and **Figure 6-3**). 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 6-14: Characteristics of the marine diesel

Hydrocarbon type	Initial density (g/cm³) at 25 °C	Viscosity (cP @ 25 °C)	Component BP (°C)	Volatiles %<180	Semi volatiles % 180–265	Low volatility (%) 265-380	Residual (%) >380
				Non-Persistent			Persistent
Marine diesel	0.829	4.0	% of total	6	34.6	54.4	5

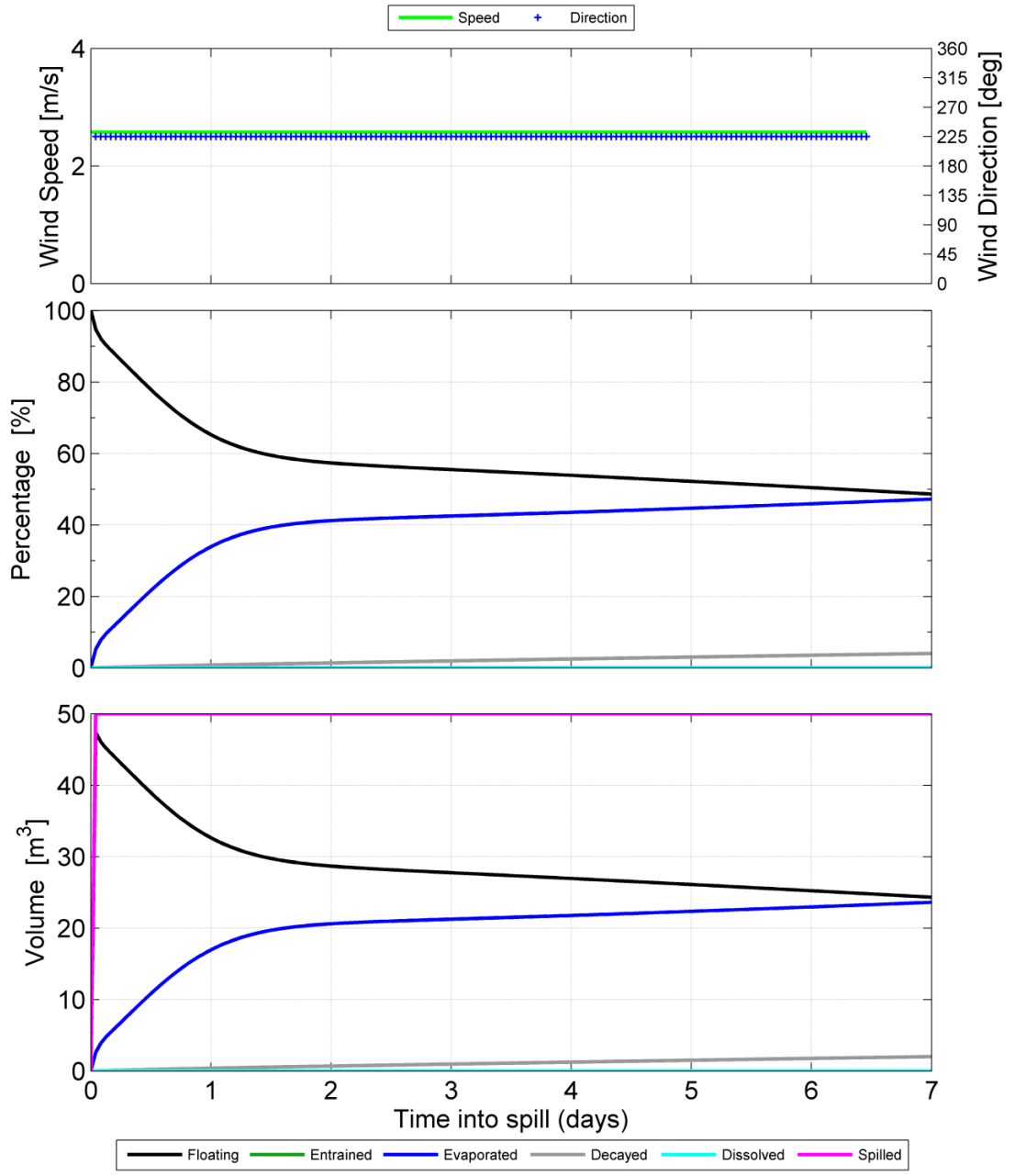


Figure 6-2: Mass balance plot representing, as proportion (middle panel) and volume (bottom panel), the weathering of marine diesel spilled onto the water surface as a one-off release (50 m^3 over one hour) and subject to a constant 5 kn (2.6 m/s) wind at 27 °C water temperature and 25 °C air temperature

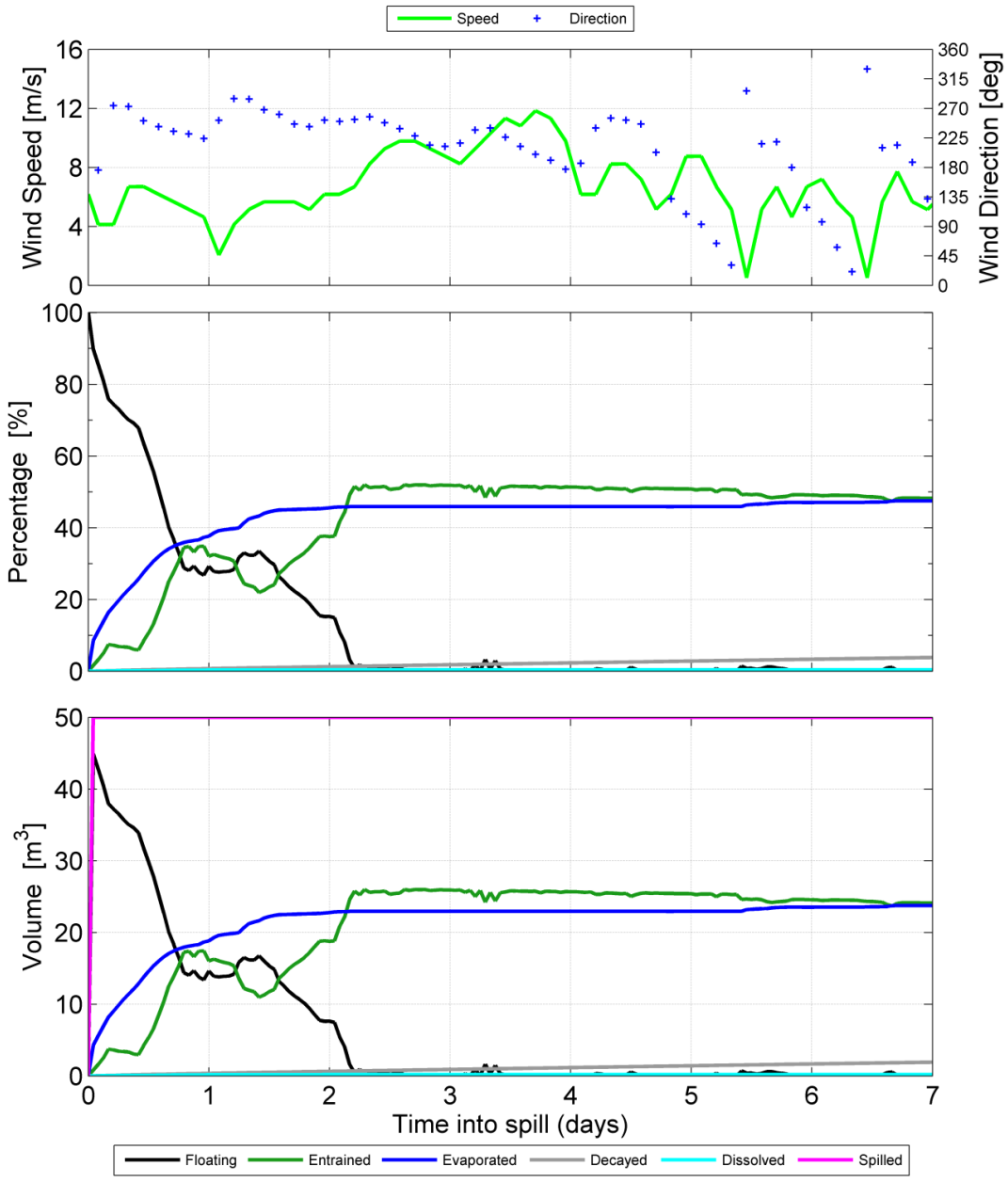


Figure 6-3: Proportional mass balance plot representing weathering of a surface spill of marine diesel as a one-off release (50 m^3 over 1 hour) and subject to variable wind at 27 °C water temperature and 25 °C air temperature

(Source: RPS, 2019)

Detailed Impact Assessment

Assessment of Potential Impacts

Environment that May Be Affected

Surface Hydrocarbons: If this scenario occurred, a surface hydrocarbon slick would form down-current of the release location, with the trajectory dependent on prevailing wind and current conditions at the time. The modelling indicates

that the EMBA would be confined to open water, with surface hydrocarbons extending up to about 52 km from the release location at or above the 10 g/m² impact threshold. No contact with sensitive receptor locations is predicted.

A socio-cultural EMBA for surface hydrocarbons which includes the threshold for visible surface hydrocarbons of 1 g/m^2 may extend up to about 58 km from the release site.

Entrained Hydrocarbons: Quantitative hydrocarbon spill modelling results are shown in **Table 6-15**. If this vessel collision scenario occurred, a plume of entrained hydrocarbons would form down-current of the release location, with the trajectory dependent on prevailing current conditions at the time. The modelling indicates that locations exposed to entrained hydrocarbons at or above the threshold concentration of 100 ppb are restricted to offshore areas up to about 236 km from the release site. The only receptor predicted to be contacted by entrained oil concentrations at the 100 ppb threshold was Gascoyne Marine Park (**Table 6-15**). The maximum entrained oil concentration forecast for Gascoyne Marine Park was 998 ppb.

Dissolved Hydrocarbons: Dissolved aromatic hydrocarbons at concentrations equal to or greater than the 50 ppb threshold are predicted to be found up to 145 km from the spill site. No contact with sensitive receptor locations is predicted.

Accumulated Hydrocarbons: Accumulated hydrocarbons above threshold concentrations (≥100 g/m²) were not predicted by the modelling to occur at any location.

Water Quality

The highly-mixed, open water location and characteristics of hydrocarbons released will result in rapid evaporation and dispersion. However, MDO contains a small proportion of heavy components (or low-volatile components) that tend to physically entrain into the upper water column in the presence of moderate winds (i.e. >12 knots) and breaking waves but may resurface if these conditions abate. If a substantial spill occurred, the heavier components could remain entrained or remain on the sea surface for an extended period and travel significant distances from the source, albeit at low concentrations.

The hydrocarbon characteristics of MDO mean that in variable wind conditions, it is expected that 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%) (RPS, 2019).

Given the control measures in place to prevent unplanned hydrocarbon releases, and the offshore location of Scarborough and hydrocarbon characteristics, the change to water quality resulting from unplanned hydrocarbon releases will be temporary and habitat or ecosystem function or integrity will not be impacted.

Based on the detailed risk evaluation, the magnitude of potential impact of a change in water quality from unplanned release of MDO is assessed as slight. Receptor sensitivity of water quality is low (low value, open ocean), and therefore the consequence of a release of hydrocarbons on water quality is Negligible (F).

Plankton

Injury/mortality to planktonic species may occur due to a change in water quality following an unplanned hydrocarbon release.

Primary production by plankton (supported by sporadic upwelling events in the offshore waters of the NWS) is an important component of the primary marine food web. Planktonic communities are generally mixed, including phytoplankton (cyanobacteria and other microalgae) and secondary consuming zooplankton, such as crustaceans (e.g. copepods), and the eggs and larvae of fish and invertebrates (meroplankton).

Exposure to hydrocarbons in the water column (entrained or dissolved) can change species composition, with declines or increases in one or more species or taxonomic groups (Batten et al., 1998). Phytoplankton may also experience decreased rates of photosynthesis (Tomajka, 1985). For zooplankton, such as fish, coral and invertebrate eggs and larvae, direct effects of contamination may include toxicity, suffocation, changes in behaviour, or environmental changes that make them more susceptible to predation. Impacts on plankton communities are likely to occur in areas where entrained or dissolved aromatic hydrocarbon threshold concentrations are exceeded, but communities are expected to recover relatively quickly (within weeks or months). This is due to high population turnover, with copious production within short generation times that also buffers the potential for long-term (i.e. years) population declines (International Tanker Owners Pollution Federation, 2011a).

When first released, MDO has a higher toxicity due to the presence of the volatile components. Plankton making contact close to the spill source at the time of the spill may be impacted, however, due to low planktonic productivity within the NWMR it is unlikely that large populations of plankton will be affected at the sea surface above thresholds as this is only predicted for the first few days after the spill.

Given hydrocarbon characteristics, expected rapid weathering and then degradation of the entrained component to below impact thresholds, and relatively quick recovery times of plankton, unplanned releases from Scarborough are not expected to have a substantial adverse effect on plankton life cycle and spatial distribution.

There are no Management Plans, Recovery Plans or Conservation Advice related to plankton.

Based on the detailed risk evaluation, the magnitude of potential impact to plankton from unplanned release of MDO is assessed as slight. Receptor sensitivity of plankton is low (low value, open water), and therefore the consequence of a release of hydrocarbons on plankton is Negligible (F).

Fish

Injury/mortality to fish species may occur due to a change in water quality following an unplanned hydrocarbon release. Any surface and subsurface hydrocarbon release could impact fish, as they are widely dispersed throughout the water column.

Impacts to sharks and rays may occur through direct contact with hydrocarbons and contaminate the tissues and internal organs, either through direct contact or via the food chain (consumption of prey). As gill breathing organisms, sharks and rays may be vulnerable to toxic effects of dissolved hydrocarbons (entering the body via the gills) and entrained hydrocarbons (coating of the gills inhibiting gas exchange). In the offshore environment, it is probable that pelagic shark species are able to detect and avoid hydrocarbons by swimming into deeper water or away from the affected areas.

Fish mortalities are rarely observed to occur as a result of hydrocarbon spills (International Tanker Owners Pollution Federation, 2011b). This has generally been attributed to the possibility that pelagic fish are able to detect and avoid surface waters underneath hydrocarbon spills by swimming into deeper water or away from the affected areas. Fish that have been exposed to dissolved aromatic hydrocarbons are capable of eliminating the toxicants once placed in clean water; hence, individuals exposed to a spill are likely to recover (King et al., 1996). Where fish mortalities have been recorded, the spills (resulting from the groundings of the tankers Amoco Cadiz in 1978 and the Florida in 1969) have occurred in sheltered bays.

Laboratory studies have shown that adult fish can detect hydrocarbons in water at very low concentrations, and large numbers of dead fish have rarely been reported after hydrocarbon spills (Hjermann et al., 2007). This suggests that juvenile and adult fish can avoid water contaminated with high concentrations of hydrocarbons.

The effects of exposure to oil on the metabolism of fish appear to vary according to the organs involved, exposure concentrations and route of exposure (waterborne or food intake). Oil reduces the aerobic capacity of fish exposed to aromatics in the water, and to a lesser extent affects fish consuming contaminated food (Cohen et al., 2005). The liver, a major detoxification organ, appears to be where anaerobic activity is most impacted, probably increasing anaerobic activity to help eliminate ingested oil from the fish (Cohen et al., 2005).

Fish are perhaps most susceptible to the effects of spilled oil in their early life stages, particularly during egg and planktonic larval stages, which can become entrained in spilled oil. Contact with oil droplets can mechanically damage feeding and breathing apparatus of embryos and larvae (Fodrie and Heck, 2011). The toxic hydrocarbons in water can result in genetic damage, physical deformities and altered developmental timing for larvae and eggs exposed to even low concentrations over prolonged timeframes (days to weeks) (Fodrie and Heck, 2011). More subtle, chronic effects on the life history of fish because of exposure in early life stages to hydrocarbons include disruption to complex behaviour such as predator avoidance, reproductive and social behaviour (Hjermann et al., 2007). Prolonged exposure of eggs and larvae to weathered concentrations of hydrocarbons in water has also been shown to cause immunosuppression and allows expression of viral diseases (Hjermann et al., 2007).

Adult fish exposed to low hydrocarbon concentrations are likely to metabolise the hydrocarbons and excrete the derivatives, with studies showing that fish can metabolise petroleum hydrocarbons and that accumulated hydrocarbons are released from tissues when the fish is returned to hydrocarbon-free sea water. Several fish communities in these areas are demersal (i.e. living closer to the seabed) where concentrations of entrained hydrocarbons will be lower; any impacts are expected to be highly localised.

Marine fauna with gill-based respiratory systems are expected to have higher sensitivity to exposures of entrained contaminants. Therefore, the receptors most susceptible to dissolved hydrocarbons are fish and whale sharks. Whale sharks are not expected to be present in the EMBA given its offshore location (based on Protected Matters Search results). MDO does not tend to have a high proportion that dissolves – all three release locations predict low probabilities and low concentration to intersect with sensitive receptors.

When first released, MDO has a higher toxicity due to the presence of the volatile components. Individual fish making contact close to the spill source at the time of the spill may be impacted. Fish presence is generally concentrated in waters closer to shore. Although fish presence may occur throughout the entire PAA and defined EMBA, it is unlikely that a large number of fish will be affected at the sea surface above thresholds, as this is only <1-15% remaining on the surface after 7 days. Mobile transient fauna is not expected to remain within entrained hydrocarbon plumes for an extended time. Therefore, no acute impacts or risks associated with entrained exposures from an unplanned MDO release are expected. Any impacts from this exposure are expected to result in localised short-term effects to limited small numbers of juvenile fish and prey species (larvae and planktonic organisms), which are not expected to affect population viability and recruitment of fish. Consequently, diverse fish assemblages are not expected to be significantly impacted.

Although potential impacts could include mortality or sub-lethal injury/illness of pelagic fish, this would be expected to comprise a small proportion of the resident and transitory population. Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds and degradation of entrained fractions, and the mobile transient nature of fish, unplanned releases of MDO are not expected to have a substantial adverse effect on the population or spatial distribution of fish; or substantially modify, destroy or isolate an area of important habitat for migratory species. Additionally, unplanned releases will not seriously disrupt the lifecycle of an ecologically significant proportion of any migratory fish species.

There are specific conservation advices for some fish species which identify habitat degradation/modification as a key threat. While for some species there are specific requirements (e.g. sawfish), no specific requirements have been identified for relevant species (i.e. species identified as having potential to occur in the EMBA).

Based on the detailed risk evaluation, the magnitude of potential impacts to fish from unplanned hydrocarbon releases is assessed as slight. Receptor sensitivity of fish is high (high value fauna), and therefore the consequence of a release of hydrocarbons on fish is Minor (D).

Marine Mammals

A change in marine fauna behaviour or injury/mortality to marine mammals may occur due to a change in water quality after an unplanned hydrocarbon release.

Air-breathing fauna such as marine mammals are most at risk from surface exposures due to the high volatile components. Marine mammals that have direct physical contact with surface, entrained or dissolved aromatic hydrocarbons may suffer surface fouling, ingest hydrocarbons and inhale toxic vapours. This may result in the irritation of sensitive membranes such as the eyes, mouth, digestive and respiratory tracts and organs, impairment of the immune system or neurological damage (Helm et al., 2015). If prey (fish and plankton) are contaminated, this can result in the absorption of toxic components of the hydrocarbons (PAHs).

In a review of cetacean observations in relation to a number of large-scale hydrocarbon spills, Geraci (1988) found little evidence of mortality associated with hydrocarbon spills. However, behavioural disturbance (i.e. avoiding spilled hydrocarbons) was observed in some instances for several species of cetaceans. This suggests that cetaceans are able to detect and avoid surface slicks. While this reduces the potential for physiological impacts from contact with hydrocarbons, active avoidance of an area may disrupt behaviours such as migration, or displace individuals from important habitat, such as foraging, resting or breeding.

When first released, MDO has a higher toxicity due to the presence of the volatile components. Individual cetaceans making contact close to the spill source at the time of the spill may be impacted. Cetacean presence is generally more concentrated in waters closer to shore with the exception of false killer whales. Although cetacean presence may occur throughout the PAA and defined EMBA, it is unlikely that a large number of cetaceans will be affected at the sea surface above thresholds, as dependant on wind conditions, weathering predicts that only <1–15% of hydrocarbon remains on the surface after about seven days (RPS, 2019d).

Although potential impacts could include mortality or sub-lethal injury/illness of marine mammals, this would be expected to comprise a small proportion of the resident and transitory population. Given hydrocarbon characteristics, expected rapid weathering of surface oil to below impact thresholds, and the mobile transient nature of marine mammals and potential avoidance behaviour, unplanned releases of MDO are not expected to have a substantial adverse effect on the population or spatial distribution of marine mammals; or substantially modify, destroy or isolate an area of important habitat for migratory species. Additionally, unplanned releases will not seriously disrupt the lifecycle of an ecologically significant proportion of any migratory species.

There are specific conservation advices for some species which identify noise interference and vessel disturbance as key threats. While hydrocarbon spills are not explicitly identified as a threat, the sei whale conservation advice does include the management of physical disturbance and development activities. No explicit management actions are identified relevant to hydrocarbon spills.

Potential impacts are unlikely to lead to mortality or sub-lethal injury/illness of an EPBC-listed protected species. Based on the detailed risk evaluation, the magnitude of potential impacts to marine mammals (focused on changes in behaviour) from unplanned MDO releases is assessed as slight. Receptor sensitivity of marine mammals is high (high value fauna), and therefore the consequence of a release of hydrocarbons on marine mammals is Minor (D).

Marine Reptiles

A change in marine fauna behaviour or injury/mortality to marine reptiles may occur due to a change in water or sediment quality following an unplanned hydrocarbon release.

Marine reptiles can be impacted by surface exposure when they surface to breathe, and by shoreline accumulation of hydrocarbons when breeding and nesting.

Hydrocarbons in surface waters may impact turtles when they surface to breathe and inhale toxic vapours. Their breathing pattern, involving large ‘tidal’ volumes and rapid inhalation before diving, results in direct exposure to petroleum vapours which are the most toxic component of the hydrocarbon spill (Milton and Lutz, 2003). This can lead to lung damage and congestion, interstitial emphysema, inhalant pneumonia and neurological impairment (National Oceanic and Atmospheric Administration, 2010). Contact with entrained hydrocarbons can result in hydrocarbon adherence to body surfaces, irritating mucous membranes in the nose, throat and eyes, leading to inflammation and infection (Gagnon and Rawson, 2010).

Adult sea turtles exhibit no avoidance behaviour when they encounter hydrocarbon spills (National Oceanic and Atmospheric Administration, 2010). Oiling can also irritate and injure skin, which is most evident on pliable areas such as the neck and flippers (Lutcavage et al., 1995). A stress response associated with this exposure pathway includes an increase in the production of white blood cells, and even a short exposure to hydrocarbons may affect the functioning of their salt gland (Lutcavage et al., 1995).

When first released, MDO has a higher toxicity due to the presence of the volatile components. Individual turtles making contact close to the spill source at the time of the spill may be impacted. Turtle presence is generally more concentrated in waters closer to shore, with infrequent presence of turtles as far offshore as the PAA. Although turtle presence may occur throughout the PAA and defined EMBA, it is unlikely that a large number of turtles will be affected at the sea surface above thresholds, as weathering predicts that only <1 to 15% of hydrocarbon remains on the surface after about seven days (RPS, 2019d).

With no shoreline exposure, there is negligible potential for impacts to turtle nesting beaches.

Impacts to sea snakes from direct contact with hydrocarbons are likely to result in similar physical effects to those recorded for marine turtles.

Potential impacts are unlikely to lead to mortality or sub-lethal injury/illness of an EPBC-listed protected species. Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, and the mobile transient nature of individuals, an unplanned release from a vessel collision is not expected to substantially modify, destroy or isolate an area of important habitat for migratory species. It is not expected that unplanned releases will have a substantial adverse effect on the population, or spatial distribution of marine reptiles; or seriously disrupt the lifecycle of an ecologically significant proportion of any migratory species.

Impacts to turtles from unplanned hydrocarbon releases are to be managed in accordance with the Recovery Plan for marine turtles in Australia (Commonwealth of Australia, 2017). The Recovery Plan identifies ensuring spill risk strategies and response programs include management for turtles and their habitats. In addition, there is in place approved Conservation Advice for the short-nosed sea snake (DSEWPaC, 2011), which includes ensuring there is no anthropogenic disturbance in areas where the species occurs, excluding necessary actions to manage the conservation of the species.

Based on the detailed risk evaluation, the magnitude of potential impacts to marine reptiles from unplanned hydrocarbon releases is assessed as no lasting effects (from change in fauna behaviour) and slight (from injury/mortality to fauna). Receptor sensitivity of marine reptiles is high (high value fauna), and therefore the overall consequence of a release of hydrocarbons on marine reptiles is Minor (D).

Seabirds and Migratory Shorebirds

A change in marine fauna behaviour or injury/mortality to seabirds and migratory shorebirds may occur due to a change in water following an unplanned hydrocarbon release.

Seabirds and migratory birds are particularly vulnerable to contact with floating hydrocarbons, which may mat feathers. This may lead to hypothermia from loss of insulation and ingestion of hydrocarbons when preening to remove hydrocarbons. Both impacts may result in mortality (Hassan and Javed, 2011). Pathways of biological exposure that can result in impact may occur through ingesting contaminated fish (nearshore waters) or invertebrates (intertidal foraging grounds such as beaches, mudflats and reefs). Ingestion can also lead to internal injury to sensitive membranes and organs (International Petroleum Industry Environmental Conservation Association, 2004). Whether the toxicity of ingested hydrocarbons is lethal or sub-lethal will depend on the weathering stage and its inherent toxicity. Exposure to hydrocarbons may have longer term effects, with impacts to population numbers due to decline in reproductive performance and malformed eggs and chicks, affecting survivorship and losing adult birds.

When first released, MDO has a higher toxicity due to the presence of the volatile components. Individual birds making contact close to the spill source at the time of the spill may be impacted. Bird presence within the NWMR is more concentrated in waters closer to shore with the potential for individual migratory birds within the PAA. Although bird presence may occur throughout the PAA and defined EMBA, it is unlikely that a large number of birds will be affected at the sea surface above thresholds as this is only predicted for the first five days.

No shoreline contact is predicted, therefore there is negligible likelihood of impact to significant nesting and / or roosting sites.

Although potential impacts could include mortality or sub-lethal injury/illness of birds, this would be expected to comprise a small proportion of the resident and transitory population. Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, and the mobile transient nature of individuals, an unplanned release from a vessel collision is not is not expected to substantially modify, destroy or isolate an area of important habitat for migratory species.

There are specific conservation advices for some species which identify habitat degradation as the key threat, but generally no explicit management actions are identified relating to hydrocarbon spills.

Based on the detailed risk evaluation, the magnitude of potential impact to seabirds and migratory shorebirds from unplanned hydrocarbon releases is assessed as having no lasting effects (from change in fauna behaviour) and slight (from injury/mortality to fauna). Receptor sensitivity of seabirds and migratory shorebirds is high (high value fauna), and therefore the overall consequence of a release of hydrocarbons on seabirds and migratory shorebirds is Minor (D).

Key Ecological Features

A change in habitat may occur due to a change in water or sediment quality that could impact KEFs.

The PAA intersects with the Exmouth Plateau KEF; and a further two KEFs have the potential to intersect with an unplanned release of hydrocarbons. The values and sensitivities of these KEFs relate to seafloor features, and demersal fish species (i.e. that live close to the seafloor). Therefore, water depth can determine whether any in-water hydrocarbons can potentially interact with these values and sensitivities.

As MDO typically remains in the top ~20 m of the water column and rapidly weathers, there is no potential for in-water hydrocarbons to intersect with the seafloor and demersal values.

- Exmouth Plateau KEF: intersects the PAA. 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 in the PAA (~930 m). However, these seafloor features may promote enhanced upwelling; potential impacts to plankton and fish are discussed above.
- Continental Slope Demersal Fish Communities KEF: intersects the EMBA (132 km south of the PAA). The KEF represents high levels of endemism of demersal fish species. Considering the minimum water depths of this KEF are 220–500 m and 750–1000 m, impacts to demersal fish 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 (116 km south-east of the PAA). The seafloor features of this KEF may promote enhanced upwelling and associated productivity, which is assessed above.

Given the weathering characteristics of MDO, exposure would be restricted to surface (including the upper water column); no interaction with benthic habitats in deep water areas is predicted. As such, there is unlikely to be adverse impact on marine ecosystem functioning or integrity.

Based on the assessment, the magnitude of a potential impact to KEFs associated with a release of hydrocarbons is no lasting effect. Receptor sensitivity of KEFs is high (high value), and therefore the consequence of a release of hydrocarbons on KEFs is slight (E).

AMP's

Spill modelling predicts that the Gascoyne AMP may be contacted by entrained hydrocarbons above the 100 ppb ecological impact threshold with a probability of 4%. The Gascoyne AMP contains marine fauna and biological communities, which are considered to be of important environmental value that the AMP is intended to protect. The values of the AMP have been evaluated in the sections above and it is determined that a spill is unlikely to result in significant impacts based on the nature of the spilled hydrocarbons.

Based on the assessment, the magnitude of a potential impact to the Gascoyne AMP associated with a release of hydrocarbons is slight. Receptor sensitivity of the AMP is high (high value), and therefore the consequence of a release of hydrocarbons on the AMP is Minor (D).

Commonwealth and State Managed Fisheries

A change in marine fauna behaviour or injury or mortality to marine fauna – in particular to commercially targeted species, or their prey species (e.g. plankton) – can impact fisheries.

Fish exposure to hydrocarbon can result in 'tainting' of their tissues. Even very low levels of hydrocarbons can impart a taint or 'off' flavour or smell in seafood. Tainting is reversible through the process of depuration which removes hydrocarbons from tissues by metabolic processes, although it depends on the magnitude of the contamination. Fish have a high capacity to metabolise these hydrocarbons while crustaceans (such as prawns) have a reduced ability (Yender et al., 2002). Seafood safety is a major concern associated with spill incidents. Therefore, actual or potential contamination of seafood can affect commercial and recreational fishing and can impact seafood markets long after any actual risk to seafood from a spill has subsided (Yender et al., 2002).

A major spill could result in the establishment of an exclusion zone around the spill affected area. There would be a temporary prohibition on fishing activities for a period and subsequent potential for economic impacts to affected commercial fishing operators. Additionally, hydrocarbon can foul fishing equipment such as traps and trawl nets, requiring cleaning or replacement.

MDO presence in the water would be restricted to the surface and upper water column only. Dissolved aromatics (i.e. the form that is bioavailable) are in such small concentrations in MDO that their effect in the marine environment is negligible; i.e. tainting from an MDO exposure is not considered likely to occur. Any exclusion zone established would be limited to the immediate vicinity of the release point, and due to the rapid weathering of MDO would only be in place days after release, therefore physical displacement to vessels is unlikely to be a significant impact.

While the PAA and EMBA overlap with a number of fishery management areas for commonwealth and state managed fisheries, Woodside considers there to be no potential for interaction given the current distribution of fishing effort for all fisheries identified is concentrated outside the PAA and EMBA. No significant impact from an MDO spill is therefore predicted.

Although potential impacts could include mortality or sub-lethal injury/illness of pelagic fish (described in the specific receptor evaluation), this would be expected to comprise a small proportion of the resident and transitory population. Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, and the offshore location of

the PAA and lack of fishing effort, an unplanned hydrocarbon spill from the Petroleum Activities Program is not expected to have an adverse effect on the sustainability of commercial fishing; or to interfere with other marine users.

Based on the detailed risk evaluation, the magnitude of potential impacts to Commonwealth and State managed fisheries from an unplanned hydrocarbon releases is assessed as having no lasting effect. Receptor sensitivity of commonwealth and state managed fisheries is high (high value marine user), and therefore the consequence of a release of hydrocarbons on commonwealth and state managed fisheries is Slight (E).

Shipping

In the event of a spill, an exclusion zone may be established around the spill affected area. This could result in exclusion of other users such as shipping vessels or vessels used by the mining and petroleum industries. Any exclusion zone established would be limited to the immediate vicinity of the release point, and due to the rapid weathering of MDO would only be in place for days after release, therefore physical displacement to vessels is unlikely to be a significant impact.

Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, short duration of displacement, and the offshore location of the PAA, unplanned releases of MDO are not expected to interfere with shipping to a greater extent than necessary.

Based on the assessment, the magnitude of a potential impact to shipping associated with an unplanned release of hydrocarbons is slight. Receptor sensitivity of shipping is medium (medium value user), and therefore the consequence of a release of hydrocarbons on shipping is Slight (E).

Industry

The proposed Equus Development Project is located about 70 km east of the PAA. No other facilities are located within the EMBA. In the event of a major spill, an exclusion zone may be established around the spill affected area. This could result in exclusion of other users such as vessels used by the mining and petroleum industries.

Any exclusion zone established would be limited to the immediate vicinity of the release point, and due to the rapid weathering of MDO would only be in place days after release, therefore physical displacement to vessels is unlikely to be a significant impact.

Given hydrocarbon characteristics, expected rapid weathering to below impact thresholds, and the offshore location of the PAA and distance to relevant industries, unplanned releases from Scarborough are not expected to interfere with other marine users than a greater extent than necessary.

Based on the assessment, the magnitude of a potential impact to industry associated with an unplanned release of hydrocarbons is slight. Receptor sensitivity of industry is medium (medium value user), and therefore the consequence of a release of hydrocarbons on industry is Slight (E).

Cultural Heritage

No listed World Heritage Places, Indigenous Sites of Significance, Commonwealth Heritage Places or National Heritage Places were identified in the EMBA. A search of the Australasian Underwater Cultural Heritage Database (**Section 4.9.2)** indicated that there are no underwater heritage sites or shipwrecks within the PAA or EMBA. Therefore, no impacts to heritage sites are expected. Refer to **Section 6.10** for cultural features and heritage assessment.

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity	Risk Consequence	Likelihood	Risk Rating
Water quality	Change in water quality	Low value (open water)	Negligible (F)	Highly Unlikely	Low
Plankton	Injury/ mortality to fauna	Low value (open water)	Negligible (F)	Highly Unlikely	Low
Fish	Change in fauna behaviour	High value species	Minor (D)	Highly Unlikely	Moderate
	Injury/mortality to fauna	High value species	Minor (D)	Highly Unlikely	Moderate
Marine mammals	Change in fauna behaviour	High value species	Minor (D)	Highly Unlikely	Moderate
	Injury/mortality to fauna	High value species	Minor (D)	Highly Unlikely	Moderate
Marine reptiles	Change in fauna behaviour	High value species	Slight (E)	Highly Unlikely	Low

Summary of Assessment Outcomes					
Receptor	**Impact**	**Receptor Sensitivity**	**Risk Consequence**	**Likelihood**	**Risk Rating**
	Injury/ mortality to fauna	High value species	Minor (D)	Highly Unlikely	Moderate
Seabirds and migratory shorebirds	Change in fauna behaviour	High value species	Slight (E)	Highly Unlikely	Low
	Injury/mortality to fauna	High value species	Minor (D)	Highly Unlikely	Moderate
AMP's	Change in habitat	High value habitat	Minor (D)	Highly Unlikely	Moderate
KEFs	Change in habitat	High value habitat	Slight (E)	Highly Unlikely	Low
Commonwealth and State managed fisheries	Changes to the functions, interests or activities of other users	High value marine user	Slight (E)	Highly Unlikely	Low
Shipping	Changes to the functions, interests or activities of other users	Medium value users	Slight (E)	Highly Unlikely	Low
Industry	Changes to the functions, interests or activities of other users	Medium value	Slight (E)	Highly Unlikely	Low
Overall Risk Consequence/Risk Rating: The overall risk rating for an unplanned hydrocarbon release resulting from a vessel collision is Moderate based on a Minor consequence, to the high value receptors (marine fauna, AMPs and KEFs), and a highly unlikely likelihood. The risk consequence/risk rating for individual receptors are consistent with the levels rated in the OPP.					

Table 6-15: Key receptor locations and sensitivities potentially contacted above impact thresholds by the vessel collision scenario with summary hydrocarbon spill contact (table cell values correspond to probability of contact [%])

Environmental setting	Location / name	Environmental, Social, Cultural, Heritage and Economic Aspects presented as per the Environmental Risk Definitions (Woodside's Risk Management Procedure (WM0000PG10055394))																											Probability of hydrocarbon contact (diesel) (%) Note: the probability is based on stochastic modelling of 200 hypothetical worst-case spills under a variety of weather and metocean conditions						
		Physical		Biological																					Socio-economic and Cultural					Socio-cultural EMBA		EMBA			
		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)*	Surface hydrocarbon (1–10 g/m²)	Accumulated hydrocarbons (10–100 g/m²)	Surface hydrocarbon (≥10 g/m²)	Entrained hydrocarbon (≥100 ppb)	Dissolved aromatic hydrocarbon (≥50 ppb)	Accumulated hydrocarbons (>100 g/m²)
		Open water – (pristine)	*Marine Sediment – (pristine)*	*Coral reef*	*Seagrass beds / Macroalgae*	*Mangroves*	*Spawning/nursery areas*	*Open water – Productivity/upwelling*	*Non biogenic coral reefs*	*Offshore filter feeders and/or Deepwater benthic communities*	*Nearshore filter feeders*	*Sandy shores*	*Estuaries / tributaries / creeks / lagoons (including mudflats)*	*Rocky shores*	*Cetaceans – migratory whales*	*Cetaceans – dolphins and porpoises*	*Dugongs*	*Pinnipeds (sea lions and fur seals)*	*Marine turtles*	*Sea snakes*	*Whale sharks*	*Sharks and rays*	*Sea birds and/or migratory shorebirds*	*Pelagic fish populations*	*Resident /Demersal Fish*										
Offshore	Gascoyne AMP	✓	✓												✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	-	-	-	4	-	-

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Marine Order 30 (Prevention of Collisions) 2016, including: • adherence to steering and sailing rules including maintaining look-outs (e.g. visual, hearing, radar etc.), proceeding at safe speeds, assessing risk of collision and taking action to avoid collision (monitoring radar) • adherence to navigation light display requirements, including visibility, light position/shape appropriate to activity • adherence to navigation noise signals as required.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of interference with other marine users resulting in a collision.	Controls based on legislative requirements – must be adopted.	Yes **C 8.1**
Marine Order 21 (Safety and emergency arrangements) 2016, including: • adherence to minimum safe manning levels	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of interference with other marine users resulting in a collision.	Controls based on legislative requirements – must be adopted.	Yes **C 8.2**
Establishment of a 500 m petroleum safety zone around MODU and installation vessel and communicated to marine users.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of a collision with a third-party vessel.	Controls based on legislative requirements – must be adopted.	Yes **C 4.2**
Arrangements supporting the activities in the OPEP (per **Table 7-9**) will be tested to ensure the OPEP can be implemented as planned.	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirement based on vessel class. Unlikely to have a significant reduction in consequence.	Controls based on legislative requirements – must be adopted.	Yes **C 8.3**
Marine Order 27 (safety of navigation and radio equipment) 2016: • maintenance of navigation equipment in efficient working order (compass/radar) • navigational system and equipment required are those specified in Regulation 19 of	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of interference with other marine users resulting in a collision.	Controls based on legislative requirements – must be adopted.	Yes **C 8.4**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Chapter V of Safety of Life at Sea • Automatic Identification System that provides other users with information about the vessel's identity, type, position, course, speed, navigational status and other safety-related data.				
Good Practice				
Support vessel on standby as required during drilling activities to assist in third-party vessel interactions. When a support vessel is designated for standby it will undertake actions to prevent unplanned interactions, such as: • maintain a 24-hour radio watch on designated radio channel(s) • undertake continuous surveillance and warn the MODU/ installation vessel of any approaching vessels reaching 500 m petroleum safety zone. Surveillance shall be conducted by a combination of: visual lookout radar watch other electronic systems available including Automatic Identification System (AIS) monitoring any additional/ agreed radio communications channels all other means available. • While complying with the International Regulations for Preventing Collisions at Sea (COLREGS), approach any vessel attempting to transit through the 500 m zone and contact vessel by all available means.	F: Yes. CS: Minimal cost – support vessels available routinely in PAA during Petroleum Activities Program. Standard practice.	Given the legislative controls in place, use of a support vessel, as defined in the One Marine Charterers Instructions, will provide a small reduction in likelihood of a collision with a third-party vessel.	Benefits outweigh cost/sacrifice.	Yes **C 8.5**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
• Monitor and advise the MODU if: – MODU navigation signals are defective. – visibility becomes restricted. – Any buoys in the area are not holding position or are not working as expected.				
Notify Australian Hydrographic Office (AHO) of activities and movements will be notified no less than four working weeks prior to scheduled activity commencement date.	F: Yes. CS: Minimal cost. Standard practice.	Notification of AHO will enable them to update maritime charts thereby reducing the likelihood of a collision with a third-party vessel.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 4.3**
Notify AMSA JRCC of activities and movements of the activity 24 to 48 hours before operations commence.	F: Yes. CS: Minimal cost. Standard practice.	Communication of the Petroleum Activities Program to other marine users ensures they are informed and aware, thereby reducing the likelihood of a collision with a third-party vessel occurring	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 4.5**
Develop a SIMOPS Plan to manage rig interactions with other facilities / vessels i.e. during xmas tree installation	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 – which can help reduce likelihood of vessel collision.	Benefits outweigh cost/sacrifice. Control is also Standard Practice.	Yes **C 8.6**
Mitigation: Oil spill response	Refer to **Appendix D.**			
Professional Judgement – Eliminate				
Eliminate use of vessels.	F: No. The use of vessels is required to conduct the Petroleum Activities Program. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Substitute				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
Risk Based Analysis				
A quantitative spill risk assessment was undertaken (see detail above).				
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of an unplanned loss of hydrocarbon as a result of a vessel collision. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.				

Demonstration of Acceptability

Acceptability Criteria and Assessment

Demonstration of acceptability for the sources of risk and associated impacts assessed in this section are provided in Section 7.2.6.4 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:**

- Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP.
- EPOs and controls in the OPP that are relevant to an unplanned hydrocarbon release from a vessel collision have been adopted.
- There are no changes to internal context specific to this risk from the OPP.
- Potential impacts from an unplanned hydrocarbon release, from a vessel collision, was raised during consultation (**Appendix F, Table 1**) and this feedback was considered in the finalisation of the EP.

Acceptability Statement:

The impact assessment has determined that an accidental hydrocarbon release as a result of a vessel collision represents a moderate current risk rating and is unlikely to result in a risk consequence greater than Minor. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice. The adopted controls are considered consistent with industry legislation, codes and standards, good practice and professional judgement and meet the requirements and expectations of Australian Marine Orders, AMSA and AHO identified during impact assessment and consultation. The potential risks and consequences are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks and consequences of a loss of vessel structural integrity to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 16 No release of hydrocarbons to the marine environment due to a vessel collision associated with the	**C 8.1** Marine Order 30 – Prevention of collisions – 2016, including: • adherence to steering and sailing rules including maintaining	**PS 8.1** Support vessels, installation vessel and MODU compliant with Marine Orders 30 (Prevention of Collisions) 2016 (which requires vessels to be	**MC 8.1.1** Marine Assurance inspection records demonstrate compliance with standard maritime safety procedures (Marine Orders 21 and 30).

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
Petroleum Activities Program.	look-outs (e.g. visual, hearing, radar, etc), proceeding at safe speeds, assessing risk of collision and taking action to avoid collision (monitoring radar) • adherence to navigation light display requirements, including visibility, light position/shape appropriate to activity • adherence to navigation noise signals as required.	visible at all times) to prevent unplanned interaction with marine users.	
	C 8.2 Marine Orders 21 (Safety and emergency arrangements) 2016, including: • adherence to minimum safe manning levels	**PS 8.2** Support vessels, installation vessel and MODU compliant with Marine Orders Marine Orders 21 (Safety and emergency arrangements) 2016 to prevent unplanned interaction with marine users.	
	C 4.2 **See Section 6.7.4**	**PS 4.2** **See Section 6.7.4**	**MC 4.2.1** See **Section 6.7.4**
			MC 4.2.2 **See Section 6.7.4**
	C 8.3 Arrangements supporting the activities in the OPEP (per **Table 7-9**) will be tested to ensure the OPEP can be implemented as planned.	**PS 8.3.1** Exercises/tests will be conducted in alignment with the frequency identified in **Table 7-12**.	**MC 8.3.1** Testing of arrangement records confirm that emergency response capability has been maintained.
		PS 8.3.2 Testing of arrangement records confirm that emergency response capability has been maintained.	**MC 8.3.2** Emergency Management dashboard confirms that minimum level of personnel trained for core OPEP roles are available.
	C 8.4 Marine Order 27 (safety of navigation and radio equipment) 2016: • maintenance of navigation equipment in efficient working order (compass/radar) • navigational system and equipment required are those	**PS 8.4.1** Support vessels, installation vessel and MODU compliant with Marine Orders Marine Orders 27 (Safety of navigation and radio equipment) 2016 to prevent unplanned interaction with marine users.	**MC 8.4.2** Marine Assurance inspection records demonstrate compliance with standard maritime safety procedures (Marine Orders 27).

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	specified in Regulation 19 of Chapter V of Safety of Life at Sea Automatic Identification System that provides other users with information about the vessel's identity, type, position, course, speed, navigational status and other safety-related data.		
	C 8.5 Support vessel on standby as required during drilling activities to assist in third-party vessel interactions. When a support vessel is designated for standby it will undertake actions to prevent unplanned interactions, such as: • Maintain a 24-hour radio watch on designated radio channel(s) • Perform continuous surveillance and warn the MODU/ installation vessel of any approaching vessels reaching 500 m petroleum safety zone. Surveillance shall be conducted by a combination of: – visual lookout – radar watch – other electronic systems available including Automatic Identification System (AIS) – monitoring any additional/agreed radio communications channels – all other means available. • While complying with the International Regulations for Preventing Collisions at Sea (COLREGS), approach any vessel	**PS 8.5** Define role of support vessels in maintaining petroleum safety zone, preventing unplanned third-party vessel interactions, monitoring the effectiveness of navigation controls (e.g. signals), and warning third-party vessels of navigation hazards.	**MC 8.5.1** Records of non-conformance against controls maintained.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	attempting to transit through the 500 m zone and contact vessel by all available means. • Monitor and advise the MODU if: – MODU navigation signals are defective – visibility becomes restricted. • Advise if any buoys in the area are not holding position or are not working as expected.		
	C 8.6 SIMOPS Plan in place when MODU working in vicinity of other facilities / vessels i.e. during xmas tree installation. SIMOPS Plan will contain information on: • Minimum separation distances • Communications • MODU / vessels / activities involved in SIMOPS • Exclusion zone entry and exit processes • ROV operations • Helicopter operations • Key roles, responsibilities and emergency contacts • PTW arrangements • Incident reporting and investigation • Management of Change	**PS 8.6** MODU and applicable vessels compliant with SIMOPS Plan	**MC 8.6.1** Up-to-date and approved SIMOPS Plan in place
	C 4.3 **See Section 6.7.4**	**PS 4.3** **See Section 6.7.4**	**MC 4.3.1** **See Section 6.7.4**
	C 4.5 **See Section 6.7.4**	**PS 4.5** **See Section 6.7.4**	**MC 4.5.1** **See Section 6.7.4**
	Detailed preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are presented in **Appendix D**.		

6.8.3 Unplanned Hydrocarbon Release: Loss of Well Control

Scarborough OPP – Relevant Impact Assessment Section		
Section 7.2.6 (Unplanned Hydrocarbon Release)		
Context		
Relevant Activities Drilling Activities – **Section 3.8** Contingency Activities – **Section 3.10**	**Existing Environment** Physical Environment – **Section 4.2** Habitats and Biological Communities – **Section 4.5** Protected Species – **Section 4.6** Protected Places – **Section 4.8** Socio-economic Environment – **Section 4.9**	**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**
Unplanned loss of hydrocarbons during drilling operations			X					A	F	1	L	LCS GP PJ	Broadly acceptable	EPO 17

Description of Source of Impact/Risk

Loss of hydrocarbons to marine environment during drilling

A blowout is an incident where hydrocarbons from the formation flow out of the well or between formation layers after all the predefined technical well barriers (e.g. the BOP) or activation of the same have failed.

Shallow hazards

Shallow hazards (small pockets of subsurface gas not contained in the reservoir) may be present around well locations. Current well locations have been planned to avoid any potential shallow hazard zones, however there is a risk that the as-drilled geology is different to that which is expected. In the unlikely event that shallow hazards are unintentionally intersected whilst drilling, gas may evolve to the seabed. This could manifest as bubbles in the water column however would be unlikely to reach the sea surface given water depth, and would not reach the rig, having no conduit.

Likelihood Assessment

Woodside has a good history of implementing industry standard practice in well design and construction. In the Company's 60-year history, it has not experienced any well integrity events that have resulted in significant releases or significant environmental impacts.

The spill likelihood was evaluated using Blowout and Well release Frequencies based on SINTEF offshore blowout database 2012 (Scandpower, 2013). This uses data from 1991-2010 to determine likelihood for well blowouts and releases. For a gas well, the SINTEF calculated probability of blowout during drilling and completion is 2.93 X 10^{-4}.

Operation	Frequency, average well	Frequency, Gas well	Frequency Oil well
Development drilling, deep (normal wells)	2.24 E-05	1.33E-05	3.34 E-05

Completion	1.85 E-04	2.83 E-04	8.72E-05
Total Per well	2.07 E-04	2.93 E-04	1.26 E-04

The SINTEF data supports a likelihood of 'Highly Unlikely' for a well blowout with potential to result in a spill as the dataset does not account for Woodside and Industry Process Safety Improvements post the Gulf of Mexico Macondo event and is therefore likely to be conservative. The SINTEF data set is January 1991 – December 2010, whilst the Macondo blowout occurred in April 2010. Significant strengthening of barriers is now in place post the data set period, including, but not limited to:

- Revised and more stringent API 53 Subsea BOP requirements in force.
- Competency assessments of offshore personnel is now more stringent for both Woodside and drilling contractors, for example through implementation of improvements to well control training as recommended by IOGP and requirements for Woodside personnel in safety critical roles to complete the Process Safety Management training requirements.
- Revision to Woodside barrier installation and verification process, including acceptance criteria and change control management.

The Scarborough Field is well appraised with a comprehensive set of measured reservoir pressure data from exploration and appraisal wells. The likelihood of encountering significant overpressure in the overburden section is minimised through in-field drilling experiences and pre-drill geohazard evaluations including seismic surveys and multiple in-field well data. This is believed another area of conservatism in the SINTEF likelihood data when applied to Scarborough.

When considering likelihood from an 'Experience' perspective a ranking of 'Has occurred many times in the industry' is considered too high when assessing the worst credible event of blowout with no pipe in hole, and no significant bridging or flow restriction through the BOP or other means. This is supported by SINTEF data, showing that none of the 17 blowouts analysed were open hole with no pipe in hole, whilst 28% had an annulus 'full flow' but the flow area is unknown (though it is unlikely to be as large as the open hole, no pipe in hole case).

Drilling Timeframe

Drilling is scheduled to occur throughout the year (all seasons) to provide operational flexibility for requirements and schedule changes and vessel/MODU availability.

Credible Scenario – Loss of Well Control

The Petroleum Activities Program consists of the drilling of up to ten development wells (two of which are contingency). A loss of well control could result in a loss of containment at any of these wells. A key difference between Scarborough and many other offshore developments is that the reservoirs contain no or only trace liquid hydrocarbons. Given that hydrocarbons of the Scarborough reservoir contain no measurable liquid fraction, in the event of a loss of containment there is expected to be no or negligible liquid component. This means there is no credible hydrocarbon spill scenario in the event of well blowout and as such, quantitative spill modelling has not been undertaken.

A loss of well control may escalate to major accident events. An ignited gas release could cause large scale fire and explosions topsides with significant equipment damage. This equipment damage may cause unplanned release of topsides chemical and hydrocarbon inventory, and potentially escalate to impact floating stability. In an extreme case, the MODU may founder, capsize and sink.

Detailed Impact Assessment

Assessment of Potential Impacts

Change in Water Quality

A loss of well control may temporarily decrease the water quality in the immediate vicinity of the release.

The Scarborough reservoir properties are dry gas, primarily methane (approximately 95%) and nitrogen (approximately 4%), with some ethane, CO_2 content and limited heavier hydrocarbon components. Understanding of the Scarborough gas composition was supported by information collected from reservoir samples and well tests obtained from the Scarborough-4 and Scarborough-5 appraisal wells, and compositional analysis undertaken in 2018 and 2019. Analysis of worst case ("heaviest") reservoir composition indicates that no liquid hydrocarbons will exist at any pressure or temperature conditions that will be experienced in the environment. Liquid hydrocarbons are only expected at sub-zero temperatures which are not present in the marine environment at the location.

In the event of a loss of well control, the well will release gas at a worst-case discharge rate of 1.666 BSCFD/day of dry gas over 67 days. Hydrocarbons will be released from the well until one of the following interventions can be made:

- BOP intervention using ROV and hot stab;

- Capping stack; or
- a relief well is drilled with successful well kill.

In the event of a release of gaseous hydrocarbons from a loss of well control, the pressurised discharge will emit a jet of small gas bubbles with high momentum into the water column. The initial momentum of the jet would rapidly dissipate, and following the initial jet phase as the bubbles expand due to pressure reduction their buoyancy becomes the driving force for an upward plume of gas bubbles and entrained water.

As the gas travels upwards through the water column, dissolution will occur. Methane is moderately soluble in seawater, more so under higher pressure and colder temperature. Because of the deep water location, the majority of methane potentially released at seabed is expected to dissolve in the water column rather than reaching the surface.

The dissolved methane would biodegrade into non hydrocarbon products. Any gaseous methane would continue to rise to the sea surface and be transported away by surface winds.

Given the control measures in place to prevent a loss of well control event, and the offshore location of Scarborough and gas characteristics, the change to water quality resulting from unplanned hydrocarbon releases will be temporary and there is no pathway for impacts to habitat or ecosystem function or integrity.

Based on the risk evaluation, the magnitude of potential impact of a change in water quality from a loss of well control is assessed as slight. Receptor sensitivity of water quality is low (low value, open ocean), and therefore the consequence of a release of hydrocarbons on water quality is Negligible (F).

Benthic communities and Sediment Quality

Seabed disturbance would result in the event of the MODU sinking. The potential area that would be affected can conservatively be defined as MODU footprint plus 100 m in all directions, approximately 0.037 km^2. The benthic habitats and communities in the PAA are considered to be of low sensitivity and reflective of the wider NWMR. The physical disturbance to the seabed resulting from sinking of the MODU would be localised.

The MODU could act as a source of environmental contaminants due to material onboard the MODU (e.g. chemical / hydrocarbon inventories, corrosion of structural materials, debris etc.). The potential for contamination would diminish over time as the structure degrades. Depending on the nature of the loss of structural integrity, complete or partial salvage of the MODU may not be feasible. Any structures not able to be recovered would be left on the seabed indefinitely.

Summary of Assessment Outcomes

Receptor	Impact	Receptor Sensitivity Level	Risk Consequence	Likelihood	Risk Rating
Water quality	Change in water quality	Low value (open water)	Negligible (F)	Highly Unlikely	Low
Sediment Quality	Change in sediment quality	Low value (open water)	Negligible (F)	Highly Unlikely	Low
Epifauna and Infauna	Injury/ mortality to fauna	Low value	Negligible (F)	Highly Unlikely	Low
KEFs	Change in habitat	High value habitat	Minor (D)	Highly Unlikely	Moderate

Overall Risk Consequence: The risk rating for an unplanned discharge from a loss of well control is Moderate based on a minor consequence to a high value receptor (KEF) and a highly unlikely likelihood. The risk consequence/risk rating for individual receptors are consistent with the levels rated in the OPP.

Demonstration of ALARP

Control Considered	*Control Feasibility (F) and Cost/Sacrifice (CS)*	*Benefit in Impact/Risk Reduction*	*Proportionality*	*Control Adopted*
Legislation, Codes and Standards				
Offshore Petroleum and Greenhouse Gas Storage (Resource Management and	F: Yes. CS: Minimal cost. Standard practice.	Compliance with an accepted WOMP will ensure a number of barriers are in place and verified, reducing the likelihood of loss of well control occurring. Although	Benefits outweigh cost/sacrifice.	Yes **C 9.1**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Administration) Regulations 2011: accepted WOMP, which describes the well design and barriers to be used to prevent a loss of well control.		the consequence of a blowout would not be reduced, the reduction in likelihood reduces the overall risk.		
As-built checks that shall be completed during well operations to establish a minimum acceptable standard of well integrity is achieved.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of occurrence. No reduction in consequence will occur.	Benefits outweigh cost/sacrifice.	Yes **C 2.3**
Implement requirements for permanent well abandonment: • well barrier as per the internal Woodside Standard and Procedure • placement, length, material and verification of a permanent barrier.	F: Yes. CS: Minimal cost. Standard practice.	This procedure will reduce the likelihood of a spill occurring from a suspended well. Although changes in consequence would occur, the reduction in likelihood results in a reduction in overall risk.	Benefits outweigh cost/sacrifice.	Yes **C 9.2**
An approved Source Control Emergency Response Plan (SCERP) shall exist prior to drilling each well, including feasibility and any specific considerations for relief well kill.	F: Yes. CS: Minimal cost. Standard practice.	The SCERP will describe the responses to a loss of well control including ROV intervention on BOP, use of capping stack to contain well, and the relief well. All of these responses are aimed at reducing the duration of the gas release, resulting in a reduction in consequence and overall risk.	Benefits outweigh cost/sacrifice.	Yes **C 9.3**
Good Practice				
Subsea BOP installed and tested during drilling operations.	F: Yes CS: Standard practice. Required by Woodside standards.	Testing of the BOP will reduce the likelihood of a blowout resulting in release of hydrocarbons to the marine environment. In the event of a blowout, this control would not reduce the consequence, although the likelihood reduction reduces the overall risk ranking.	Benefits outweigh cost/sacrifice	Yes **C 9.4**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Project-specific mooring design analysis.	F: Yes. CS: Standard practice. Required by Woodside standards.	Ensure adequate MODU station holding capacity to prevent loss of station. This will reduce the likelihood of a blowout resulting in release of hydrocarbons to the marine environment.	Benefits outweigh cost/sacrifice.	Yes **C 5.4**
Professional Judgement – Eliminate				
Do not drill well.	F: No. CS: Inability to produce hydrocarbons. Loss of the project.	All risk would be eliminated.	Disproportionate. Given the extremely low likelihood of a loss of well control due to the systematic implementation of Woodside's policies, standards, procedures and processes relating to drilling activities, the cost/sacrifice outweighs the benefit gained.	No
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
Implement slimmer well design to reduce blowout volumes.	F: No. Slim well design is not considered feasible based on the following factors: • The well design is optimised to minimise the size of hole drilled while still being able to reach the targets and meet development objectives safely. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
ALARP Statement:				

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of an unlikely unplanned hydrocarbon release as a result of a loss of well control. Woodside has completed further analysis of options for other activities with loss of well control events. The cost of applying this analysis to this Petroleum Activities Program is seen as grossly disproportionate because the event is risk rated as highly unlikely likelihood and moderate consequence.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.6.4 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**): • Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to a loss of well control have been adopted. • There are no changes to internal context specific to this risk from the OPP. • Potential impacts from an unplanned hydrocarbon release, from the loss of well control, was raised during consultation (**Appendix F, Table 1**) and this feedback was considered in the finalisation of the EP.
Acceptability Statement: The impact assessment has determined that an accidental hydrocarbon release resulting from a loss of well control represents a moderate current risk rating and is unlikely to result in a risk consequence greater than minor. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice. The adopted controls are considered consistent with industry legislation, codes and standards, and industry good practice. 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 well control to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
Outcomes	***Controls***	***Standards***	***Measurement Criteria***
EPO 17 No loss of well control resulting in loss of hydrocarbons to the marine environment during Petroleum Activities Program	**C 9.1** Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011: (WOMP), which describes the well design and barriers to be used to prevent a loss of well control, which include: • Blowout preventer (BOP) installation during drilling operations	**PS 9.1** Wells drilled in compliance with the accepted WOMP, including implementation of barriers to prevent a loss of well control.	**MC 9.1.1** Acceptance letter from NOPSEMA demonstrates the WOMP and application to drill were accepted by NOPSEMA prior to the drilling activity commencing. **MC 9.1.2** Records demonstrate minimum of two verified barriers (a single fluid barrier may be implemented during the initial stages of

Environmental Performance Outcomes, Standards and Measurement Criteria			
Outcomes	***Controls***	***Standards***	***Measurement Criteria***
	• Regular testing of BOP		well construction if appropriateness is confirmed by a shallow hazard study) were in place for all permeable zones penetrated by the wellbore.
			MC 2.3.3 Records demonstrate composition and weight of drilling fluids were applicable to down hole conditions.
	C 2.3 **See Section 6.7.2**	**PS 2.3.1** **See Section 6.7.2**	**MC 2.3.1** **See Section 6.7.2**
			MC 2.3.2 **See Section 6.7.2**
	C 9.2 Implement requirements for permanent well abandonment: • well barrier as per the internal Woodside Standard and Procedure • placement, length, material and verification of a permanent barrier	**PS 9.2** Woodside abandons the wells according to internal Woodside Procedure.	**MC 9.2.1** Records demonstrate Well Acceptance Criteria have been met
	C 9.3 An approved SCERP shall exist prior to drilling each well, including feasibility and any specific considerations for relief well kill.	**PS 9.3** SCERP is in place to ensure feasibility of responding to a source control incident.	**MC 9.3** An approved Source Control Emergency Response Plan
	C 9.4 Subsea BOP installed and tested during drilling operations. The BOP shall include: • one annular preventer • two pipe rams (excluding the test rams) • a minimum of two sets of shear rams, one of which must be capable of sealing • deadman functionality • the capability of ROV intervention • independent power systems.	**PS 9.4** Subsea BOP specification, installation and testing compliant with internal Woodside Standards and international requirements (API Standard 53 5th Edition) as agreed by Woodside and MODU contractor.	**MC 9.4.1** Records demonstrate that BOP and BOP control system specifications and testing were in accordance with minimum standards for the expected drilling conditions as agreed by Woodside and MODU contractor.
	C 5.4 **See Section 6.7.5**	**PS 5.4** **See Section 6.7.5**	**MC 5.4.1** **See Section 6.7.5**

6.8.4 Unplanned Discharge: Chemicals and Hydrocarbons

Scarborough OPP – Relevant Impact Assessment Section		
OPP Section 7.2.1 Unplanned Discharge: Chemicals		
Context		
Relevant Activities Drilling Activities – **Section 3.8** Vessel Operations – **Section 3.9.2** MODU Operations – **Section 3.9.1** ROV Operations – **Section 3.9.4** Contingency Activities – **Section 3.10**	**Existing Environment** Marine Regional Characteristics – **Section 4.2**	**Consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Accidental discharge of hydrocarbons/ chemicals from MODU and project vessels deck activities and equipment, from subsea ROV hydraulic leaks			✓			✓		A	E	1	L	LCS GP PJ	Broadly Acceptable	EPO 18
Accidental discharge of drilling fluids (WBM/ NWBM/ base oil) and cement to marine environment due to failure of slip joint packers, bulk transfer hose/fitting, emergency disconnect system or from routine MODU operations			✓			✓								

Description of Source of Impact/Risk

Vessel, MODU and ROV Operations

Deck spills can result from spills from stored hydrocarbons/chemicals or equipment. Project vessels typically store hydrocarbon/chemicals in various volumes (20 L, 205 L; up to approximately 4000–6000 L). Storage areas are typically set up with effective primary and secondary bunding to contain any deck spills. Releases from equipment are predominantly from the failure of hydraulic hoses, which can either be located within bunded areas or outside of bunded or deck areas (e.g. over water on cranes). Helicopter refuelling may also take place within the PAA, on the helipad of the MODU and project vessels.

Chemicals that will be used and may be accidentally released include:

- non process chemicals (maintenance and cleaning chemicals)
- non process hydrocarbons - i.e. hydraulic fluids used in machinery (including cranes, winches, ROVs), small volumes of fuel
- drilling and well fluids.

Non-Process Chemicals

Non-process chemicals, such as wash chemicals, cleaning chemicals, maintenance and solvents, are generally held onboard in low quantities (typically <50 L containers) and are located within chemical cabinets or bunded storage areas on the vessels and MODU. Non-process chemical spills may result from human error or damage to a chemical container during handling. Spills are generally captured by the drain system and routed to a holding tank for treatment or disposal onshore. 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.

Non-Process Hydrocarbons

Woodside's operational experience demonstrates that spills are most likely to originate from hydraulic hoses and have been less than 100 L, with an average volume <10 L.

Non-process hydrocarbons (hydraulic fluids) are used in hydraulic-powered machinery, such as winches, cranes and ROVs, and are hydrocarbon-based with added chemical component additives. Unplanned discharges are predominantly due to failure of hydraulic hoses or minor leaks from process components, or spills during periodic refuelling of hydraulic hoses. Spills or leaks from hydraulic hoses are usually very small volumes (~1 L) and are typically contained within a bunded or drained area under the equipment mounted on deck. These small on-deck spills are unlikely to reach the marine environment. A burst hydraulic hose on an extended crane could potentially result in hydraulic fluid being sprayed in a fine jet out over the water. However, this would only result in a small volume (~25 L) being released, due to the small capacity of hydraulic hoses.

Subsea spills can result from a loss of containment of fluids from subsea equipment including the BOP or ROVs. A review of these spills to the marine environment in the past 12 months showed subsea spills did not exceed approximately 26 L in Woodside's Drilling function.

The ROV hydraulic fluid is supplied through hoses containing approximately 20 L of fluid. Hydraulic lines to the ROV arms and other tooling may become caught resulting in minor leaks to the marine environment. Small volume hydraulic leaks may occur from equipment operating via hydraulic controls subsea (subsea control fluid).

Hydraulic fluids are medium oils of light to moderate viscosity. They have a relatively rapid spreading rate and will dissipate quickly, particularly in high sea states. Lubricating oils may also be held onboard, typically stored with the non process chemicals and held in low quantities. These hydrocarbons are more viscous, so in the event of an unplanned discharge, the spreading rate of a slick of these oils would be slightly slower.

Drilling Fluids - Transfers

A project vessel will undertake bulk transfer of mud or base oil to the MODU, if and when required. Failure of a transfer hose or fittings during a transfer or backload, as a result of an integrity or fatigue issue, could result in a spill of mud or base oil to either the bunded deck or into the marine environment.

The most likely spill volume of mud is likely to be less than 0.2 m^3 based on the volume of the transfer hose and the immediate shutoff of the pumps by personnel involved in the bulk transfer process. However, the worst-case credible spill scenario could result in up to 8 m^3 of mud being discharged. This scenario represents a complete failure of the bulk transfer hose combined with a failure to follow procedures requiring transfer activities to be monitored, coupled with a failure to immediately shut off pumps (e.g. mud pumped through a failed transfer hose for a period of about five minutes).

Drilling Fluids - Slip Joint Packer Failure

The slip joint packer enables compensation for the dynamic movement of the MODU (heave) in relation to the static location of the BOP. A partial or total failure of the slip joint packer could result in a loss of mud to the marine environment. The likely causes of this failure include a loss of pressure in the pneumatic (primary) system combined with loss of pressure in the back up (hydraulic) system.

Catastrophic sequential failure of both slip joint packers (pneumatic and hydraulic) would trigger the alarm and result in a loss of the volume of fluid above the slip joint (conservatively 1.5 m^3) plus the volume of fluid lost in the one minute (maximum) taken to shut down the pumps. At a flow rate of 1000 gallons per minute this volume would equate to an additional 3.8 m^3. In total, it is expected that this catastrophic failure would result in a loss of 5.3 m^3.

Failure of either of the slip joint packers at a rate not large enough to trigger the alarms could result in an undetected loss of 20 bbl (3 m^3) maximum assuming a loss rate of 10 bbl/hour and that MODU personnel would likely walk past the moon pool at least every two hours.

Loss of a drilling chemical container or drum during transfer from the supply vessel to the MODU may occur due to crane operator error or machinery failure. The maximum container that could be lost is an intermediate Bulk Container (IBC) which can hold 1 m^3 of chemicals. In the event that an IBC or drum is lost to the marine environment and cannot

be recovered the contents will discharge, either immediately or over a period depending on the damage to the drum or container.

NWBM Drilling Fluid System

The selection of a NWBM drilling fluid system (if required) will be based on Woodside processes; however, for the purposes of this risk assessment, an example base oil (Saraline 185V) has been used. Saraline 185V is a mixture of volatile to low volatility hydrocarbons. Predicted weathering of base oil, based on typical conditions in the region, indicates that about 50% by mass is predicted to evaporate over the first day or two (refer to **Table**). At this time, most of the remainder could be entrained into the water column. In calm conditions, entrained hydrocarbons are likely to resurface with up to 100% able to evaporate over time.

Table 6-16: Characteristics of the non water-based mud base oil

Oil type	Initial density (kg/m³)	Viscosity (cP @ 20 °C)	Volatiles (%) <180	Semi volatiles (%) 180–265	Low volatility (%) 265–380	Residual (%) >380	Aromatic (%) of whole oil <380 °C BP
			Non-Persistent		***Persistent***		
Base oil (Saraline 185V)	0.7760	2.0 @ 40 °C	8.5	41.1	50.4	0	0

All chemicals that may be released or discharged to the marine environment during the Petroleum Activities Program are assessed as per Woodside Chemical Selection and Assessment. This procedure is used to demonstrate that the potential impacts of the chemicals that may be released are acceptable and ALARP.

Cement

Bulk cement is transferred as powder from the supply vessel to the MODU prior to being mixed into a slurry in the cement unit. Additives are required to form a cement slurry; these are transferred to the MODU in drums from the supply vessel to the MODU. Unplanned discharge to the marine environment may occur due to crane operator error or machinery failure resulting in loss of a drum of cement additive, which cannot be recovered. Cement additives are typically stored in drums <100 litres.

Contingency Activities

Activation of the Emergency Disconnect Sequence

The EDS is an emergency system that provides a rapid means of shutting in the well (i.e. BOP closed) and disconnecting the MODU from the BOP. The EDS could be manually activated due to an identified threat to the safety of the MODU, including loss of MODU station keeping resulting from loss of multiple moorings, potential collision by a third-party vessel or a loss of well control. During operations, this could result in a subsurface release of a combination of WBM and/or NWBM and solids at the seabed and a release of base fluid. The volume of material released depends on the water depth and, hence, the length of the riser (i.e. the entire riser volume would be lost). The base oil of the NWBM would remain in an emulsion with the other components of the mud system. Approximately 103 m^3 of base oil could be released in the event of the riser being disconnected when drilling with NWBM.

Wireline Operations

Minor leaks during wireline activities with a live well are described to include leaks such as:

- leaks from the lubricator, stuffing box and hose or fitting failure, which are expected to be less than 10 L (0.01 m^3)
- loss of containment – fluids – surface holding tanks
- backloading of raw slop fluids in an IBC
- stuffing box leak/under pressure
- draining of lubricator contents
- excess grease/lubricant leaking from the grease injection head
- wind-blown lubricant dripping from cable/on deck
- lubricant used to lubricate hole.

Woodside's operational experience demonstrates that spills are most likely to originate from hydraulic hoses and have been less than 100 L, with an average volume less than 10 L.

Detailed Impact Assessment
Assessment of Potential Impacts
Water Quality Change in Water Quality Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (<0.2 m^3) are anticipated, resulting in very short-term impacts to water quality, and limited to the immediate release location. The worst-case drilling fluid or cement unplanned discharge is 8 m^3 which could occur during bulk transfer from the supply vessel to the MODU during drilling. These discharges would be to the sea surface and would rapidly dilute through mixing by surface currents and wave action. Given the occasional nature of unplanned chemical discharge, the small volumes, and the offshore location of the PAA, the change to water quality resulting from unplanned discharge of chemicals will not be substantial. Therefore the magnitude of any potential impact of a change in water quality is Slight. Receptor sensitivity of water quality is low (low value, open ocean), and therefore the consequence of a release of hydrocarbons/chemicals on water quality is Negligible (F). ***Marine Fauna*** Injury or Mortality to Marine Fauna As a result of a change in water quality, further impacts to receptors may occur, which include injury or mortality to marine fauna resulting from exposure to toxins in the released chemicals/hydrocarbons. Given that surface discharges are rapidly dispersed, and subsea discharges (from ROVs) would be of very small volumes, potential impacts would be highly localised and temporary. The magnitude of potential impact to marine fauna is no lasting effect, which results in a consequence of Slight (E) 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)	Highly Unlikely	Low
Migratory Shorebirds and Seabirds	Injury/mortality to fauna	High value species	Slight (E)	Highly Unlikely	Low
Fish		High value species	Slight (E)	Highly Unlikely	Low
Marine Mammals		High value species	Slight (E)	Highly Unlikely	Low
Marine Reptiles		High value species	Slight (E)	Highly Unlikely	Low

Overall Risk Consequence: The overall risk rating for unplanned discharge of chemicals is Low based on a Slight consequence, to a high value receptor (marine fauna), and a highly unlikely likelihood. The risk rating/risk consequence for individual receptors are consistent with the levels rated in the OPP.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Marine Order 91 (Marine pollution prevention – oil) 2014, requires	F: Yes. CS: Minimal cost. Standard practice.	By ensuring a SOPEP/SMPEP is in place for the vessel, the likelihood of a spill	Controls based on legislative requirements – must be adopted.	Yes **C 6.4**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
SOPEP/SMPEP (as appropriate to vessel class).		entering the marine environment is reduced. Although no significant reduction in consequence could result, the overall risk is reduced.		
Where there is potential for loss of primary containment of oil and chemicals on the MODU, deck drainage must be collected via a closed drainage system. E.g. drill floor.	F: Yes. CS: Minimal cost. Standard practice.	Requirements for deck drainage and management of oily water would reduce the likelihood of contaminated deck drainage water being discharged to the marine environment. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 6.3**
Marine riser's telescopic joint to be: • comprised of a minimum of two packers (one hydraulic and one pneumatic) • pressure tested in accordance with manufacturers recommendations.	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of equipment failure leading to an unplanned release of drilling fluids. Although the consequence of an unplanned release would be reduced, the reduction in likelihood reduces the overall risk providing an overall environmental benefit.	Benefits outweigh cost/sacrifice.	Yes **C 10.1**
Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	F: Yes. CS: Minimal cost. Standard practice.	Implementation of procedures for chemical storage and handling on the MODU/Installation Vessel will reduce the consequence of impacts resulting from unplanned discharges to the marine environment by ensuring chemicals have been assessed for environmental acceptability.	Controls based on legislative requirements – must be adopted.	Yes **C 10.2**
Good Practice				
Drilling, completions, cementing, and subsea control fluids and additives will have	F: Yes. CS: Minimal cost. Standard practice.	Reduces the consequence of impacts resulting from discharges to the	Benefits outweigh cost/sacrifice.	Yes **C 7.1**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
an environmental assessment completed prior to use.		marine environment by ensuring chemicals have been assessed for environmental acceptability. Planned discharges are required for safely executing activities; therefore, no reduction in likelihood can occur.		
Contractor procedure for managing drilling fluids transfers onto, around and off the MODU, which requires: • emergency shutdown systems for stopping losses of containment (e.g. burst hoses) • break-away dry-break couplings for oil-based mud hoses • transfer hoses to have floatation devised to allow detection of a leak • the valve line-up will be checked prior to commencing mud transfers • constant monitoring of the transfer process • direct radio communications • completed PTW and JSA showing contractor procedures are implemented • recording and verification of volumes moved to identify any losses • mud pit dump valves locked closed when not in use for mud transfers and operated under a PTW.	F: Yes. CS: Minimal cost. Standard practice for Woodside to review contractor systems prior to performing activity.	Reduces the likelihood of an unplanned release occurring. Although no change in consequence would occur, the reduction in likelihood decreases the overall risk, providing environmental benefit.	Benefits outweigh cost/sacrifice.	Yes **C 10.8**
Check for the functionality of: • additional SCE (augers and cuttings dryers) • mud tanks • mud tank room • transfer hoses	F: Yes. CS: Minimal cost. Standard practice	Reduces the likelihood of an event occurring and reduces the potential consequences (by limiting volume released).	Benefits outweigh cost/sacrifice.	Yes **C 10.9**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
• NWBM base fluid transfer lines • NWBM base fluid transfer station • base fluid storage.				
Spill kits positioned in high risk locations around the rig (near potential spill points such as transfer stations).	F: Yes. CS: Minimal cost. Standard practice.	Spill kits would reduce the likelihood of a deck spill from entering the marine environment. The consequence is unchanged.	Benefits outweigh cost/sacrifice.	Yes **C 10.10**
Installation vessels have self-containing hydraulic oil drip tray management system.	F: Yes. CS: Minimal cost. Standard practice.	Requirements for self-containing hydraulic oil drip tray management system would reduce the likelihood of contaminants being discharged to the marine environment. No change in consequence would occur.	Benefits outweigh cost/sacrifice.	Yes **C 10.11**
For drilling and completion fluids, chemical reviews are performed.	F: Yes. CS: Minimal cost. Standard practice.	Regular reviews will ensure chemicals selected for drilling and completions fluids remain ALARP.	Benefits outweigh cost/sacrifice.	Yes **C 7.2**
Professional Judgement - Eliminate				
No additional controls identified				
Professional Judgement – Substitute				
Only use WBM during drilling.	F: Not feasible. While the base case is to use WBM, a contingent NWBM drilling fluid system is required for safety and technical reasons; therefore option to use must be maintained. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
Professional Judgement – Engineered Solution				
Use a MODU which may have a larger tank storage capacity for WBM. As such, there would be fewer bulk transfer movements.	F: Not feasible. The use of a MODU with greater storage capacity cannot be confirmed.	Not considered – control not feasible.	Not considered – control not feasible.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	CS: Significant cost and schedule delay would occur if the MODU was limited to greater storage capacity.			
Below-deck storage of all hydrocarbons and chemicals.	F: No. During operations there is a need to keep small volumes near activities and within equipment requiring use of hydrocarbons and chemicals and can result in increased risk of leaks from transfers via hose or smaller containers. CS: Not considered – control not feasible.	Not considered – control not feasible.	Not considered – control not feasible.	No
A reduction in the volumes of chemicals and hydrocarbons stored onboard MODU/vessels.	F: Yes. Increases the risks associated with transportation and lifting operations. CS: Project delays if required chemicals not on board. Increases the risks associated with transportation and lifting operations.	No reduction in likelihood or consequence since chemicals will still be required to enable drilling activities to occur.	Disproportionate. The cost/ sacrifice outweighs the benefit gained.	No
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of an unplanned release of chemicals. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.1.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall risk consequence for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to an unplanned hydrocarbon release from bunkering have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during consultation.
Acceptability Statement:

The impact assessment has determined that accidental discharge of chemicals represents a low current risk rating and is unlikely to result in a risk consequence greater than Slight. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice. The adopted controls are considered consistent with industry legislation, codes and standards, good practice and professional judgement and meet the requirements and expectations of Australian Marine Orders identified during impact assessment.

The potential risks and consequences are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks and consequences of an unplanned discharge of chemicals /hydrocarbons to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 18 Undertake the Petroleum Activities Program in a manner that will prevent an unplanned release of chemicals or non-process hydrocarbons to the marine environment resulting in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**C 6.4** **See Section 6.7.6**	**PS 6.4** **See Section 6.7.6**	**MC 6.4** **See Section 6.7.6**
	C 6.3 **See Section 6.7.6**	**PS 6.3** **See Section 6.7.6**	**MC 6.3.1** **See Section 6.7.6**
	C 10.1 Marine riser's telescopic joint to be: • comprised of a minimum of two packers (one hydraulic and one pneumatic) • pressure tested in accordance with manufacturer's recommendations.	**PS 10.1** MODU's joint packer designed and maintained to reduce hydrocarbons discharged to the environment.	**MC 10.1.1** Records demonstrate that MODU's joint packer is compliant.
	C 10.2 Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily.	**PS 10.2** Failure of primary containment in storage areas does not result in loss to the marine environment.	**MC 10.2.1** Records confirms all liquid chemicals and fuel are stored in bunded/secondarily contained areas when not being handled/moved temporarily.
	C 7.1 See **Section 6.7.7**	**PS 7.1** See **Section 6.7.7**	**MC 7.1.1** See **Section 6.7.7**
	C 10.8 Contractor procedure for managing drilling fluids transfers onto, around and off the MODU, which requires: • emergency shutdown systems for stopping losses of containment (e.g. burst hoses) • break-away dry-break couplings for oil-based mud hoses	**PS 10.8.1** Compliance with Contractor procedures to limit accidental loss to the marine environment.	**MC 10.8.1** Records demonstrate drilling fluid transfers are performed in accordance with the applicable contractor procedures.
		PS 10.9.1 Prevents unacceptable use or discharge of NWBM/base oil.	**MC 10.9.1** Records demonstrate the functionality of the specified equipment.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	• transfer hoses to have flotation devised to allow detection of a leak • the valve line-up will be checked prior to commencing mud transfers • constant monitoring of the transfer process • direct radio communications • completed PTW and JSA showing contractor procedures are implemented • recording and verification of volumes moved to identify any losses • mud pit dump valves locked closed when not in use for mud transfers and operated under a PTW. **C 10.9** Check for the functionality of: • additional SCE (augers and cuttings dryers) • mud tanks • mud tank room • transfer hoses • NWBM base fluid transfer lines • NWBM base fluid transfer station • base fluid storage.		
	C 10.10 Spill kits positioned in high risk locations around the rig (near potential spill points such as transfer stations).	**PS 10.10** Spill kits to be available for use to clean up deck spills.	**MC 10.10.1** Records confirms that spill kits are present, maintained, and suitably stocked.
	C 10.11 Installation vessels have self-containing hydraulic oil drip tray management system.	**PS 10.11** To contain any on-deck spills of hydraulic oil.	**MC 10.11.1** Records demonstrate project installation vessel is equipped with self-containing hydraulic oil drip tray management system.
	C 7.2 See **Section 6.7.7**	**PS 7.2.1** See **Section 6.7.7**	**MC 7.2.1** See **Section 6.7.7**

6.8.5 Unplanned Discharge: Bunkering

Scarborough OPP – Relevant Impact Assessment Section		
OPP Section 7.2.1 Unplanned Discharge: Chemicals		
Context		
Relevant Activities Vessel Operations – **Section 3.9.2** MODU Operations – **Section 3.9.1**	**Existing Environment** Marine Regional Characteristics – **Section 4.2**	**Consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Loss of hydrocarbons (diesel/jet fuel) to marine environment from bunkering/ refuelling			✓			✓		A	D	1	M	LCS GP PJ	Broadly Acceptable	EPO 18

Description of Source of Impact/Risk

Diesel LOC from bunkering

Bunkering of marine diesel between support vessels and the MODU as well as the possible refuelling of cranes, helicopters and other equipment may take place on the MODU.

Three credible scenarios for the loss of containment of marine diesel during bunkering operations have been identified:

- Partial or total failure of a bulk transfer hose or fittings during bunkering, due to operational stress or other integrity issues could spill marine diesel to the deck and/or into the marine environment. This would be in the order of less than 200 L, based on the likely volume of a bulk transfer hose (assuming a failure of the dry break and complete loss of hose volume).
- Partial or total failure of a bulk transfer hose or fittings during bunkering, combined with a failure in procedure to shutoff fuel pumps, for a period of up to five minutes, resulting in approximately 50 m3 marine diesel lost to the deck and/or into the marine environment.
- Partial or total failure of a bulk transfer hose or fittings during helicopter refuelling could spill aviation jet fuel to the helicopter deck and/or into the marine environment. All helicopter refuelling activities are closely supervised and leaks on the helideck are considered to be easily detectable. In the event of a leak, transfer would cease immediately. The credible volume of such a release during helicopter refuelling would be in the order of <100 L.

Given the limited volume of the potential release and offshore location no modelling has been undertaken as it is within significantly less than the 250 m^3 of MDO in **Section 6.8.2.**

Detailed Impact Assessment

Assessment of Potential Impacts

A spill at the surface as a result of bunkering activities is likely to be localised with limited potential contact with sensitive receptor locations based on the modelling presented in **Section 6.7.2** for a larger spill (250 m^3), which predicted the spill to be restricted to open offshore waters.

Detailed Impact Assessment
The potential biological and ecological impacts associated with much larger hydrocarbon spills are presented in **Section 6.7.2**; further detail on impacts specific to a spill of marine diesel from a bunkering loss are provided below. The biological consequences of such a small volume spill on identified open water sensitive receptors relate to the potential for minor impacts to megafauna, plankton and fish populations (surface and water column biota) that are within the spill-affected area. No impacts to commercial fisheries are expected. Refer to **Section 6.7.2** (potential impacts of unplanned hydrocarbon release to the marine environment from vessel collision) for the detailed potential impacts. However, the extent of the EMBA associated with a marine diesel spill from loss during bunkering will be much reduced in terms of spatial and temporal scales, and hence, potential impacts from bunkering are considered slight.

Summary of Assessment Outcomes					
Receptor	**Impact**	**Receptor Sensitivity**	**Risk Consequence**	**Likelihood**	**Risk rating**
Water quality	Change in water quality	Low value (open water)	Negligible (F)	Highly Unlikely	Low
Migratory Shorebirds and Seabirds	Injury/mortality to fauna	High value species	Slight (E)	Highly Unlikely	Low
Fish		High value species	Minor (D)	Highly Unlikely	Moderate
Marine Mammals		High value species	Minor (D)	Highly Unlikely	Moderate
Marine Reptiles		High value species	Minor (D)	Highly Unlikely	Moderate
Overall Risk Rating: The overall risk rating for unplanned discharge of hydrocarbons during bunkering is Moderate based on a minor risk consequence to the high value receptors (marine fauna) and a highly unlikely likelihood. The risk consequence/risk rating for individual receptors are consistent with the levels rated in the OPP.					

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Marine Order 91 (Marine pollution prevention – oil) 2014, requires SOPEP/SMPEP (as appropriate to vessel class).	F: Yes. CS: Minimal cost. Standard practice.	By ensuring a SOPEP/SMPEP is in place for the vessel, the likelihood of a spill entering the marine environment is reduced. Although no significant reduction in consequence could result, the overall risk is reduced.	Controls based on legislative requirements – must be adopted.	Yes **C 6.4**
The Australian Government Civil Aviation Safety Authority CAAP 92-4(0) 'Guidelines for the development and operation of off-shore helicopter landing sites, including vessels'.	F: Yes. CS: Minimal cost. Standard practice.	Reduced the likelihood of an unplanned release during helicopter operations. The consequence is unchanged.	Controls based on legislative requirements – must be adopted.	Yes **C 10.3**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Good Practice				
Bunkering equipment controls: • All hoses that have a potential environmental risk following damage or failure shall be placed on a hose register that is linked to the MODU's preventative maintenance system. • All bulk transfer hoses shall be pressure-rated at purchase to reduce the risk of accidental hydrocarbon release during bunkering. • There shall be dry-break couplings and flotation on fuel hoses. • There shall be an adequate number of appropriately stocked, located and maintained spill kits.	F: Yes. CS: Minimal cost. Standard practice.	By ensuring the appropriate equipment is in place, tested and maintained appropriately, the likelihood of a spill occurring is reduced. Although no significant reduction in consequence could result, the overall risk is reduced.	Benefits outweigh cost/sacrifice	Yes **C 10.4**
Contractor procedures include requirements to be implemented during bunkering/refuelling operations, including: • A completed PTW and/or JSA shall be implemented for the hydrocarbon bunkering/refuelling operation. • Visually monitoring of gauges, hoses, fittings and the sea surface during the operation. • Hoses will be checked before starting. • Bunkering/refuelling will commence in daylight hours. If the transfer is to continue into darkness, the JSA risk assessment must consider lighting and the ability to determine if a spill has occurred. • Hydrocarbons shall not be transferred in marginal weather conditions.	F: Yes. CS: Minimal cost. Standard practice.	By ensuring the appropriate equipment is in place, tested and maintained appropriately, the likelihood of a spill occurring is reduced. Although no significant reduction in consequence could result, the overall risk is reduced.	Benefits outweigh cost/sacrifice.	Yes **C 10.5**
Mitigation: Oil spill response.	Refer to **Appendix D**.			

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Professional Judgement - Eliminate				
No refuelling of helicopter on MODU.	F: No. Given the distance of the Petroleum Permit from the airports suitable for helicopter operations, and the endurance of available helicopters, eliminating helicopter refuelling is not feasible. Helicopter flights cannot be eliminated and may be required in emergency situations. CS: Not assessed, control cannot feasibly be implemented.	Not considered – control not feasible.	Not considered – control not feasible.	No
The MODU/installation vessel brought into port to refuel.	F: No. Does not eliminate the fuel transfer risk. It is not operationally practical to transit MODU back to port for refuelling based on the frequency of the refuelling requirements and distance from the nearest port. CS: Significant due to schedule delay and vessel transit costs and day rates.	Eliminates the risk in the Permit Area, However, moves risk to another location. Therefore, no overall benefit.	Disproportionate. The cost/sacrifice outweighs the benefit gained.	No
Professional Judgement – Substitute				
No additional controls identified				
Professional Judgement – Engineered Solution				
No additional controls identified				

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.2.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of an unplanned release of chemicals. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.1.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to an unplanned hydrocarbon release from bunkering have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during consultation.
Acceptability Statement: The impact assessment has determined that accidental discharge of hydrocarbons as a result of bunkering failure represents a moderate current risk rating and is unlikely to result in a risk consequence greater than Minor. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice. The adopted controls are considered consistent with industry legislation, codes and standards, good practice and professional judgement and meet the requirements and expectations of Australian Marine Orders. The potential risks and consequences are considered acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks of a loss of hydrocarbons during bunkering / refuelling to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 18 Undertake the Petroleum Activities Program in a manner that will prevent an unplanned release of chemicals or non-process hydrocarbons to the marine environment resulting in a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**C 6.4** See **Section 6.7.6**	**PS 6.4** See **Section 6.7.6**	**MC 6.4** See **Section 6.7.6**
	C 10.3 Helicopter fuel storage areas are bunded or secondarily contained when they are not being handled/moved temporarily in accordance with the Australian Government Civil Aviation Safety Authority CAAP 92-4(0) 'Guidelines for the development and operation of off-shore helicopter landing sites, including vessels'.	**PS 10.3** Failure of primary containment in storage areas does not result in loss to the marine environment.	**MC 10.3.1** Records confirms all liquid chemicals and fuel are stored in bunded/secondarily contained areas when not being handled/moved temporarily.
	C 10.4 Bunkering equipment controls: • All hoses that have a potential environmental risk following damage or failure shall be placed on the MODU's preventative maintenance system.	**PS 10.4.1** To ensure damaged equipment is replaced prior to failure.	**MC 10.4.1** Records confirm the MODU bunkering equipment is subject to systematic integrity checks.
		PS 10.4.2 All diesel transfer hoses to have dry break couplings and pressure rating suitable for intended use.	**MC 10.4.2** Records confirm presence of dry break of couplings and flotation on fuel hoses.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	• All bulk transfer hoses shall be pressure-tested at purchase to reduce the risk of accidental hydrocarbon release during bunkering. • There shall be dry-break couplings and flotation on fuel hoses. • There shall be an adequate number of appropriately stocked, located and maintained spill kits.	**PS 10.4.3** To ensure adequate resources are available to allow implementation of SOPEP.	**MC 10.4.3** Records confirm presence of spill kits.
	C 10.5 Contractor procedures include requirements to be implemented during bunkering/refuelling operations, including: • A completed PTW and/or JSA shall be implemented for the hydrocarbon bunkering/refuelling operation. • Visual monitoring of gauges, hoses, fittings and the sea surface during the operation. • Hose checks prior to commencement. • Bunkering/refuelling will commence in daylight hours. If the transfer is to continue into darkness, the JSA risk assessment must consider lighting and the ability to determine if a spill has occurred. • Hydrocarbons shall not be transferred in marginal weather conditions.	**PS 10.5** Compliance with Contractor procedures for the management of bunkering/helicopter operations.	**MC 10.5.1** Records demonstrate bunkering/refuelling undertaken in accordance with contractor bunkering procedures.
Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are presented in **Appendix D**.			

6.8.6 Unplanned Discharge: Hazardous and Non – Hazardous Solid Waste/Equipment

Scarborough OPP – Relevant Impact Assessment Section		
OPP Section 7.2.2 Unplanned Discharge: Solid Waste		
Context		
Relevant Activities MODU Operations – **Section 3.9.1** Vessel Operations – **Section 3.9.2**	**Existing Environment** Marine Regional Characteristics – **Section 4.2**	**Consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Accidental loss of hazardous or non-hazardous solid wastes / equipment to the marine environment			✓			✓		A	D	0	L	LCS GP PJ	Broadly Acceptable	EPO 2, 3, 4, 8, 11, 19, 20, 21

Description of Source of Impact/Risk

The MODU and project vessels will generate a variety of solid wastes, including packaging and domestic wastes such as aluminium cans, bottles, paper and cardboard. Hence, there is the potential for solid wastes to be lost overboard to the marine environment.

Equipment may also be accidentally lost overboard. Equipment that has been recorded as being lost on previous campaigns has primarily been windblown or dropped overboard and has included things such as personal protective equipment and small tools or materials.

These events have occurred during backloading activities, periods of adverse weather and incorrect waste storage.

Detailed Impact Assessment

Assessment of Potential Impacts

The potential impacts of hazardous or non-hazardous solid waste / equipment accidentally discharged to the marine environment include contamination of the environment as well as secondary impacts relating to potential contact of marine fauna with wastes. This could result in entanglement or ingestion and lead to injury and death of individual animals and changes to aesthetic values. The temporary or permanent loss of waste materials into the marine environment is not likely to have a significant environmental impact, based on the location of the PAA, the types, size and frequency of wastes that could occur, and species present.

Water Quality

Change in Water Quality

Hazardous solid wastes such as paint cans, oily rags, etc., can cause localised contamination of the water through a release of toxins and chemicals. The level of impact to water quality will depend on the nature of the discharge, however volumes of the hazardous components are generally low (such as residual paint in cans or oily rags). Modelling of small volumes of hydrocarbons such as this (e.g., Shell, 2010) indicate rapid dilution in the offshore marine environment, with impacts limited to the immediate vicinity of the contamination.

Given likely small volumes, and the occasional nature of the event, these would result in temporary and highly localised changes to the water quality.

Based on the detailed risk evaluation, the magnitude of potential impact of a change in water quality is slight. Receptor sensitivity is low for water quality, leading to a Negligible (F) consequence.

Seabirds and Migratory Shorebirds, Fish, Marine Reptiles and Marine Mammals

Injury/Mortality to Fauna

The unplanned discharge of solid wastes can result in mortality to fauna, either through contamination or physical injury depending on the nature of the waste. Marine fauna, including fish, seabirds and shorebirds, marine mammals and marine reptiles may be impacted through ingestion or entanglement of waste or through exposure to toxic chemicals. Ingestion or entanglement of marine fauna has the potential for physical harm which may limit feeding/foraging behaviours and thus can result in mortalities. Injury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris was listed as a key threatening process under the EPBC Act in August 2003 (DoEE, 2018). The Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (DoEE, 2018) identifies EPBC Act-listed species for which there are scientifically documented adverse impacts resulting from marine debris. Marine turtles and seabirds in particular may be at risk from plastics which may cause entanglement or be mistaken for food (e.g. DoEE, 2018; DoEE, 2017) and ingested causing damage to internal tissues and potentially preventing feeding activities. In the worst instance this could have a lethal affect to an individual. Marine debris has been identified as threat in the Recovery Plan for Marine Turtles in Australia (2017–2027).

Impacts to species including fish, birds, marine mammals and marine reptiles from the unplanned discharge of solid waste is unlikely given low occurrence of unplanned discharges and the location of the activities at significant distance from sensitive habitats. Significant impacts are unlikely to occur at an individual level and will not occur at a population level, nor result in the decrease of the quality of the habitat such that the extent of these species is likely to decline.

While the threat abatement plan for impacts of marine debris on vertebrate marine life does not list explicit management actions for non-related industries (DEWHA, 2009), management controls will reduce the risk of unplanned discharge of solid waste.

The magnitude of potential impact to marine fauna is Slight, which results in a consequence of Minor (D) based on the high receptor sensitivity.

Summary of Assessment Outcomes					
Receptor	**Impact**	**Receptor Sensitivity**	**Risk Consequence**	**Likelihood**	**Risk Rating**
Water Quality	Change in water quality	Low value (open water)	Negligible (F)	Remote	Low
Migratory Shorebirds and Seabirds	Injury/mortality to fauna	High value species	Minor (D)	Remote	Low
Fish		High value species	Minor (D)	Remote	Low
Marine Mammals		High value species	Minor (D)	Remote	Low
Marine Reptiles		High value species	Minor (D)	Remote	Low
Overall Risk Consequence: The overall risk rating for unplanned discharge of hazardous and non-hazardous solid waste is Low based on a Minor consequence, to the high value receptors (marine fauna), and a remote likelihood. The risk consequence levels/risk ratings for individual receptors are consistent with the levels rated in the OPP.					

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Marine Order 95 – Pollution prevention – Garbage (as appropriate to vessel class), which requires putrescible	F: Yes. CS: Minimal cost. Standard practice.	Legislative requirements to be followed reduce the likelihood of an	Controls based on legislative requirements – must be adopted.	Yes **C 6.2**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
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.		unplanned release. The consequence is unchanged.		
Good Practice				
Drilling and Completions Waste Management Plan, which requires: • dedicated space for waste segregation bins and skips provided on the MODU • records of all waste to be disposed, treated or recycled • waste streams handled and managed according to their hazard and recyclability class • all non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed of onshore.	F: Yes. CS: Minimal cost. Standard practice.	Controls outlined in the management plan will reduce the likelihood of an unplanned release. The consequence is unchanged.	Benefit outweighs cost sacrifice.	Yes **C 11.2**
Installation vessel waste arrangements, which require: • dedicated waste segregation bins • records of all waste to be disposed, treated or recycled • waste streams to be handled and managed according to their hazard and recyclability class.	F: Yes. CS: Minimal cost. Standard practice.	Controls will reduce the likelihood of an unplanned release. The consequence is unchanged.	Benefit outweighs cost sacrifice.	Yes **C 11.3**
MODU/Project vessel ROV, crane or project vessel may be used to attempt recovery of solid wastes /equipment lost overboard. Where safe and practicable for this activity will consider: • risk to personnel to retrieve object • whether the location of the object is in	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 **C 11.4**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
recoverable water depths • object's proximity to subsea infrastructure • ability to recover the object (i.e. nature of object, lifting equipment or, ROV availability and suitable weather). Any material dropped objects / waste that remain in the title will undergo an impact assessment and be added to the inventory.				
Professional Judgement – Eliminate				
No additional controls identified.				
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.2**), Woodside considers the adopted controls appropriate to manage the risks and consequences of accidental loss of hazardous or non-hazardous solid wastes / equipment to the marine environment. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.2.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)**:** • Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to an unplanned release of hazardous and non-hazardous wastes have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during consultation.
Acceptability Statement: The impact assessment has determined that unplanned discharges from a release of solid hazardous and non-hazardous wastes / equipment represents a low current risk rating and is unlikely to result in a risk consequence greater than Minor. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice. The adopted controls are considered consistent with industry legislation, codes and standards, good practice and professional judgement and meet the requirements of Australian Marine Orders identified during impact assessment. Further opportunities to reduce the impacts have been investigated above.

Demonstration of Acceptability
Based on an assessment against the defined acceptable levels, the risk from unplanned discharges of solid waste / equipment is considered acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 2 Undertake the Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of seabirds or shorebirds, or the spatial distribution of the population. **EPO 3** Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. **EPO 4** Undertake the Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of marine reptiles or the spatial distribution of the population. **EPO 8** Undertake the Petroleum Activities Program in a manner that will not substantially modify, destroy or isolate an area of important habitat for a migratory species. **EPO 11** Undertake the Petroleum Activities Program in a manner that will prevent a substantial change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.	**C 6.2** See **Section 6.7.6**	**PS 6.2** See **Section 6.7.6**	**MC 6.2.1** See **Section 6.7.6**
	C 11.2 Drilling and Completions Waste Management Plan, which requires: • dedicated space for waste segregation bins and skips shall be provided on the MODU. • records of all waste to be disposed, treated or recycled. • waste streams to be handled and managed according to their hazard and recyclability class. • all non-putrescible waste (excludes all food, greywater or sewage waste) to be transported from the MODU and disposed of onshore • CM15: implementation of waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of all waste generated.	**PS 11.2** Hazardous and non-hazardous waste will be managed in accordance with the Drilling and Completions Waste Management Plan.	**MC 11.2.1** Records demonstrate compliance against Drilling and Completions Waste Management Plan.
	C 11.3 Installation Vessel waste management arrangements, which require: • dedicated waste segregation bins • records of all waste to be disposed, treated or recycled	**PS 11.3** Hazardous and non-hazardous waste will be managed in accordance with the Installation vessel waste management arrangements.	**MC 11.3.1** Records demonstrate compliance against Installation Vessel waste management arrangements.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 19 Undertake the Petroleum Activities Program in a manner that will prevent an unplanned release of solid waste to the marine environment resulting in a significant impact. **EPO 20** Undertake the Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of fish, or the spatial distribution of the population. **EPO 21** Undertake the Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of marine mammals or the spatial distribution of the population.	• waste streams to be handled and managed according to their hazard and recyclability class • implementation of waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of all waste generated.		
	C 11.4 MODU/Project vessel ROV, crane or project vessel may be used to attempt recovery of solid wastes /equipment lost overboard. Where safe and practicable for this activity will consider: • risk to personnel to retrieve object • whether the location of the object is in recoverable water depths • object's proximity to subsea infrastructure • ability to recover the object (i.e. nature of object, lifting equipment or, ROV availability and suitable weather). Any material dropped objects / waste that remain in the title will undergo an impact assessment and be added to the inventory.	**PS 11.4** Any solid waste /equipment dropped to the marine environment will be recovered where safe and practicable to do so. Where retrieval is not practicable and / or safe, material items (property) that are lost to the marine environment will undergo an impact assessment and will be added to the inventory for the title.	**MC 11.4.1** Records detail the recovery attempt consideration and status of any waste /equipment lost to marine environment. **MC 11.4.2** First Priority records demonstrate outcomes of the safe and practicable evaluation including an impact assessment for the objects remaining. **MC 11.4.3** Records demonstrate that material items left in title are added to the inventory.

6.8.7 Physical Presence (Unplanned): Seabed Disturbance

Scarborough OPP – Relevant Impact Assessment Section		
OPP Section 7.2.3 Physical Presence (Unplanned): Seabed Disturbance		
Context		
Relevant Activities MODU Operations – **Section 3.9.1** Vessel Operations – **Section 3.9.2**	**Existing Environment** Marine Regional Characteristics – **Section 4.2**	**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**
Dropped objects resulting in the disturbance of benthic habitat		✓			✓			A	D	1	M	LCS GP PJ	Broadly Acceptable	EPO 13, 22
Failed MODU mooring leading to anchor drag and the disturbance of benthic habitat		✓			✓									

Description of Source of Impact/Risk

During MODU and project vessel operations, the primary cause for unplanned seabed disturbance is through dropped objects from the MODU or project vessels. Additional unplanned disturbance to the seabed may occur from mooring failure and subsequent anchor drag during MODU operations if a moored MODU is used for the Petroleum Activities Program.

Dropped Objects

There is the potential for objects to be dropped overboard from the MODU and project vessels to the marine environment. Objects that have been dropped during previous offshore activities include small numbers of personal protective gear (e.g. glasses, gloves, hard hats), small tools (e.g. spanners) hardware fixtures (e.g. riser hose clamp) and drill equipment (e.g. drill pipe); however, there is also potential for larger equipment to also be dropped during the activity, particularly during recovery of infrastructure from the seabed. The spatial extent in which dropped objects can occur is restricted to the PAA.

Anchor Drag

During drilling, the MODU will be secured on station by mooring lines (if a moored MODU is used), which are held in place by anchors deployed to the seabed. High energy weather events such as cyclones, occurring while the MODU is on station, can lead to excessive loads on the mooring lines, resulting in failure (either anchor(s) dragging or mooring lines parting). A failure of mooring integrity may lead to the mooring lines and anchors attached to the MODU being trailed across the seabed. If mooring failure is sufficient, the MODU may move off station, increasing the likelihood of anchor drag across the seafloor.

Industry statistics from the North Sea show that a single mooring line failure for MODUs is the most common failure mechanism (33×10^{-4} per line per year), followed by a double mooring line failure (11×10^{-4} per line per year) (Petroleumstilsynet, 2014). Note that single and double mooring line failures do not typically result in the loss of station keeping. If partial or complete mooring failures are sufficient to result in a loss of station keeping, industry

experience indicates that MODUs may drift considerable distances from their initial position (Offshore: Risk & Technology Consulting Inc., 2002). Partial mooring failures leading to a loss of station keeping resulted in smaller MODU displacements, due to the remaining anchors dragging along the seabed when compared to complete mooring failures; complete mooring failures resulted in a freely drifting MODU (Offshore: Risk & Technology Consulting Inc., 2002).

NOPSEMA has recorded four cases of anchor drag due to loss of MODU holding station during cyclone activity between 2004 and 2015 (NOPSEMA 2015). Seabed disturbance area size from anchor drag will depend on the extent of the drag.

Detailed Impact Assessment

Assessment of Potential Impacts

In the unlikely event of an object being dropped into the marine environment or failed mooring, potential environmental effects would be limited to localised physical impacts on benthic communities. In most cases, objects will be able to be recovered and therefore these impacts will also be temporary in nature. However, there may be instances where objects are unable to be recovered due to health and safety, operational constraints or other factors such as the difficulty of recovering dropped objects at depth. When dropped objects are unable to be recovered, the impact will continue to be localised but would also be long-term.

KEFs

The temporary or permanent loss of dropped objects into the marine environment and mooring failure is likely to result in a localised impact only, as the benthic communities associated with the PAA are of low sensitivity and are broadly represented throughout the NWMR. As described in **Section 4.7**, the Exmouth Plateau KEF overlaps the PAA. Benthic communities in the PAA are representative of the Exmouth Plateau and of deep water soft sediment habitats reported in the wider region (e.g. BHP Billiton, 2004; Woodside, 2005; Woodside, 2006; Brewer et al., 2007; RPS, 2011; Woodside, 2013; Apache, 2013).

Given the nature and scale of risks and consequences from dropped objects and mooring failure, no lasting effect is expected to seabed sensitivities within the PAA. Further, considering the types, size and frequency of dropped objects that could occur, it is unlikely that a dropped object would have a significant impact on any benthic community.

Any unplanned seabed disturbance within the KEF would be highly localised and relatively small compared to the size of the KEF. There will be no substantial adverse effect on the KEF or the communities within it. On this basis, the magnitude of potential impacts to KEFs from unplanned seabed disturbance during activities is Slight. Receptor sensitivity for KEF is high, leading to a Minor (D) risk consequence.

Epifauna and Infauna

As a result of a change in water quality and change in habitat, injury or mortality to marine fauna resulting from an increase in turbidity may occur. Given a change to water quality is unlikely, the only receptors that would potentially be at risk of unplanned seabed disturbance are bottom dwelling species including epifauna and infauna. Benthic communities, including epifauna and infauna may be impacted by the dropped objects, or the drag of anchors on the seabed. If not recovered, dropped objects may result in the permanent loss of a small area under the object.

If anchor drag occurs, habitat impact will span the extent of the drag area, leading to a localised change in communities; however, substantial adverse effect is not anticipated, given the sparse marine life that are well represented elsewhere in the region.

Given generally sparse benthic communities in the PAA, no threatened or migratory species or ecological communities were identified, and those epifauna and infauna communities observed are likely to be well represented elsewhere in the region, impacts are expected to be restricted to a localised proportion of epifauna and infauna communities.

Based on the detailed evaluation, the magnitude of potential impacts to epifauna and infauna from unplanned seabed disturbance during activities associated with Scarborough is evaluated to be slight. Sensitivity for epifauna and infauna is low, leading to a Negligible (F) risk consequence.

Summary of Assessment Outcomes

Receptor	Impact	Receptor sensitivity	Risk Consequence	Likelihood	Risk Rating
Epifauna and infauna	Change in habitat Injury/ mortality to fauna	Low value	Negligible (F)	Highly Unlikely	Low

Summary of Assessment Outcomes					
Receptor	**Impact**	**Receptor sensitivity**	**Risk Consequence**	**Likelihood**	**Risk Rating**
KEFs	Change in habitat	High Value	Minor (D)	Highly Unlikely	Moderate
Overall Risk Consequence: The overall risk rating for disturbance to benthic habitat from unplanned seabed disturbance is Moderate based on minor consequence to the high value receptor (KEFs) and a highly unlikely likelihood. The risk consequence/risk ratings for individual receptors are consistent with the levels rated in the OPP.					

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
No additional controls identified.				
Good Practice				
The MODU/ installation vessel work procedures for lifts, bulk transfers and cargo loading, which require: • The security of loads shall be checked prior to commencing lifts. • Loads shall be covered if there is a risk of loss of loose materials. • Lifting operations shall be conducted using the PTW and JSA systems to manage the specific risks of that lift, including consideration of weather and sea state.	F: Yes. CS: Minimal cost. Standard practice.	Occurs after a dropped object event and therefore no change to the likelihood. Since the object may be recovered, a reduction in consequence is possible.	Benefits outweigh cost/sacrifice.	Yes **C 12.1**
MODU/ installation vessel inductions include control measures for dropped object prevention.	F: Yes. CS: Minimal cost. Standard practice.	By ensuring crew are appropriately trained in dropped object prevention, the likelihood of a dropped object event is reduced. No change in consequence will occur.	Benefits outweigh cost/sacrifice.	Yes **C 12.2**
Specifications and requirements for station keeping equipment (mooring systems), require that: • systems are tested and inspected in accordance with API RP 21 • systems have sufficient capability such that a failure of any single component will not	F: Yes. CS: Minimal cost. Standard practice.	Reduces the likelihood of mooring failure leading to uncontrolled anchor drag. Should mooring failure occur, no significant reduction in consequence could occur.	Benefit outweighs cost sacrifice.	Yes **C 12.3**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
cause progressive failure of the remaining anchoring arrangement.				
Professional Judgement – Eliminate				
Only use a DP MODU (no anchoring required) for all wells.	F: Yes. CS: Restricting MODU selection to only DP capable rigs would introduce unacceptable additional costs and operational delays. Woodside has a demonstrated capacity to manage the environmental risks and impacts from mooring to a level that is ALARP and acceptable.	Application of control would eliminate the risk.	Disproportionate. The cost/sacrifice associated with only using a DP capable MODU outweighs the benefit gained.	No
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
MODU tracking equipment operational when the MODU unmanned.	F: Yes. CS: Minimal cost. Standard practice.	Although no reduction in consequence would occur, the overall risk is reduced as the location of the MODU would be known at all times and response times could be improved in the event of a loss of station keeping. (E,1).	Benefit outweighs cost sacrifice.	Yes **C 12.4**
Risk Based Analysis				
Project-specific Mooring Design Analysis.	F: Yes. CS: Minimal cost. Standard practice.	By ensuring that a mooring analysis report is undertaken, the likelihood of mooring failure occurring is reduced. Although no reduction in consequence would occur, the overall risk is reduced.	Benefit outweighs cost sacrifice.	Yes **C 5.4**
Mooring system is tested to recommended tension as per API RP 2SK.	F: Yes. CS: Minimal cost. Standard practice	Reduces the likelihood of anchor drag leading to seabed disturbance.	Benefit outweighs cost sacrifice.	Yes **C 12.5**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of unplanned seabed disturbance. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.3.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**)*:* • Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to an unplanned seabed disturbance have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during consultation.
Acceptability Statement: The impact assessment has determined that disturbance to seabed from dropped objects or a loss of station keeping of the MODU represents a moderate current risk rating and is unlikely to result in a risk consequence greater than Minor. The adopted controls are considered industry good practice. The potential risks and consequences are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks of seabed disturbance from dropped objects / anchor drag to an acceptable level.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 13 Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in an area defined as a Key Ecological Feature. **EPO 22** Undertake the Petroleum Activities Program in a manner which prevents unplanned seabed disturbance.	**C 12.1** The MODU/ installation vessel work procedures for lifts, bulk transfers and cargo loading, which require: • the security of loads shall be checked prior to commencing lifts • loads shall be covered if there is a risk of loss of loose materials. Lifting operations shall be conducted using the PTW and JSA systems to manage the specific risks of that lift, including consideration of weather and sea state.	**PS 12.1** All lifts conducted in accordance with applicable MODU/ installation vessel work procedures to limit potential for dropped objects.	**MC 12.1.1** Records show lifts conducted in accordance with the applicable MODU/ installation vessel work procedures.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	C 12.2 MODU/ installation vessel inductions include control measures for dropped object prevention.	**PS 12.2** To ensure awareness of requirements for dropped object prevention.	**MC 12.2.1** Records show dropped object prevention training is provided to the MODU/ installation vessel.
	C 12.3 Specification and requirements for station keeping equipment (mooring systems), require that: • systems are tested and inspected in accordance with API RP 21 • systems have sufficient capability such that a failure of any single component will not cause progressive failure of the remaining anchoring arrangement.	**PS 12.3** MODU mooring system tested and in place to ensure no complete mooring failure.	**MC 12.3.1** Records demonstrate mooring system tests and inspection.
	C 12.4 Moored MODU tracking equipment operational when the MODU unmanned.	**PS 12.4** Tracking of the MODU is possible when the MODU is unmanned.	**MC 12.4.1** Records show the moored MODU has functional tracking equipment for instances when MODU is unmanned.
	C 5.4 See **Section 6.7.5**	**PS 5.4.1** See **Section 6.7.5**	**MC 5.4.1** See **Section 6.7.5**
	C 12.5 Mooring system is tested to recommended tension as per API RP 2SK	**PS 12.5** Monitoring compliant with ISO 19901-7:2013	**MC 12.5** Records confirm mooring system is tested to recommended tension as per API RP 2SK.

6.8.8 Physical Presence (Unplanned): Accidental Introduction and Establishment of Invasive Marine Species

Scarborough OPP – Relevant Impact Assessment Section		
OPP Section 7.2.4 Physical Presence (Unplanned): IMS		
Context		
Relevant Activities Installation of Subsea Infrastructure – **Section 3.8.10** MODU Operations – **Section 3.9.1** Vessel Operations – **Section 3.9.2**	**Existing Environment** Marine Regional Characteristics – **Section 4.2**	**Consultation** Consultation – **Section 5**

Impact/Risk Evaluation Summary

Source of Impact/Risk	***Environmental Value Potentially Impacted***							***Evaluation***						
	Soil and Groundwater	**Marine Sediment**	**Water Quality**	**Air Quality (inc. odour)**	**Ecosystems / Habitat**	**Species**	**Socio-economic**	**Decision Type**	**Impact/Consequence**	**Likelihood**	**Current Risk Rating**	**ALARP Tools**	**Acceptability**	**Outcome**
Introduction and establishment of invasive marine species (IMS) within the PAA.					✓	✓	✓	A	E	0	L	LCS	Broadly Acceptable	EPO 13, 23

Description of Source of Impact/Risk

Installation of Subsea Infrastructure, and MODU and Vessel Operations

During the Petroleum Activities Program, vessels will be transiting to and from the PAA, potentially including traffic mobilising from beyond Australian waters. These project vessels may include the MODU, installation vessel or general support vessels (**Section 3.9.2**).

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.). Organisms can also be drawn into ballast tanks during onboarding of ballast water as cargo is loaded or to balance vessels under load.

During the Petroleum Activities Program, project vessels have the potential to introduce IMS to the PAA through marine fouling (containing IMS) on vessels as well as within high risk ballast water discharge. Cross contamination between vessels can also occur (e.g. IMS translocated between project vessels) during times when vessels need to be alongside each other.

Detailed Impact Assessment

Assessment of Potential Impacts

IMS are a subset of Non-indigenous Marine Species (NIMS) that have been introduced into a region beyond their natural biogeographic range resulting in impacts to social/cultural, human health, economic and/or environmental values. NIMS are species that have the ability to survive, reproduce and establish founder populations. However, not all NIMS introduced into an area will thrive or cause demonstrable impacts; the majority of NIMS around the world are relatively benign and few have spread widely beyond sheltered ports and harbours. NIMS are only considered IMS when they result in impacts to environmental values and/or have social/cultural, economic and/or human health impacts.

Once introduced, IMS may prey on local species (which had previously not been subject to this kind of predation and therefore not have evolved protective measures against the attack), they may outcompete indigenous species for food, space or light and can also interbreed with local species, creating hybrids such that the endemic species is lost. These changes to the local marine environment result in changes to the natural ecosystem.

IMS have also proven economically damaging to areas where they have been introduced and established. Such impacts include direct damage to assets (fouling of vessel hulls and infrastructure) and depletion of commercially harvested marine life (e.g. shellfish stocks). IMS have proven particularly difficult to eradicate from areas once established. If the introduction is detected early, eradication may be effective but is likely to be expensive, disruptive and, depending on the method of eradication, harmful to other local marine life.

Potential IMS have historically been introduced and translocated around Australia by a variety of natural and human means, including marine fouling and ballast water. Potential IMS vary from one region to another depending on various environmental factors such as water temperature, salinity, nutrient levels and habitat type, which dictate their survival and invasive capabilities. IMS typically require hard substrate in the photic zone; therefore, requiring shallow waters to become established. Highly-disturbed, shallow-water environments such as shallow coastal waters, ports and marinas are more susceptible to IMS colonisation, whereas IMS are generally unable to successfully establish in deep-water ecosystems and open-water environments where the rate of dilution and the degree of dispersal are high.

Epifauna and Infauna

Epifauna and infauna are susceptible to impacts from IMS due to the risk of changes to the ecosystem dynamics such as competition for resources and predation.

Benthic productivity on the outer continental shelf and slope is low, and is a function of water depth, low nutrient availability, and the absence of hard substrates. Studies completed within the region indicate that benthic composition in deep-water habitats is generally lower in abundance than shallow water habitats of the region (DEWHA, 2008a; Brewer et al., 2007). The seafloor in the PAA is characterised by sparse marine life dominated by motile organisms (ERM, 2013). Such motile organisms included shrimp, sea cucumbers, demersal fish and small, burrowing worms and crustaceans. This soft bottom habitat is also supporting patchy distributions of mobile epibenthos, such as sea cucumbers, ophiuroids, echinoderms, polychaetes and sea-pens (DEWHA, 2008). The dominant types of epifauna were arthropods and echinoderms (especially shrimp and sea cucumbers, respectively), while the dominant infauna groups were crustaceans and polychaetes (ERM, 2013). Benthic communities in the PAA are representative of the Exmouth Plateau and of deep-water soft sediment habitats reported in the region.

While project vessels have the potential to introduce IMS into the PAA, the deep offshore open waters of the PAA (approximately 900–955 m) are not conducive to the settlement and establishment of IMS. Furthermore, the PAA are away from shorelines and/or critical habitat. The likelihood of IMS being introduced and establishing viable populations within the PAA or immediate surrounds is considered not credible.

Accordingly, impact to epifauna/infauna in the PAA is not considered credible. Receptor sensitivity for epifauna and infauna is low, leading to a Negligible (F) risk consequence.

Industry, Shipping, Defence

The establishment of IMS has the potential to cause changes to the functions, interests or activities of other users through indirect impact such as changes to fisheries target species resulting in economic and social implications, or due to compromised reputation to the oil and gas industry.

Given the low likelihood of IMS translocation to, and colonisation of environments within the PAA, project activities will not result in establishment of IMS, and as such not adversely affect other marine user activities in the region.

Based on the detailed impact evaluation, the magnitude of potential impacts of a change to the functions, interests or activities of other users is slight (see **Table 6-17**). Receptor sensitivity for industry, shipping and defence is medium, leading to a Slight (E) risk consequence. The likelihood of the risk event occurring is Remote, therefore the risk is assessed as Low.

Summary

In support of Woodside's assessment of the risks and consequences of IMS introduction associated with the Petroleum Activities Program, Woodside conducted a risk and impact evaluation of the different aspects of a marine pest translocation. The results of this assessment are presented in **Table** .

As a result of this assessment, Woodside has presented the highest potential consequence as a Slight (E) and likelihood as Remote (0), resulting in an overall Low risk following the implementation of identified controls.

Table 6-17: Credibility, consequence and likelihood of introducing IMS

IMS Introduction Location	Credibility of Introduction	Consequence of Introduction	Likelihood
Introduced to Operational Area and establishment	**Not Credible**		

on the seafloor or subsea structures	The deep offshore open waters of the Permit Area, away from shorelines and/or critical habitat, more than 50 km from a shoreline and in waters more than 100 m deep are not conducive to the settlement and establishment of IMS.		
Introduced to Operational Area and establishment on a project vessel.	**Credible** There is potential for the transfer of marine pests between project vessels within the Operational Area.	**Environment – Not Credible** The translocation of IMS from a colonised MODU or project vessel to shallower environments via natural dispersion is not considered credible given the distances of the PAA from nearshore environments (i.e. greater than 12 nm/50 m water depth). There is therefore no credible environmental risk and the assessment is limited to Woodside's reputation. **Reputation – E** If IMS were to establish on a project vessel (i.e. MODU, installation vessel, activity project vessels) this could potentially impact the vessel operationally through the fouling of intakes, result in translocation of an IMS into the PAA and, depending on the species, potentially transfer of an IMS to other project vessels, which would likely result in the quarantine of the vessel until eradication could occur (through cleaning and treatment of infected areas), which would be costly to perform. Such introduction would be expected to have slight impact to Woodside's reputation, particularly with Woodside's contractors, and would likely have a reputational impact on future proposals.	**Remote (0)** Interactions between project vessel will be limited during the Petroleum Activities Program, with minimum 500 m safety exclusion zones being adhered to around the MODU and installation vessel, and interactions limited short periods of time alongside (i.e. during backloading, bunkering activities). There is also no direct contact (i.e. they are not tied up alongside) during these activities. Spread of marine pests via ballast water or spawning in these open ocean environments is also considered remote.
Transfer between project vessels and from project vessels to other marine environments beyond the PAA.	**Not Credible** This risk is considered so remote that it is not credible for the purposes of the activity. The transfer of a marine pest between project vessels was already considered remote, given the offshore open ocean environment (i.e. transfer pathway discussed above). For a marine pest to then establish into a mature spawning population on the new project vessel (which would have been through Woodside's IMS process) and then transfer to another environment is not considered credible (i.e. beyond the Woodside risk matrix).		

	Project vessels will be located in an offshore, open ocean, deep environment, where IMS survival is implausible. Furthermore, this marine pest once transferred would need to survive on a new vessel with good vessel hygiene (i.e. has been through Woodside's risk assessment process) and survive the transport back from the PAA to shore. In the event it was to survive this trip, it would then need to establish a viable population in nearshore waters.

Summary of Assessment Outcomes					
Receptor	**Impact**	**Receptor Sensitivity**	**Risk Consequence**	**Likelihood**	**Risk Rating**
Epifauna and infauna	Change in ecosystem dynamics	Low value habitat (homogenous)	Negligible (F)	Remote	Low
Industry, Shipping, Defence	Changes to the functions, interests or activities of other users	Medium value	Slight (E)	Remote	Low
Overall Risk Consequence: The overall risk rating for the accidental introduction of IMS is Low given the remote offshore location of the PAA. The risk consequence/risk ratings for individual receptors are consistent with the levels rated in the OPP.					

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Project vessels will manage their ballast water using one of the approved ballast water management options, as specified in the Australian Ballast Water Management Requirements. This applies to all project vessels that will enter the Operational Area, including those carrying out activities outside of Australian Territorial Seas (>12nm).	F: Yes. CS: Minimal cost. Standard practice.	The use of an approved ballast water treatment system will reduce the likelihood of transfer of marine pests between project vessels within the PAA. No change in consequence would occur.	Controls based on legislative requirements under the *Biosecurity Act 2015* – must be adopted.	Yes **C 13.1**
Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	F: Yes. CS: Standard practice.	Reduces the likelihood of transfer of marine pests between vessels within the Operational Area. No change in consequence would occur.	Controls based on legislative requirements under the *Biosecurity Act 2015* – must be adopted.	Yes **C 13.2**
Good Practice				
Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment that enter the Operational	F: Yes. CS: Minimal cost. Good practice implemented across all Woodside Operations.	Identifies potential risks and additional controls implemented accordingly. In doing so, the likelihood of transferring marine	Benefits outweigh cost/sacrifice.	Yes **13.3**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
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.		pests between project vessels within the Operational Area is reduced. No change in consequence would occur.		
Professional Judgement - Eliminate				
No discharge of ballast water during the Petroleum Activities Program.	F: No. Ballast water discharges are critical for maintaining vessel stability. Given the nature of the Petroleum Activities Program, the use of ballast (including the potential discharge of ballast water) is considered to be a safety critical requirement. CS: Not assessed, control not feasible.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Eliminate use of MODU/vessels.	F: No. Given that vessels must be used to implement project, there is no feasible means to eliminate the source of risk. CS: Loss of the project.	Not assessed, control not feasible.	Not assessed, control not feasible.	No
Professional Judgement - Substitute				
Source project vessels based in Australia only.	F: Potentially. Limiting activities to only use local project vessels could potentially pose a significant risk in terms of time and duration of sourcing a vessel, as well as the ability of the local vessels to perform the required tasks. For example, there are limited installation vessels based in Australian waters. While the project will attempt to source project vessels locally it is not always possible. Availability cannot always be guaranteed	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 PAA 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 PAA; however, the potential cost of implementing this control is grossly disproportionate to the minor environmental gain (or reducing an already remote likelihood of IMS introduction) potentially achieved by using only Australian based	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	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.		vessels, consequently this risk is considered not reasonably practicable.	
IMS inspection of all vessels.	F: Yes. Approach to inspect vessels could be a feasible option. CS: Significant cost and schedule impacts. In addition, Woodside's IMS risk assessment process (**C 13.3**) is seen to be more cost effective as this control allows Woodside to manage the introduction of marine pests through biofouling, while targeting its efforts to and resources to areas of greatest concern.	Inspection of all vessels for IMS would reduce the likelihood of IMS being introduced to the PAA. However, this reduction is unlikely to be significant given the other control measures implemented. No change in consequence would occur.	Disproportionate. The cost/sacrifice outweighs the benefit gained, as other controls to be implement achieve an ALARP position.	No
Professional Judgement – Engineered Solution				
None identified.				
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the risks and consequences of IMS introduction. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.4.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**): • Overall risk consequence for individual receptors are less than the significant impact level defined in the OPP. • EPOs and controls in the OPP that are relevant to an unplanned introduction of IMS have been adopted. • There are no changes to internal/external context specific to this risk from the OPP, including issues raised during consultation.
Acceptability Statement:

The impact assessment has determined that the accidental introduction and establishment of IMS represents a low current risk rating and is unlikely to result in a risk consequence greater than Slight. The adopted controls are considered consistent with industry legislation, codes and standards. Further opportunities to reduce the impacts have been investigated above.

The potential risks and consequences are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks of invasive marine species to an acceptable level.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 13 Undertake the Petroleum Activities Program in a manner which does not modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in an area defined as a Key Ecological Feature. **EPO 23** Undertake the Petroleum Activities Program in a manner which prevents a known or potential pest species (IMS) becoming established.	**C 13.1** Project vessels 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).	**PS 13.1** Prevent the translocation of IMS within the vessel's ballast water from high risk locations to the Operational Area.	**MC 13.1.1** Ballast Water Records System maintained by vessels which verifies compliance against Australian Ballast Water Management Requirements.
	C 13.2 Internationally sourced Project vessels will manage their biosecurity risk associated with biofouling as specified in the Australian Biofouling Management Requirements.	**PS 13.2** Compliance with Australian Biofouling Management Requirements.	**MC 13.2.1** Records of implementation of biofouling management measures and pre-arrival reporting
	C 13.3 Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment that enter the Operational Area, unless exempt (**Section 7.2.2**) Based on the outcomes, management options commensurate with the risk will be implemented to minimise the likelihood of IMS being introduced.	**PS 13.3.1** Before entering the Operational Area, project vessels, MODU and relevant immersible equipment are determined to be low risk of introducing IMS of concern.	**MC 13.3.1** Records of IMS risk assessments maintained for all project vessels and relevant immersible equipment entering the operational area to undertake the Petroleum Activities Program.
		PS 13.3.3 In accordance with Woodside's IMS risk assessment process, the IMS risk assessments will be undertaken by an authorised environment adviser who has completed relevant Woodside IMS training or by qualified and experienced IMS inspector.	**MC 13.3.2** Records confirm that the IMS risk assessments undertaken by an Environment Adviser or IMS inspector (as relevant).

6.8.9 Physical Presence (Unplanned): Collision with Marine Fauna

Scarborough OPP – Relevant Impact Assessment Section		
OPP Section 7.2.5 Physical Presence (Unplanned): Collision with Marine Fauna		
Context		
Relevant Activities Vessel Operations – **Section 3.9.2**	**Existing Environment** Marine Fauna of Conservation Significance – **Section 4.6**	**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 MODU/project vessels and protected marine fauna						✓		A	E	1	L	LCS GP PJ	Broadly Acceptable	EPO 26

Description of Source of Impact/Risk

Vessel Operations

Activities associated with the Petroleum Activities Program will require vessels for subsea installation, support operations and supply/transport. The type and number of vessels in the PAA at any one time, and the duration of presence, will differ depending on the activities being undertaken. Physical presence of vessels may result in unplanned collision with marine fauna including marine mammals, marine reptiles and fish.

Detailed Impact Assessment

Assessment of Potential Impacts

Project vessels operating in and around the PAA may present a potential hazard to marine mammals and other protected marine fauna, such as marine turtles. Vessel movements can result in collisions between the vessel (hull and propellers) and marine fauna, potentially resulting in superficial injury, serious injury that may affect life functions (e.g. movement and reproduction), or mortality. Marine fauna are also at risk of mortality through being caught in thrusters during station keeping operations (dynamic positioning).

The likelihood of vessel/fauna collision being lethal is influenced by vessel speed—the greater the speed at impact, the greater the risk of mortality (Jensen and Silber, 2004; Laist et al., 2001). Vanderlaan and Taggart (2007) found that the chance of lethal injury to a large whale as a result of a vessel strike increases from about 20% at 8.6 knots to 80% at 15 knots. Project vessels within the PAA are likely to be travelling <8 knots (and will often be stationary) within the 500 m zone for the MODU. At times, vessels will be transiting between wells where speed could be up to a maximum of about 15 knots, however these would only be transitory through the area. Therefore, the chance of a vessel collision with protected species resulting in a lethal outcome is considered unlikely.

The risk of marine life getting caught in operating thrusters is unlikely, given the low presence of individuals, combined with the avoidance behaviour commonly displayed during dynamic positioning operations.

Marine Mammals

As described above, vessel speed influences the probability of a vessel collision with a cetacean and also whether a collision may result in lethal injury (Vanderlaan and Taggart, 2007). Additionally, behaviour of individuals may also influence the likelihood of a collision occurring. Although large cetaceans are expected to show localised avoidance in response to vessel noise, studies have reported limited behavioural response to approaching ships (McKenna et al.,

2015) and individuals engaging in behaviours such as feeding, mating or nursing may be less aware of their surroundings and more susceptible to collision (Laist et al., 2001).

No known key aggregation areas for marine mammals (resting, breeding or feeding) are located within or immediately adjacent to the PAA. However, individuals may occasionally be present in the PAA, including pygmy blue whales during seasonal migrations (**Section 4.6.5**). Eleven species of dolphin were identified that may occur in the PAA. However, most dolphins show preference for coastal habitats over deep offshore waters. This reduces the likelihood of dolphin species being encountered in the PAA and interacting with project vessels.

According to the data of Vanderlaan and Taggart (2007), it is estimated that the risk of lethal injury to a large whale as a result of a vessel strike is less than 10% at a speed of 4 knots. Vessel-whale collisions at this speed are uncommon and, based on reported data contained in the NOAA database (Jensen and Silber, 2004) there are only two known instances of collisions when the vessel was travelling at less than 6 knots; both of these were from whale-watching vessels that were deliberately positioned amongst whales

Smaller cetaceans, such as dolphins, comprise a lower proportion of vessel collision records (DoEE, 2016), though it is difficult to determine if this is due to a lower collision rate or lower detection rate of incidents. Dolphins often engage in bow riding which may make them more vulnerable to entanglement with propellers or thrusters compared to larger cetaceans.

Marine Reptiles

The Recovery Plan for Marine Turtles in Australia recognises turtles are at risk from vessel strikes, particularly in shallow coastal foraging habitats and internesting areas where there are high numbers of recreational and commercial vessels (Commonwealth of Australia, 2017). Considering the offshore location, it is expected that the presence of marine turtles would be very unlikely and only comprise individuals transiting the open, offshore waters for short periods of time. It is expected that individuals will respond to vessel presence by avoiding the immediate vicinity of the vessels and, combined with low vessel speed, will reduce the likelihood of a vessel-turtle collision.

It is unlikely that vessel movement associated with the Petroleum Activities Program will have a significant impact on marine fauna populations, given the low presence of transiting individuals and the low operating speed of the support vessels (generally <8 knots or stationary, unless operating in an emergency).

Marine Fauna Summary

Potential impacts from collision with marine fauna will not result in a substantial adverse effect on a population or the spatial distribution of the population. Additionally, no adverse impact on marine ecosystem functioning or integrity or impacts to lifecycles of the population of migratory whales will occur.

Summary of Assessment Outcomes					
Receptor	**Impact**	**Receptor Sensitivity**	**Risk Consequence**	**Likelihood**	**Risk Rating**
Marine Mammals	Injury to/ mortality of fauna	High value species	Slight (E)	Highly Unlikely	Low
Marine Reptiles	Injury to/ mortality of fauna	High value species	Slight (E)	Highly Unlikely	Low
Overall Risk Consequence: The overall risk rating is Low based on slight consequence, to the high value receptors (marine mammals and reptiles) and a highly unlikely likelihood. The risk rating/risk consequence for individual receptors are consistent with the levels rated in the OPP.					

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans,	F: Yes. CS: Minimal cost. Standard practice.	Implementation of these controls will reduce the likelihood of a collision between a cetacean and vessel from occurring. The consequence of	Controls based on legislative requirements – must be adopted.	Yes **C 3.1**

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
including the following measures[40]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • Project vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.		a collision is unchanged.		
Project vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to pproach closer than 30 m of a whale shark[40]	F: Yes. CS: Minimal cost. Standard practice	Implementation of these controls will reduce the likelihood of a collision between a whale shark and vessel occurring. The consequence of a collision is unchanged.	F: Yes.	F: Yes. **C 3.5**
Good Practice				
Vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots[40].	F: Yes. CS: Minimal cost. Standard practice	Implementation of these controls will reduce the likelihood of a collision between a turtle and vessel occurring. The consequence of a collision is unchanged.	F: Yes.	F: Yes. **C 3.6**
Variation of the timing of the Petroleum Activities Program to avoid whale migration periods.	F: No. Timing of activities is linked to MODU schedule. Timing of all activities is currently not determined, and due to MODU availability and operational requirements,	Not considered – control not feasible.	Not considered – control not feasible.	No

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

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	undertaking activities during migration seasons may not be able to be avoided. CS: Not considered – control not feasible.			
Professional Judgement – Eliminate				
No additional controls identified.				
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
The use of dedicated MFOs on project vessels for the duration of each activity to watch for whales and provide direction on and monitor compliance with Part 8 of the EPBC Regulations.	F: Yes. However, vessel bridge crews already maintain a constant watch during operations in compliance with the Woodside Marine – Charterers Instructions on the requirements of vessel and whale interactions, and crew undertake specific cetacean observation training. CS: Additional cost of MFOs	Given that project vessel bridge crews already maintain a constant watch during operations in compliance with the Woodside Marine – Charterers Instructions, additional MFOs would not significantly further reduce the risk.	Disproportionate. The cost/sacrifice outweighs the benefit gained.	No
Manage Vessel speed to reduce likelihood of interaction with marine fauna	F: Yes. CS: Good practice	There is an established relationship between the likelihood of vessel strikes to whales and the speed of the vessel. However, the PAA does not overlap with any cetacean BIAs or critical habitat and the presence of marine fauna is likely to be limited to infrequent occurrences of individuals or small groups. Therefore, there is no further risk reduction from the application of this control.	Given the slow speeds at which vessels operate, the likely presence of marine fauna in the PAA and the controls currently in place (C3.1) the adoption of this control offers no further reduction in risk.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***

ALARP Statement:

On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **Section 2.3.3**), Woodside considers the adopted controls appropriate to manage the risks and consequences of potential vessel collision with protected marine fauna. As no reasonable additional/alternative controls were identified that would further reduce the risks and consequences without grossly disproportionate sacrifice, the risks and consequences are considered ALARP.

Woodside acknowledges that uncertainty on cultural values may remain; however, the Ongoing Program on Traditional Custodian Feedback (EPO 27 and C4.9) has been developed to enable Woodside to manage potential uncertainty on the impacts and risks to cultural values which may be identified at any time during Woodside's activities via ongoing dialogue with Traditional Custodians.

Demonstration of Acceptability

Acceptability Criteria and Assessment

Demonstration of acceptability for the sources of aspect and associated impacts assessed in this section are provided in Section 7.2.5.3 of the Scarborough OPP (SA0006AF0000002, rev 5). The Petroleum Activities Program meets the acceptability criteria (**Section 2.3.5**):

- Overall risk consequence/risk ratings for individual receptors are less than the significant impact level defined in the OPP.
- EPOs and controls in the OPP that are relevant to an unplanned seabed disturbance have been adopted.
- There are no changes to internal/external context specific to this risk from the OPP.
- Potential impacts to marine fauna from a vessel strike was raised during consultation (**Appendix F, Table 1**) and this feedback was 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. There are no BIAs for any EPBC Act listed Threatened or Migratory species overlapping or adjacent to the PAA. Relevant recovery plans and conservation advice have been considered during the impact assessment, and the Petroleum Activities Program is not considered to be inconsistent with the overall recovery objectives and actions of these recovery plans and conservation advice (**Section 6.9**). The adopted controls are considered consistent with industry good practice and professional judgement and meet the requirements of Part 8 (Division 8.1) of the EPBC Regulations 2000. The potential risks and consequences are considered broadly acceptable if the adopted controls are implemented. Therefore, Woodside considers the adopted controls appropriate to manage the risks of vessel collision with marine fauna to a level that is broadly acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria			
EPO	***Adopted Control(s)***	***EPS***	***MC***
EPO 26 Undertake the Petroleum Activities Program in a manner which prevents a vessel strike with protected marine fauna during project activities.	**C 3.1** See **Section 6.7.3**	**PS 3.1** See **Section 6.7.3**	**MC 3.1.1** See **Section 6.7.3**
	C 3.5 See **Section 6.7.3**	**PS 3.5** See **Section 6.7.3**	**MC 3.5.1** See **Section 6.7.3**
	C 3.6 See **Section 6.7.3**	**PS 3.6** See **Section 6.7.3**	**MC 3.6.1** See **Section 6.7.3**

6.9 Recovery Plan and Threat Abatement Plan Assessment

As described in **Section 1.10.2.2**, an EP must not be inconsistent with a recovery plan or threat abatement plan for a listed threatened species or ecological community. This section describes the assessment that Woodside has undertaken to demonstrate that the Petroleum Activities Program is not inconsistent with any relevant recovery plans or threat abatement plans. For the purposes of this assessment, the relevant Part 13 statutory instruments (recovery plans and threat abatement plans) are:

- Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia, 2017).
- Conservation Management Plan for the Blue Whale - A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999 2015-2025 (Commonwealth of Australia, 2015a).
- Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans 2018 (DoEE, 2018).

Table 6-18 lists the objectives and (where relevant) the action areas of these plans, and also describes whether these objectives/action areas are applicable to government, the Titleholder and/or the Petroleum Activities Program. For those objectives/action areas applicable to the Petroleum Activities Program, the relevant actions of each plan have been identified, and an evaluation has been conducted as to whether impacts and risks resulting from the activity are clearly inconsistent with that action or not. The results of this assessment against relevant actions are presented in **Table 6-19** to **Table 6-21**.

The assessment of potential impacts and risks to pygmy blue whales from underwater noise emissions in **Section 6.7.3** has taken into account the definitions of terminology in the CMP, as described in the DAWE and NOPSEMA guidance released in September 2021. Similarly, the assessment against relevant actions in the CMP in **Table 6-20** has been undertaken in the context of the definitions included in the guidance note.

Table 6-18: Identification of applicability of recovery plan and threat abatement plan objectives and action areas

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
Marine Turtle Recovery Plan			
Long-term Recovery Objective: Minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so they can be removed from the EPBC Act threatened species list	Y	Y	Y
Interim Recovery Objectives			
Current levels of legal and management protection for marine turtle species are maintained or improved, both domestically and throughout the migratory range of Australia's marine turtles	Y		
The management of marine turtles is supported	Y		
Anthropogenic threats are demonstrably minimised	Y	Y	Y
Trends in nesting numbers at index beaches and population demographics at important foraging grounds are described	Y	Y	
Action Areas			
A. Assessing and addressing threats			

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
A1. Maintain and improve efficacy of legal and management protection	Y		
A2. Adaptively manage turtle stocks to reduce risk and build resilience to climate change and variability	Y		
A3. Reduce the impacts of marine debris	Y	Y	Y
A4. Minimise chemical and terrestrial discharge	Y	Y	Y
A5. Address international take within and outside Australia's jurisdiction	Y		
A6. Reduce impacts from terrestrial predation	Y		
A7. Reduce international and domestic fisheries bycatch	Y		
A8. Minimise light pollution	Y	Y	Y
A9. Address the impacts of coastal development/infrastructure and dredging and trawling	Y	Y	
A10. Maintain and improve sustainable Indigenous management of marine turtles	Y		
B. Enabling and measuring recovery			
B1. Determine trends in index beaches	Y	Y	Y
B2. Understand population demographics at key foraging grounds	Y		
B3. Address information gaps to better facilitate the recovery of marine turtle stocks	Y	Y	Y
Blue Whale Conservation Management Plan			
Long-term recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list	Y	Y	Y
Interim Recovery Objectives			
The conservation status of blue whale populations is assessed using efficient and robust methodology	Y		
The spatial and temporal distribution, identification of biologically important areas, and population structure of blue whales in Australian waters is described	Y	Y	Y
Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place	Y		
Anthropogenic threats are demonstrably minimised	Y	Y	Y
Action Areas			
A. Assessing and addressing threats			
A.1: Maintain and improve existing legal and management protection	Y		
A.2: Assessing and addressing anthropogenic noise	Y	Y	Y
A.3: Understanding impacts of climate variability and change	Y		
A.4: Minimising vessel collisions	Y	Y	Y
B. Enabling and Measuring Recovery			
B.1: Measuring and monitoring population recovery	Y		

EPBC Act Part 13 Statutory Instrument	Applicable to:		
	Government	***Titleholder***	***Petroleum Activities Program***
B.2: Investigating population structure	Y		
B.3: Describing spatial and temporal distribution and defining biologically important habitat	Y	Y	Y
Marine Debris Threat Abatement Plan			
Objectives			
Contribute to long-term prevention of the incidence of marine debris	Y	Y	
Understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations	Y	Y	Y
Remove existing marine debris	Y		
Monitor the quantities, origins, types and hazardous chemical contaminants of marine debris, and assess the effectiveness of management arrangements for reducing marine debris	Y		
Increase public understanding of the causes and impacts of harmful marine debris, including microplastic and hazardous chemical contaminants, to bring about behaviour change	Y		

Table 6-19: Assessment against relevant actions of the Marine Turtle Recovery Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Marine Turtle Recovery Plan	**Action Area A3**: Reduce the impacts from marine debris	**Action**: Support the implementation of the Marine Debris Threat Abatement Plan (TAP) Priority actions at stock level: • G-NWS – understand the threat posed to this stock by marine debris • LH-WA – determine the extent to which marine debris is impacting loggerhead turtles • F-Pil and H-WA – no relevant actions	Refer **Section 6.8.6** **Not inconsistent assessment**: The assessment of accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to marine turtles.	**EPO 4, 19** **C 11.1, 11.4** **EPS 11.1, 11.4**
	Action Area A4: Minimise chemical and terrestrial discharge	**Action**: Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in reference to 'slow to recover habitats', e.g. nesting habitat, seagrass meadows or coral reefs Priority actions at stock level: • G-NWS – ensure that spill risk strategies and response programs include management for turtles and their habitats • LH-WA, F-Pil – ensure that spill risk strategies and response programs include management for turtles and their habitats, particularly in reference to slow to recover habitats, e.g. seagrass meadows or corals • H-WA – no relevant actions	Refer **Sections 6.8.2, 6.8.4, 6.8.5** and **Appendix D** **Not inconsistent assessment**: The assessment of accidental release of chemicals / hydrocarbons has considered the potential risks to marine turtles. Spill risk strategies and response program include management measures for turtles and their nesting habitats.	Refer **Section 7.10**. Detailed oil spill preparedness and response performance outcomes, standards and measurement criteria for the Petroleum Activities Program are present in **Appendix D**
		Action: Routine discharges from MODU and project vessels are managed such that marine turtles are not adversely affected by changes in water quality. Priority actions at stock level: • G-NWS – as above • LH-WA, F-Pil – as above • H-WA – no relevant actions	Refer **Section 6.7.6** **Not inconsistent assessment:** The assessment of routine discharges of chemicals, deck drainage, treated sewerage, putrescible wastes and grey water has considered the potential risks to marine turtles. Individuals transiting the localised area may come into contact with routine discharges, however these are sporadic and	**EPO 11** **C 6.1, 6.3, 6.4. 6.5** **EPS 6.3, 6.4. 6.5**

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
			in small quantities, and are unlikely to pose a significant risk.	
	Action Area A8: Minimise light pollution	**Action**: Artificial light within or adjacent to habitat critical to the survival of marine turtles will be managed such that marine turtles are not displaced from these habitats Priority actions at stock level: • G-NWS – as above • LH-WA – no relevant actions • F-Pil and H-WA – manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and emerging/dispersing hatchlings can continue	Refer **Section 6.7.1.** **Not inconsistent assessment**: The assessment of light emissions has considered the potential impacts to marine turtles. Internesting, mating, foraging or migrating turtles are not impacted by light from offshore vessels. Vessel light emissions could cause localised and temporary behavioural disturbance to isolated transient individuals, which is unlikely to result in displacement of adult turtles from internesting or nesting habitat critical to the survival of marine turtles.	**EPO 3, 4** **C 1.1** **EPS 1.1**
	Action Area B1: Determine trends at index beaches	**Action**: Maintain or establish long-term monitoring programs at index beaches to collect standardised data critical for determining stock trends, including data on hatchling production Priority actions at stock level: • G-NWS – continue long-term monitoring of index beaches • LH-WA – continue long-term monitoring of nesting and foraging populations • F-Pil and H-WA – no relevant actions	**Not inconsistent assessment**: Woodside contributes to Action Area B1 via its support of the Ningaloo Turtle Program[41]. Given the offshore location of the PAA, impacts to turtle nesting beaches will not occur.	N/A
	Action Area B3: Address information gaps to better facilitate the recovery of marine turtle stocks	**Action**: Understand the impacts of anthropogenic noise on marine turtle behaviour and biology Priority actions at stock level: • G-NWS – given this is a relatively accessible stock that is likely to be exposed to anthropogenic noise – Investigate the impacts of anthropogenic noise on turtle behaviour and	Refer **Section 6.7.3.** **Not inconsistent assessment**: The assessment of acoustic emissions has considered the potential impacts to flatback and olive ridley turtles. Vessel acoustic emissions could cause localised and short-term behavioural disturbance to isolated transient individuals, which is unlikely to	**EPO 3, 7, 8** **C 3.1** **PS 3.1**

[41] http://www.ningalooturtles.org.au/media_reports.html

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
		biology and extrapolate findings from the North West Shelf stock to other stocks • LH-WA, F-Pil – no relevant actions • H-WA – investigate mixed stock genetics at foraging grounds	result in displacement of adult turtles from internesting or nesting habitat critical to the survival of marine turtles.	
Assessment Summary The Marine Turtle Recovery Plan has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-20: Blue Whale Conservation Management Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Blue Whale Conservation Management Plan	**Action Area A.2**: Assessing and addressing anthropogenic noise	**Action 2**: Assessing the effect of anthropogenic noise on blue whale behaviour **Action 3**: Anthropogenic noise in biologically important areas will be managed such that any blue whale continues to use the area without injury, and is not displaced from a foraging area	Refer **Section 6.7.3.** **Not inconsistent assessment**: The assessment of acoustic emissions has considered the potential impacts to pygmy blue whales.	**EPO 3, 7, 8** **C 3.1** **PS 3.1**
	Action Area A.4: Minimising vessel collisions	**Action 3**: Ensure the risk of vessel strikes on blue whales is considered when assessing actions that increase vessel traffic in areas where blue whales occur and, if required, appropriate mitigation measures are implemented	Refer **Section 6.8.9** **Not inconsistent assessment**: The assessment of vessel collision with marine fauna has considered the potential risks to pygmy blue whales. If the Petroleum Activities Program overlaps with the northern migration, individuals may deviate slightly from migratory route, but will continue on their migration to possible breeding grounds in Indonesian waters. Vessel collisions with pygmy blue whales are highly unlikely to occur, given the very slow vessel speeds and presence of MFOs.	**EPO 26** **C 3.1** **PS 3.1**

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
	Action Area B.3: Describing spatial and temporal distribution and defining biologically important habitat	**Action 2**: Identify migratory pathways between breeding and feeding grounds **Action 3**: Assess timing and residency within Biologically Important Areas	**Not inconsistent assessment**: Woodside contributes to Action Area B3 via its support of targeted research initiatives (e.g. satellite tracking of pygmy blue whale migratory movements[42]).	N/A
Assessment Summary The Blue Whale Conservation Management Plan has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

Table 6-21: Assessment against relevant Marine Debris Threat Abatement Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and PS
Marine Debris TAP	**Objective 1:** Contribute to long-term prevention of marine debris.	**Action 1.02**: Limit the amount of single use plastic material lost to the environment in Australia.	Refer **Section 6.8.6.** **Not inconsistent assessment**: The assessment of accidental release of solid hazardous and non-hazardous wastes has considered the potential risks to vertebrate wildlife.	**EPO 2, 3, 4, 8, 19, 20, 21** **C 11.1, 11.2, 11.3 11.4** **EPS 11.1, 11.2, 11.3 11.4**
Assessment Summary The Marine Debris TAP has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

[42] 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

6.10 Cultural Features and Heritage Values Assessment

As described in **Section 4**, the identification of cultural values associated with cultural heritage as well as the social, economic and cultural features important to First Nation's people is integral to understanding the environment and any potential impacts and risks to the environment.

In line with 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 as a general interest in environmental management and ecosystem health, where the group/individual was seeking further information about potential impacts and risks from the Petroleum Activities Program on the receptor. As these interests relate to the maintenance of the natural environment, these are adequately addressed through impact and risk assessments described in **Sections 6.7** and **6.8** respectively and not further assessed below.

Aspect	Cultural Features and Heritage Values
Description of source impact/ risk	The physical presence of the MODU and vessels and associated movements in the PAA, as well as physical presence of subsea infrastructure, have the potential to impact or be a risk to cultural features and heritage values. **MODU and Vessel Operations** The Petroleum Activities Program includes drilling up to ten new development wells (two of which are contingency). Inspection, monitoring, maintenance and repair activities may also be conducted on any of the proposed new development wells within Permit Area WA-61-L. While wells may be batch drilled, only one well will be drilled at any given time. Drilling operations for the development wells is expected to take approximately 60 days per well to complete, including mobilisation, demobilisation and contingency. This is equivalent to 480 days for the eight planned wells (with an additional 120 days as required for the two contingent wells). Other vessels may also be required during the activities, including subsea support vessel for light well intervention and other support vessels. Some vessels will need to transit in and out of the PAA to port for routine and emergency operations. The temporary presence of the MODU and project vessels in the PAA will 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 MODU or a project vessel which could release hydrocarbons. A volume of 250 m^3 of marine diesel is considered an appropriate worst-case for a single fuel tank, based on existing facilities. and forms the basis of the EMBA (refer to **Section 6.8.2**). **Physical presence of subsea infrastructure** The subsea xmas trees and wellheads will be located within the PAA. The physical presence of this infrastructure will remain for the duration of field life. Wellheads and xmas trees take up a small area on the seabed and will rise several metres above the seabed. These construction activities have the potential to cause various emissions and discharges (as described and impact assessed in **Section 6.7**) and the potential for unplanned risks (as described and risk assessed in **Section 6.8**). The Impact Significance Level and Risk Rating respectively for each of the marine fauna receptor identified as cultural value are provided in the subsequent section for context.

Receptor sensitivity

Cultural features and heritage values: High value

Marine mammals: High value species

Marine reptiles: High value species

Fish: High value species

Planned Activities

The potential environmental impact to species that have a cultural feature or heritage value have been summarised below to provide the context of a potential impact significance level to those species to understand any cumulative impact on the cultural feature or heritage value.

Aspect	Impact Significance Level		
Environmental impact assessment to marine species	Marine mammals	Marine reptiles	Fish
6.7.1 Routine Light Emissions: External Lighting on MODU and Project Vessels	N/A	Slight (E)	N/A
6.7.3 Routine Acoustic Emissions – Generation of Noise from MODU, Project Vessels and Positioning Equipment	Slight (E)	Slight (E)	Slight (E)
6.7.6 Routine and Non-Routine Discharges: MODU and Project Vessels	Slight (E)	Slight (E)	Slight (E)

Unplanned Activities

The potential environmental risk to species that have a cultural feature or heritage value have been summarised below to provide the context of a potential impact significance level to those species to understand any cumulative impact on the cultural feature or heritage value

Aspect	Risk Rating		
Environmental risk assessment to marine species	Marine mammals	Marine reptiles	Fish
6.8.2 Unplanned Hydrocarbon Release: Vessel Collision	Moderate	Moderate	Moderate
6.8.4 Unplanned Discharge: Chemicals and Hydrocarbons	Low	Low	Low
6.8.5 Unplanned Discharge: Bunkering	Moderate	Moderate	Moderate
6.8.6 Unplanned Discharge: Hazardous and Non – Hazardous Solid Waste/Equipment	Low	Low	Low
6.8.9 Physical Presence (Unplanned): Collision with Marine Fauna	Low	Low	N/A

Impact and Risk Assessment

The Petroleum Activities Program has the potential to impact cultural features and heritage values through the following ways:

Intangible cultural heritage:

- Songlines: Songlines can become lost, fragmented, or broken when there is a loss of Country or forced removal from Country (Neale and Kelly 2020:30). Physical sites that have been identified as comprising a component of a songline are important to protect to prevent the fragmenting or breaking apart of songlines and loss of sacred cultural knowledge. It is noted that oil and gas infrastructure exists in many areas of the North West Shelf, and that songlines are still acknowledged and recognised. It is inferred that if there were to be any impacts to surviving songlines these would be significantly more likely to be described as qualitative (i.e. "weaken" a songline) rather than binary or absolute (i.e. destroy a songline).
- Creation/dreaming sites; sacred sites; ancestral beings: Activities that physically alter landscape features may be assumed to potentially impact values of creation/dreaming sites, sacred sites or ancestral beings.
- Cultural obligations to care for Country: Environmental impacts may be assumed to impact rights and obligations to care for Sea Country. Exclusion of Traditional Custodians from Sea Country (e.g., by restricting access) or decision-making processes (e.g. by not conducting ongoing consultation) are other potential sources of impact.
- Knowledge of Country/customary law and transfer of knowledge: Direct impact to communities practicing these skills will inherently occur when relevant aspects of the environment disappear, are displaced or suffer a reduction in population. Therefore, the transmission of these skills is expected to be impacted where there are impacts at the species/population level. Limitations on access to sites or disruption/relocation of First Nations communities may have implications for the preservation of First Nations knowledge.
- Connection to Country: Where people are displaced or disrupted (e.g., during colonisation) or where there is a loss of technical skills or environmental knowledge this may damage connection to Country (McDonald and Phillips, 2021).
- Access to Country: Impacts to access to Country may be classified as temporary (e.g. where exclusion zones exist around activities for safety reasons) or permanent (e.g. where infrastructure obstructs access or navigation). Impacts to access to Country can only occur in areas that were traditionally accessed by Traditional Custodians. As described in **Section 4.9.1.5** 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.

Intangible values

Songlines

Management of intangible cultural heritage can include reducing impacts and risks to tangible features that are associated with intangible cultural heritage (UNESCO 2003; ICOMOS 2013). Impacts to marine plants, animals and other cultural features associated with songlines might impact the intergenerational transmission of knowledge of songlines when individuals can no

longer witness or interact with the cultural features tied to songlines on Country. Therefore, managing songlines may require environmental controls to minimise potential impact to marine fauna at a population level, including migratory routes. Refer to species specific assessment below for further information, in addition to the impact and risk assessment in Section 6.7 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. rocks, mountains, rivers, caves and hills (Higgins 2021:724)) are anticipated to be impacted by the Activity.

In publicly available literature, Murujuga is acknowledged 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, however 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). 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. 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.

In publicly available literature, Murujuga is acknowledged a starting point for songlines, including 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 (**Table 4-17**). Consultation with this group and associated individuals has not provided detail on the presence, features or route of this songline. The most detailed description available to Woodside is asserted in the Concise Statement and Affidavit filed by [redacted] 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 4-17**. 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, and interruption of caring for Country activities, whale caretaker/midwife behaviour and 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.

Creation/dreaming sites; sacred sites; ancestral beings

Woodside has undertaken all reasonable steps to identify creation and dreaming sites, sacred sites, and places associated with ancestral beings within the EMBA. No such sites have been

identified. A review of relevant literature has been undertaken which has identified creation, dreaming and ancestral narratives related to the sea more broadly without confirming where (if anywhere) these overlap the EMBA. These references are of a general nature, and do not identify any features or values requiring specific protection or management from the proposed activities.

In the literature reviewed, sea serpents or water serpents are common in Aboriginal creation narratives, and several references were identified. The majority of these refer to serpents residing within inland rivers or pools outside of the EMBA (Barber and Jackson 2011, Hayes v Western Australia [2008] FCA 1487, Juluwarlu 2004, Water Corporation 2019). In some versions, the serpent originates from the sea or coast and creates the rivers as it heads inland. The current coastline and past coastlines at various points along the Ancient Landscape—where the Serpent would have emerged onto the land—are all outside of the EMBA. Areas of the broader ocean where the serpent may have originally lived are not specified. 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 impacts on sea serpents from the Petroleum Activities Program. However, by analogy to other water serpent narratives across Australia, possible impact pathways may include interruption of its path by blocking or reducing flows of water, damaging sacred sites such as thalu or rock art sites or depleting water sources.

No impacts to water flows (either tidal movement or ocean currents) or depletion of water sources are anticipated from this Petroleum Activities Program. The EMBA does not overlap the Ancient Landscape where thalu or rock art sites may exist.

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. The EMBA does not interact with coastal sites and no impacts to coastal sites of significance are anticipated.

No cultural activities to care for Country which are performed within the EMBA were identified.

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 6.7 and 6.8 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. No impacts to connection to country are anticipated as a result of exclusion or displacement of Aboriginal communities. Access to Country is discussed below.

Access to Country

Access to Country, including Sea Country, is necessary for the continuation of other values including caring for Country and the transfer of traditional knowledge. Access is also a value in its own right, as a continuation of traditional Sea Country access and use.

Access to areas within the PAA may be limited where exclusion zones are established around vessels for safety purposes. The PAA is located greater than 215 km from the closest landfall at North West Cape and no traditional activities within the PAA have been identified. Further the exclusion zones around drilling activities are temporary and presence of subsea infrastructure are

not anticipated to affect navigation, particularly given the water depth. Access to Country within the EMBA is also not expected to be affected in the highly unlikely event of a marine diesel spill. 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. 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.

Resource collection

A number of marine species are identified through consultation and literature as important resources, particularly as food sources. In addition to their immediate value as sustenance, the gathering and preparation of these resources are informed by cultural knowledge, and an inability to use these resources may result in a loss of ability to transfer that knowledge to future generations. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these communities may be impacted where there is an impact at the species/population level. Refer to species specific assessment below for further information, in addition to the impact assessment in Section 6.7.

Further, the closest boundary of the PAA is greater than 360 km west-north-west of Dampier, and greater than 215 km from the closest landfall at North West Cape, while the closest boundary of the EMBA is about 40 km from closest landfall with no shoreline contact. Impacts to potential resources within the EMBA are described and risk assessed in **Section 6.8**. 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

There are increase ceremonies / rituals for species of animals and plants, important to First Nations, to enhance or maintain populations. Thalu are places where these increase ceremonies are performed. All mentions of active ceremonial sites were confined to onshore locations, though the values may extend offshore where, for example, the thalu relates to marine species populations. As thalu ceremonies are performed to maintain and increase populations of marine species, it is considered that management applies at the species/population level and not to individuals—for example the thalu site on Murujuga which "brings in whales to beach" will continue to serve its purpose so long as whales continue to migrate through Mermaid Sound.

Related intangible cultural heritage may include the transmission of cultural knowledge about whales and whale behaviour, including birthing areas, whale communication and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). First Nations groups have expressed interest about whale migratory routes and studies (**Table 4-17**). 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 assessment **Sections 6.7** and **6.8** respectively, potential impacts to whales are limited to behavioural disturbance to transient individuals, which are not considered to be ecologically significant at a population level, and hence not expected to impact the value of marine mammals, including the transmission of cultural knowledge. The PAA does not overlap any BIAs, with the closest migratory BIA for pygmy blue

whales ~35 km distance away. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Marine reptiles

Turtles and their eggs have been identified through consultation and existing literature as an important resource, particularly as food sources (**Table 4-16; Table 4-17**). Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) will be impacted where there is an impact at the species/population level.

Intangible cultural heritage may also include the transmission of cultural knowledge about marine reptiles, such as nesting areas, hunting areas and migratory patterns. Such cultural knowledge may be associated with various cultural functions and activities that support the social and economic life of a community (Fijn 2021). First Nations groups have expressed an interest regarding turtle monitoring programs and migration patterns (**Table 4-17**). 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 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 **Sections 6.7** and **6.8** respectively, potential impacts to marine reptiles are predicted to be at an individual level, which are not considered to be ecologically significant at a population level. Impacts will not occur to significant proportions of the populations of the species, nor result in a decrease of the quality of the habitat such that the extent of these species is likely to decline. Further, the PAA and EMBA do not overlap any marine turtle BIAs. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Fish

Fish have been identified through consultation and existing literature as an important resource, particularly as food sources. Direct impact to communities using these resources will inherently occur when the resource disappears, is displaced or suffers a reduction in population. Therefore, these species (as resources) will be impacted where there is an impact at the species/population level.

During consultation, fish were identified as important agents in the management of the broader ecosystem in Mermaid Sound, which is outside of the EMBA, but is assumed to also apply general to marine environments Inter-generational transmission of cultural knowledge relating to fish may be impacted where changes to population/behaviour results in reduced sightings (e.g., through population decline). This transfer of knowledge may be integral to managing a group's intangible cultural heritage (UNESCO 2003). Intangible cultural heritage associated with fish, including inter-generational knowledge regarding fishing techniques and migratory patterns, can be managed by reducing impacts to fish in nearshore marine environments to which this cultural knowledge is intrinsically connected.

As described in the relevant environmental impact and risk **Sections 6.7** and **6.8** respectively, it is expected that fish, sharks and rays may demonstrate avoidance or attraction behaviour however, potential impacts are not considered to be ecologically significant at a population level. The PAA and EMBA do not overlap any whale shark BIAs. As such, cultural values and intangible cultural heritage associated with these species are expected to be maintained.

Conclusion

The impact and risk assessment has determined that the planned activities are unlikely to result in an impact greater than negligible[43] (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 4.9).

[43] Noting that as the receptor sensitivity is high the impact significance level is Slight (E).

ALARP Demonstration	Control considered	Feasibility (F) & Cost/ Sacrifice (Cs)	Benefit in Impact/Risk Reduction	Proportionality	Adopted
	Apply a 'living heritage[44]' management approach. Woodside seeks advice and incorporates Traditional Custodian cultural knowledges across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.	F: Yes CS: Minimal	Implementation of the 'living heritage' approach pays acknowledgement and respect to Traditional Custodian communities. It supports the transfer of cultural knowledges and is an effective strategy to manage intangible cultural values.	Benefits outweigh cost/sacrifice.	Yes **C 28.2**
	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.	F: Yes CS: Substantial costs	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.	Benefits outweigh cost/ sacrifice	Yes **C 4.9**
	The environmental impacts and risks of the activity will continue to be managed to as low as reasonably practicable and an acceptable level for cultural features and heritage values.	F: Yes CS: Substantial costs	Implementation of activities and associated controls to ALARP and acceptable levels supports the maintenance of cultural features and heritage values	Benefits outweigh cost/sacrifice	Yes **C 28.1**
	Use of cultural heritage monitors on vessels to oversee implementation of controls protecting cultural values	F: No CS: Not feasible	Primary Installation Vessels are POB constrained which depending on vessel has either no or limited ability to	Not considered – control not feasible.	No

[44] Living heritage supports community and individual identity. Intangible cultural heritage is 'living heritage' that is inherited from ancestors and passed on to their descendants. It is comprised of many influences, including oral traditions, art, social practices, rituals and ceremonies, cultural knowledge and practices. It is transmitted from generation to generation, and evolves in response to the 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.

			facilitate additional personnel. On vessel cultural heritage monitors would have access to areas normally subject to exclusion zones and can shape the management of cultural features and heritage values in real time. Within the PAA given the distance offshore it is likely not possible to reach agreement on which First Nations groups should be represented on vessels.		
	Project inductions to all relevant marine crew, prior to the individual commencing the activity, will include information on cultural features and heritage values, including tangible and intangible cultural heritage.	F: Yes CS: Minimal	Ensures workforce as suitably aware of cultural features and heritage values in the area they are operating.	Benefits outweigh cost/sacrifice.	Yes **C 28.3**
	C 3.1 EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[45]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale. • Project vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). • If the cetacean shows signs of being disturbed, project vessels will immediately	F: Yes CS: Minimal	Implementation of controls for reduced vessel speed around marine fauna can potentially reduce the underwater noise footprint of a vessel and reduces the likelihood of impact or influence on whale activity. Where this control prevents impacts to whales at a population level, it maintains a culturally significant resource to a level that results in no observable change to coastal communities (migratory pathways maintained).	Benefits outweigh cost/sacrifice.	Yes **C3.1**

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

	withdraw from the caution zone at a constant speed of less than 6 knots.				
	Project vessels will not travel greater than 6 knots within 250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark[46]	F: Yes CS: Minimal	Implementation of controls for reduced vessel speed around marine fauna can potentially reduce the underwater whales at a population level, it maintains a culturally significant resource to a level that results in no observable change to coastal communities (migratory pathways maintained).	Benefits outweigh cost/sacrifice.	Yes **C 3.5**
	Vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	F: Yes CS: Minimal	Implementation of controls for reduced vessel speed around marine fauna can potentially reduce the underwater noise footprint of a vessel and reduces the likelihood of impact or influence on turtle activity. Where this control prevents impacts to whales at a population level, it maintains a culturally significant resource to a level that results in no observable change to coastal communities (migratory pathways maintained).	Benefits outweigh cost/sacrifice.	Yes **C 3.6**
	Implement adaptive management procedure prior to and during MODU /installation vessel moves to the next well location, during daylight hours. Adaptive management procedure to include: • Use of trained crew (both MODU and installation vessel) • Monitoring 30 minutes prior to move and during the	F: Yes CS: Time / Cost associated with person used for observations Schedule delays associated with waiting on pygmy blue whale	Detecting pygmy blue whale and humpback whale activity in the area before MODU / installation vessel moves allows distance to be maintained and reduces the likelihood of impact or influence on pygmy blue whale or humpback whale activity. Where this control prevents impacts to whales at a population level, it	Benefits outweigh cost/sacrifice.	Yes **C 3.2**

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

	transit to the new well location • MODU / installation vessel will not approach within 500 m of any pygmy blue whales and humpback whales Where pygmy blue whale or humpback whale presence has been observed the area will not be approached, within 500 m, until there has been a period of 30 minutes with no pygmy blue whale(s) or humpback whale recorded	and humpback whale activity to cease / move on.	maintains a culturally significant resource to a level that results in no observable change to coastal communities (migratory pathways maintained).		
	Move support vessel(s) away from MODU (>2 km) if pygmy blue whale or humpback whale observed within 500 m – when support vessel is not being used to perform functionality as required by Safety Case	F: Yes CS: Time / Cost associated with vessel moving and delay to activities which cannot be carried out without support vessel present and at required standby distance	Can reduce cumulative noise and potential reduction in likelihood of impact to pygmy blue whales and humpback whales. Where this control prevents impacts to whales at a population level, it maintains a culturally significant resource to a level that results in no observable change to coastal communities (migratory pathways maintained).	Benefits outweigh cost/sacrifice	Yes **C 3.4**
	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 OSPRMA.	F: Yes CS: Minimal	Engaging with relevant cultural authorities that may be impacted by a spill will allow the Traditional Custodians to identify areas of concern.	Benefits outweigh cost/sacrifice	Yes Adopted, see **Appendix D**
	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 above controls, the controls in **Section 6.7** and **6.8** will reduce impacts to cultural features and heritage values.				
ALARP Statement	On the basis of the impact and risk assessment outcomes and use of the relevant tools appropriate to the decision type (i.e. Decision Type A, **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)[47] and unplanned activities are assessed to have a residual risk rating of moderate (or lower).

The Petroleum Activities Program and the EMBA do not overlap the Ancient Landscape and they do not have a significant impact on MNES (**Section 6.7.5**) including marine fauna with a First Nations connection with, or traditional use in nearshore areas as defined in **Section 4.9.1**. Woodside has engaged with Traditional Custodians adjacent to the EMBA to understand the cultural features and heritage values that may occur and potential impacts from the activity. Additional controls considered and adopted, to minimise impacts to whales and associated songlines (C 3.2 and C3.4) have been discussed with the relevant persons who have raised the value.

The Program of Ongoing Engagement with Traditional Custodians (EPO 27 and C4.9) and 'living heritage' management approach (C 28.2) 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.

Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values[48]

EPO	*Adopted Control(s)*	*EPS*	*MC*
EPO 27 Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values **EPO 28** New cultural values identified through the Program and supporting studies (**EPO 27**) will be managed to ALARP and an Acceptable level of impact. **EPO 29** No impact to known cultural features and heritage value, as stated in Table 4-18, greater than a consequence level	**C 4.9** 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.	**PS 4.9.1** Implement a program, which is compliant with Corporate Woodside Policies, Strategies and procedures, to undertake ongoing consultation with Traditional Custodians whose functions, interests and activities may be affected by the Petroleum Activities program. The Program may include, as agreed with relevant Traditional Custodians: • Social investment to support First Nations ranger programs • Support for First Nations oil spill response capabilities • Support for recording Sea Country values • Support to Traditional Custodian groups to build capabilities and	**MC 4.9.1** Records demonstrate discussions with relevant Traditional Custodian Groups on proposed partnerships and/ or initiatives initiated by Woodside, and responses to feedback provided by Woodside within 4 weeks. **MC 4.9.2** Progress on the Program will be reported in line with annual sustainability reporting via the Woodside website.

[47] Noting that as the receptor sensitivity is high the impact significance level is Slight (E).
[48] As marine ecosystems may hold both cultural and environmental value (see Section 4.9.1), with cultural and environmental values intrinsically linked, in addition to the specific controls for cultural features and heritage values, the controls and performance standards in section 6.7 and 6.8 will reduce impacts to cultural features and heritage values.

Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values[48]			
EPO	***Adopted Control(s)***	***EPS***	***MC***
of F[49] from the Petroleum Activities Program. **EPO 3** Undertake the Petroleum Activities Program in a manner that will not seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species. **EPO 4** Undertake the Petroleum Activities Program in a manner that prevents a substantial adverse effect on a population of fishes, marine mammals, marine reptiles, or the spatial distribution of a population. **EPO 8** Undertake the Petroleum Activities Program in a manner that will not substantially modify, destroy or isolate an area of important habitat for a migratory species. **EPO 21** Undertake Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of marine mammals or the spatial distribution of the population. **EPO 26** Undertake the Petroleum Activities Program in a manner which prevents a vessel strike with		capacity with respect to ability to engage with Woodside and the broader O&G industry on activities • Development of ongoing relationships with Traditional Custodian groups • Any other initiatives proposed for the purpose of protecting Country including cultural values	
		Consideration of cultural values/ new information, through the life of the EP, and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians if impacts to cultural values are identified. Where avoidance is not possible, impact minimisation will be prioritised and demonstrated through a written options analysis/ ALARP to ensure an acceptable level of impact. This will be documented through Woodside's Management of Change and Management of Knowledge processes.	**MC 4.9.3** Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified.
		PS 4.9.2 Undertake an annual review of the program to determine its effectiveness and adapt the program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.	**MC 4.9.4** Records demonstrate an annual review of the program has been undertaken.
	C 28.2 Apply a 'living heritage' management approach. Woodside seeks advice and incorporates Traditional Custodian cultural	**PS 28.2.1** Woodside will continue to give voice to Traditional Custodians to identify interests, transmit information and express concern through	**MC 4.9.1** Refer above

[49] Defined as F – Negligible, no lasting effect (< 1 month) Localised impact not significant to areas /items of cultural significance

Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values[48]			
EPO	***Adopted Control(s)***	***EPS***	***MC***
protected marine fauna during project activities. **EPO 20** Undertake Petroleum Activities Program in a manner that will prevent a substantial adverse effect on a population of fish, or the spatial distribution of the population.	knowledges across our activities. Cultural safety considerations are factored for our workforce and the Traditional Custodian community.	Woodside's program as per PS 4.9.1.	
		PS 28.2.2 Woodside will assess and where deemed practicable will implement appropriate cultural protocols where requested by Traditional Custodians	**MC 28.2.1** Records demonstrate Woodside implemented cultural protocols as requested through PS 4.9.1.
	C 28.1 The environmental impacts and risks of the activity will continue to be managed to as low as reasonably practicable and an acceptable level for cultural values or features.	**PS 28.1.1** Consideration of cultural values / new information, through the life of the EP, and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians if impacts to cultural values are identified. Where avoidance is not possible, impact minimisation will be prioritised and demonstrated through a written options analysis / ALARP to ensure an acceptable level of impact. This will be documented through Woodside's Management of Change and Management of Knowledge processes.	**MC 28.1.1** Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified
	C 28.3 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.	**PS 28.3.1** All relevant marine crew have completed Project inductions, prior to the individual commencing the activity, that include information on cultural values, including tangible and intangible cultural heritage for awareness.	**MC 28.3.1** Records demonstrate all relevant marine crew have completed inductions that include cultural material
	C 3.1 EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans, including the following measures[50]: • Project vessels will not travel greater than 6 knots within 300 m of a cetacean (caution zone) and not approach closer than 100 m from a whale.	**PS 3.1.1** Refer to **Section 6.7.3**	**MC 3.1.1** Refer to **Section 6.7.3**

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

Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values[48]			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	• Project vessels will not approach closer than 50 m for a dolphin and/or 100 m for a whale (with the exception of animals bow riding). If the cetacean shows signs of being disturbed, project vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.		
	C 3.2 Implement adaptive management procedure prior to and during MODU /installation vessel moves to the next well location, during daylight hours. Adaptive management procedure to include: • Use of trained crew (both MODU and installation vessel) • Monitoring 30 minutes prior to move and during the transit to the new well location • MODU / installation vessel will not approach within 500 m of any pygmy blue whales and humpback whales Where pygmy blue whale or humpback whale presence has been observed the area will not be approached, within 500 m, until there has been a period of 30 minutes with no pygmy blue whale(s) or humpback whale recorded.	**PS 3.2.1** During moves to the next well location MODU or installation vessel will not approach within 500 m of pygmy blue whales or humpback whale or an area where pygmy blue whales or humpback whale were observed within the previous 30 minutes.	**MC 3.2.1** Records demonstrate trained MODU/vessel crew on watch prior to moving to next well location **MC 3.2.2** Records demonstrate when PBW or humpback whale presence detected the MODU or installation vessel did not approach within 500 m.
	C 3.4 Move support vessel(s) away from MODU (>2 km) if pygmy blue whale or humpback whale observed within 500 m – when support vessel is not being used to perform functionality as required by Safety Case	**PS 3.4.1** Support vessels relocate, where safety allows, from vicinity of the MODU when pygmy blue whale or humpback whale are observed within 500 m of the MODU.	**MC 3.4.1** Records demonstrate support vessels relocated from MODU vicinity when cetacean activity identified.
	C 3.5 Project vessels will not travel greater than 6 knots within	**PS 3.5.1** When within 250 m of a whale shark vessels will not travel	**MC 3.5.1** Records demonstrate no breaches of speed

Environmental Performance Outcomes, Standards and Measurement Criteria related to Cultural Features and Heritage Values[48]			
EPO	***Adopted Control(s)***	***EPS***	***MC***
	250 m of a whale shark and not allow the vessel to approach closer than 30 m of a whale shark[51]	greater than 6 knots and vessels will not approach closer than 30 m to a whale shark	requirements when within 250 m of a whale shark
	C 3.6 Vessels will not travel greater than 6 knots within 300m of a turtle (caution zone). If the turtle shows signs of being disturbed, vessels will immediately withdraw from the caution zone at a constant speed of less than 6 knots.	**C 3.6.1** When within 300 m of a turtle, vessels will not travel greater than 6 knots.	**MC 3.6.1** Records demonstrate no breaches of speed requirements when within 300 m of a turtle

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

7 IMPLEMENTATION STRATEGY

7.1 Overview

Regulation 14 of the Environment Regulations requires an EP to contain an implementation strategy for the activity. The implementation strategy for the Petroleum Activities Program confirms fit for purpose systems, practices and procedures are in place to direct, review and manage the activities so environmental risks and impacts are continually being reduced to ALARP and are acceptable, and that EPOs and standards outlined in this EP are achieved.

Woodside, as Operator, is responsible for ensuring the Petroleum Activities Program is managed in accordance with this Implementation Strategy and the WMS (see **Section 1.9**).

7.2 Systems, Practice and Procedures

All operational activities are planned and carried out in accordance with relevant legislation and standards, management measures (i.e. controls) identified in this EP and internal environment standards and procedures (**Section 6**).

The systems, practices and procedures that will be implemented are listed in the Performance Standards (PS) contained in this EP. Document names and reference numbers may be subject to change during the statutory duration of this EP and is managed through a Change Register and update process.

7.2.1 Assessment of Project Fluids

All chemicals that may be operationally released or discharged to the marine environment by the Petroleum Activities Program are evaluated using a defined framework and set of tools to ensure the potential impacts are acceptable, ALARP and meet Woodside's expectation for environmental performance.

All approved drilling and completion chemicals are included on the Drilling and Completions – Master Chemical List which is periodically reviewed to drive continuous environmental improvement.

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 listed on the OCNS ranked list of registered products have an assigned ranking based on toxicity and other relevant parameters, such as biodegradation and bioaccumulation, in accordance with one of two schemes (as shown in **Figure 7-1**):

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

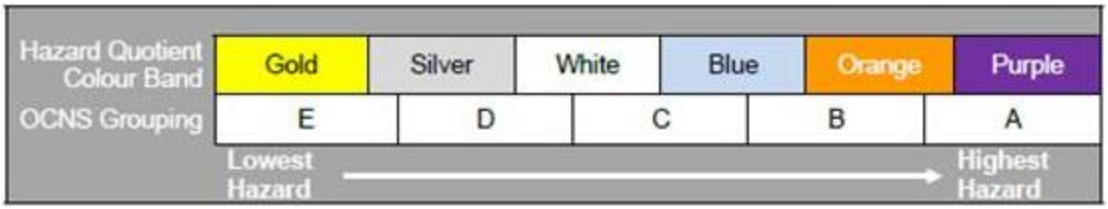


Figure 7-1: OCNS ranking scheme

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, Purple or an OCNS ranking of A, B or C
  - chemicals with an OCNS product or substitution warning.

7.2.1.1 Further Assessment/ALARP Justification

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 Mine 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
Result for sediment toxicity data (ppm)	<10	>10-100	>100-1000	>1000-10,000	>10,000

Note: Aquatic toxicity refers to the Skeletonema constatum EC50, Acartia tonsa lethal concentration 50% (LC_{50}) and Scophthalmus maximus (juvenile turbot) LC_{50} toxicity tests; sediment toxicity refers to Corophium volutator LC_{50} 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.

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: LogPow <3, or BCF ≤100 and molecular weight is ≥700.
- Bioaccumulative: LogPow ≥3 or BC >100 and molecular weight is <700.

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

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

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.

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

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)[52] or operational areas defined in environmental approvals
- 'New build' vessels launched less than 14 days prior to mobilisation
- Vessels or immersible equipment which have been inspected by a suitably qualified IMS inspector who has classified the vessels or immersible equipment as acceptably low risk no more than 14 days prior to mobilisation
- Locally sourced vessels or immersible equipment from within the Pilbara locally sourced zone[53]. 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[54]).

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).

[52] 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).

[53] 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).

[54] 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
Recent IMS inspection and cleaning history, including for internal niches	In the case of biofouling on external hull niches, different risk ratings are applied dependant on whether out-of-water or in-water IMS inspections by qualified IMS inspectors and cleaning (if required) have been undertaken prior to contract commencement. If an IMS inspection (and clean if required) has not been undertaken in the past six months (from the time of contract commencement), the highest risk factor is applied. The risk factor then lessens for vessels as the time between inspection and mobilisation reduces.
Out-of-water period before mobilisation	A risk reduction factor can be applied for vessels that are hauled out and then mobilised as deck cargo or by road during mobilisation, therefore becoming air dried over an extended period. Risk reduction factor increases with exposure time out of water.
Age and suitability of AFC at mobilisation date	AFC manufacturers provide a range of coatings, each designed to avoid premature coating failure if it is correctly applied and matched to the vessel's normal speeds and activity profile (i.e., proportion of time spent stationary or below three knots), and its main operational region (i.e., tropical, sub-tropical temperate). If the AFC type is deemed to be unknown, unsuited or absent, the highest risk value is applied. If the AFC type is suitable the risk factor applied reduces with age since application.
Internal treatment systems	A risk reduction factor applied if the vessel has an internal biological fouling control system in place at the time of assessment, or evidence of manual dosing.
Vessel origin and proposed area of operation	Differing risk ratings are assigned in relation to the climatic relationship between the vessel's origin and the proposed climatic region of the proposed area of operation. Highest risk rating is applied to similar climatic regions.
Number of stationary/slow speed periods >7 days	A risk factor is calculated based on the number of 7 day periods that the vessel has operated at stationary or at low speed (less than three knots) in port or coastal waters which is any waters less than 50 metres deep outside 12 nautical miles from land or any waters within 12 nautical miles of land. The greater the number of periods the higher the risk factor applied.
Region of stationary or slow periods	A further multiplier is applied depending on the location of the stationary/slow speed periods. The highest risk rating applied if the stationary or slow speed periods occurred within ports or coastal waters of the same climatic region,
Type of activity – contact with seafloor.	The potential for the introduction of IMS varies on the planned vessel activity taking place. Those activities that come in contact with sediments and thus have the potential to accumulate and harbour IMS in areas such as hoppers (dredges) and spud cans (drilling rigs) are considered to have a greater risk of infection.

Table 7-3: Key factors considered as a part of the risk assessment process for immersible equipment

Factors	Details
Region of deployment since last thorough clean, particularly coastal locations	Climatic region of use since last overhaul, thorough cleaning or prolonged period out of water (>28 day). Highest risk rating is applied to similar climatic regions. Activities occurring in nearshore areas (less than 50 meters deep and/or within 12 nautical miles from land) are given the highest risk rating.
Duration of deployments	Maximum duration of deployment (maximum time in water) since last overhaul or thorough cleaning. The longer the period of immersion the higher the risk rating applied.
Duration of time out of water since last deployment	A further risk reduction factor can be applied for immersible equipment that has been out of the water for an extended period.
Transport conditions during mobilisation	If the equipment is stored in damp conditions then a high risk factor is applied, while if equipment is stored in dry and well ventilated (low humidity) conditions then a low risk factor is applied.
Post-retrieval maintenance regime.	A risk reduction factor is applied if the equipment/item of interest is routinely washed, cleaned, checked and/or dissembled between project sites. While a higher risk rating is applied where no routine cleaning occurs.

Following implementation of the risk assessment process, vessels and/or immersible equipment are classified as one of three risk categories, as defined below.

- 'Low'– Low risk of introducing IMS of concern and hence no additional management required, or management options have been applied to reduce the risk.
- 'Uncertain'– Risk of introducing IMS is not apparent and as such the precautionary approach is adopted, and additional management options may be required.
- 'High'– High risk of introducing IMS means additional management options are required prior to this vessel mobilising to the Operational Area.

Following the allocation of a 'low' risk rating for a vessel or immersible equipment, the information provided by the vessel operator for the purposes of risk assessment must be confirmed prior to mobilisation. For vessels or equipment classified as posing an 'uncertain' or 'high' theoretical risk, a range of management options are presented to reduce this theoretical risk to acceptable levels and achieve a low risk status. These management options have been developed with the intention of reducing IMS risk to levels that are as low as reasonably practicable (i.e., ALARP). It is a flexible approach that allows for a range of management actions to be tailored for a specific vessel movement. These will be assessed on a case-by-case basis and may include, but not limited to, the following:

- Inspection (desktop, in-water or dry dock) by a suitably qualified and experienced IMS inspector to verify risk status. Where practicable, the inspection shall occur within seven days (but not more than 14 days) prior to final departure to the Operational Area.
- In-water or dry dock cleaning of the hull and other niche areas. This is typically applied where the risk assessment outcome is High risk driven by the age of the AFC on the vessel and its time spent in similar climatic region ports.
- Treatment of vessels internal seawater systems. This is typically applied in isolation for vessels with AFC applied to their hull within the last twelve months and where subsequent assessment through the process achieves a Low risk rating.
- Limiting the duration that the vessel spends within the IMSMA to a maximum of 48 hours (cumulative entries)[55]. 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 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 *Corporate Health, Safety, Environment and Quality Policy* (**Appendix A**) in their areas of responsibility and that the personnel are suitably trained and competent in their respective roles.

[55]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.

Table 7-4: Roles and responsibilities

Title (role)	Environmental Responsibilities
Office-based Personnel	
Woodside Project Manager	• Monitor and manage the activity so it is undertaken as per the relevant standards and commitments in this EP. • Notify the Woodside Environment Adviser of any scope changes in a timely manner. • Liaise with regulatory authorities as required. • Review this EP as necessary and manage change requests. • Ensure all project and support vessel crew members complete an HSE induction. • Verify that contractors meet environmental related contractual obligations. • Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside's Health, Safety and Environment Reporting and Investigation Procedure. • Monitor and close out corrective actions identified during environmental monitoring or audits.
Woodside Well Delivery Manager	• Ensure drilling operations are undertaken as per this EP and approval conditions. • Provide sufficient resources to implement the drilling-related management measures (i.e. controls, EPOs, PSs and MC) in this EP. • Ensure MODU and support vessel personnel are given an Environmental Induction as per **Section 7.6.2** of this EP at the start of the drilling programs. • Confirms controls and performance standards in this EP are actioned, as required, before drilling commences. • Ensures the MODU start-up meets the requirements of the Drilling and Managing Rig Operations Process.
Woodside Subsea and Pipelines Installation Manager	• Ensure the subsea installation activities are undertaken as per this EP and approval conditions. • Provide sufficient resources to implement the subsea installation-related management measures (i.e. controls, EPOs, PSs and MC) in this EP. • Ensure installation vessel personnel are given an Environmental Induction as per **Section 7.6.2** this EP at the start of the installation activities. • Confirm controls and performance standards in this EP are actioned, as required, before installation activities commence. • Ensure relevant vessels meet the requirements of Woodside's Marine Operations Operating Standard. • Manage change requests for the activity and notify the Woodside Environment Adviser of any scope changes in a timely manner. • Confirm that site-based personnel are given an Environmental Induction as per **Section 7.6.2** of this EP at the start of the activity. • Ensure all chemicals and drill fluids proposed to be discharged are assessed and approved as per the requirements of the EP.
Woodside Drilling Superintendent	• Ensure the drilling program meets the requirements detailed in this EP. • Ensure changes to the drilling program are communicated to the Woodside Environmental Adviser. • Ensure the Woodside's Well Site Manager is provided with the resources required to ensure the management measures (i.e. controls, EPOs, EPs and MC) in this EP are undertaken.

Title (role)	Environmental Responsibilities
	• Confirm environmental incident reporting meets regulatory requirements (as outlined in this EP) and Woodside's Health, Safety and Environment Reporting and Investigation Procedure. • Monitor and close out corrective actions identified during environmental monitoring or audits.
Woodside Drilling Engineers	• Ensure changes to the drilling program are communicated to the Woodside Environmental Adviser. • Ensure all drill and completions fluid chemical components and other fluids that may be used downhole have been reviewed by the Drilling and Completions Environmental Adviser.
Woodside Environmental Adviser	• Verify relevant Environmental Approvals for the activities exist prior to commencing activity. • Track compliance with performance outcomes and performance standards as per the requirements of this EP. • Prepare environmental component of relevant Induction Package. • Assist with the review, investigation and reporting of environmental incidents. • Ensure environmental monitoring and inspections/audits are undertaken as per the requirements of this EP. • Liaise with relevant regulatory authorities as required. • Assist in preparation of external regulatory reports required, in line with environmental approval requirements and Woodside incident reporting procedures. • Monitor and close out corrective actions (Campaign Action Register (CAR)) identified during environmental monitoring or audits. • Provide advice to relevant Woodside personnel and contractors to assist them to understand their environment responsibilities. • Liaise with primary installation contractors to ensure communication and understanding of environment requirements as outlined in this EP and in line with Woodside's Compass values and management systems.
Woodside Corporate Affairs Adviser	• Prepare and implement the Consultation Plan for the Petroleum Activities Program. • Report on consultation. • Ongoing liaison and notification as required as per **Section 7.8**.
Woodside Marine Assurance Superintendent	• Conducts relevant audit and inspection to confirm vessels comply with relevant Marine Orders and Woodside Marine Charters Instructions requirements to meet safety, navigation and emergency response requirements.
Woodside CICC Duty Manager	On receiving notification of an incident, the Woodside CICC Duty Manager shall: • establish and take control of the IMT and establish an appropriate command structure for the incident • assess situation, identify risks and actions to minimise the risk • communicate impact, risk and progress to the Crisis Management Team and stakeholders • develop the incident action plan (IAP) including setting objectives for action • approve, implement and Manage the IAP

Title (role)	Environmental Responsibilities
	• communicate within and beyond the incident management structure • manage and review safety of responders • address the broader public safety considerations • conclude and review activities.
MODU-based Personnel	
MODU Offshore Installation Manager (OIM)	• Ensure the MODU's management system and procedures are implemented. • Ensure personnel starting work on the MODU receive an environmental induction that meets the requirements specified in this EP. • Ensure personnel are competent to undertake the work they have been assigned. • Verify that emergency drills are conducted as per the MODU's schedule. • Ensure the MODU's Emergency Response Team has been given sufficient training to implement the MODU's SOPEP. • Ensure any environmental incidents or breaches of outcomes or standards are reported immediately to the Well Site Manager. • Ensure corrective actions for incidents or breaches are developed, communicated to the Well Site Manager, and tracked to close out in a timely manner. Close out of actions is communicated to the Well Site Manager.
Woodside Well Site Manager	• Ensure the drilling program is undertaken as detailed in this EP. • Ensure the management measures (i.e. controls, EPOs, PSs and MC) detailed in this EP (relevant to offshore activities) are implemented on the MODU (other controls will be implemented onshore). • Ensure environmental incidents or breaches of outcomes or standards are reported as per the Woodside Corporate Event Notification Matrix. Corrective actions for incidents and breaches are developed, tracked and closed out in a timely manner. • Ensure actions in the Drilling and Completions HSE Improvement Plan are undertaken. • Ensure periodic environmental inspections/reviews are completed. Corrective actions from inspections are developed, tracked and closed out in a timely manner.
Woodside Offshore HSE Adviser	• Support the Well Site Manager to ensure the controls detailed in this EP relevant to offshore activities are implemented on the MODU and help collect and record evidence of implementation (other controls are implemented, and evidence collected onshore). • Support the Well Site Manager to ensure the Environmental Performance Outcomes are met and the performance standards detailed in this EP are implemented on the MODU. • Confirm actions in the Drilling and Completions HSE Improvement Plan are undertaken. • Support the Well Site Manager to ensure environmental incidents or breaches of outcomes or standards outlined in this EP, are reported, and corrective actions for incidents and breaches are developed, tracked and closed out in a timely manner. • Ensure periodic environmental inspections/reviews are completed and corrective actions from inspections are developed, tracked and closed out in a timely manner.

Title (role)	Environmental Responsibilities
	• Review Contractors procedures, input into Toolbox talks and JSAs. • Provide day to day environmental support for activities in consultation with the Woodside Environment Adviser.
Drilling Logistics Coordinator	• Waste is managed on the MODU and sent to shore as per the Drilling and Completions Waste Management Plan.
Vessel-based Personnel	
Installation Vessel Master Activity Support Vessel Master	• Ensure the vessel management system and procedures are implemented. • Ensure personnel commencing work on the vessel receive an environmental induction that meets the relevant requirements specified in this EP. • Ensure personnel are competent to undertake the work they have been assigned. • Verify SOPEP drills are conducted as per the vessel's schedule. • Ensure the vessel Emergency Response Team (ERT) has been given sufficient training to implement the SOPEP. • Ensure any environmental incidents or breaches of relevant Environmental Performance Outcomes or performance standards detailed in this EP, are reported immediately to the Woodside Well Site Manager. • Ensure corrective actions for incidents or breaches are developed, communicated to the Well Site Manager, and tracked to close out in a timely manner. Close out of actions is communicated to the Well Site Manager.
Vessel Logistics Coordinators	• Ensure waste is managed on the relevant support vessels or installation vessel and sent to shore as per the relevant Waste Management Plan.
Vessel HSE Advisers	• Refer to Woodside HSE Offshore Adviser responsibilities detailed above under MODU-based personnel.
Contractor Project Manager	• Confirm that activities are undertaken in accordance with this EP, as detailed in the Woodside approved Contactor Environmental Management Plan • Ensure personnel commencing work on the project receive a relevant environmental induction that meets the requirements specified in this EP • Ensure personnel are competent to undertake the work they have been assigned • Ensure any environmental incidents or breaches of objectives, standards or criteria outlined in this EP, are reported immediately to the Woodside Responsible Engineer or Vessel Master.
Woodside Site Representative/ Resident Engineer	• Ensure activities are undertaken as detailed in this EP. • Ensure the management measures made in this EP are implemented on the vessel • Ensure environmental incidents or breaches of objectives, standards or criteria outlined in this EP, are reported as per the Woodside Corporate Event Notification Matrix • Verify HSE improvement actions identified during the project are implemented where practicable • Ensure periodic environmental inspections are completed.

7.4 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.

7.5 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 relating to the Scarborough Project, BTAC advised that:

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

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 or unplanned impacts to the Montebello Islands, Barrow Island or the Mackerel Islands or the Montebello Marine Park Multiple Use Zone, or the islands indicated in WC1999/045. They are outside the EMBA for the activity.

Woodside has developed a robust understanding of Thalanyji Sea Country cultural values and heritage features through publicly available information (**Section 4.9.1.5.3**) and consultation with BTAC under Regulation 11A. Woodside considers that it has taken all reasonable 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 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.

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

Activity		Timing
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 EMBAs that have been notified to BTAC to date		Completed 20 July 2023
1	Woodside requested an ethnographic assessment to be undertaken by BTAC, including: • That the scope of works identifies the values of sea-country generally sufficient to inform all Woodside EPs; • That Woodside will cover all reasonable costs of this assessment, to be agreed upon receipt of a cost estimate from BTAC; • 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; • 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 pe provided subject to the same perpetual right above; and • 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.) • Reiterate commitment to undertaking ethnographic assessments with BTAC, at BTAC's earliest availability.	July 2023 Follow up after 2 weeks and once monthly in September and October.
2	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. • Seek to consult with BTAC on any identified cultural values and relevant management and mitigation measures • Implement PS 28 which manages potential impact to newly identified cultural values or features to ALARP and Acceptable Levels	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. 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. PS28 will be implemented to manage potential impact to newly identified cultural values or features to ALARP and Acceptable Levels.		14 September
In absence of further response from BTAC, Woodside has undertaken desktop research to:		-

Activity	Timing
• Identify Indigenous cultural features and heritage values off the WA coastline (**Section 4.9.1.5.3**) • Clarify the extent of Thalanyji sea country (**Section 4.9.1.5.3**) PS28 will be implemented to manage potential impact to newly identified cultural values or features to ALARP and Acceptable Levels	

7.6 Training and Competency

7.6.1 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 MODU personnel, detailing awareness and compliance with the MODU and project vessel Contractor's environmental policy and environmental management system.

7.6.2 Inductions

Inductions are provided to all relevant personnel (e.g. contractors and Company representatives) before mobilising to or on arrival at the activity location. The induction covers the HSE requirements and environmental information specific to the activity location. Attendance records will be maintained.

The Petroleum Activities Program induction may cover information about:

- Description of the activity.
- Ecological and socio-economic values of the activity location, including an overview of pygmy blue whales.
- Regulations relevant to the activity.
- Woodside's Environmental Management System – 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 the MODU and / or vessels.

7.6.3 Activities Program Specific Environmental Awareness

Before petroleum activities begin, a pre-activity meeting will be held on-board the MODU and project vessels with all relevant personnel. The pre-activity meeting provides an opportunity to reiterate specific environmental sensitivities or commitments associated with the activity. Relevant sections

of the pre-activity meeting will also be communicated through to the support vessel personnel. Attendance lists are recorded and retained.

During operations, regular HSE meetings will be held on the MODU and project vessels which cover all crew. During these meetings, recent environmental incidents are regularly reviewed, and awareness material presented.

7.6.4 Pygmy Blue Whale Observation Training

Relevant crew onboard the MODU and installation vessels will undertake PBW observation training prior to commencing activities. Woodside and Contractor personnel will be trained to deliver the PBW training ('train-the-trainer' model) by an external organisation specialising in marine environmental training, with expertise in marine fauna observations. Training materials will be developed by the external organisation in consultation with WEL, to ensure Project specific information is incorporated. The bespoke training package will cover:

- An overview of Scarborough Project activities and the cetaceans that may be present during these activities
- An overview of the potential impacts and risks to PBW
- an overview of EP controls and management procedures relevant to PBW presence
- different types of PBW behaviours inc. the difference between foraging and migrating, and how to identify these based on the latest information on persistence in the area, dive time and swimming speed (Owen et al. 2016; AIMS unpublished data 2021; Thums & Ferreira 2021)
- precautionary approach to identification i.e. assume PBW if positive ID of different species type not possible;
- the observation and reporting requirements.

When trained crew are undertaking observations, expectations are that:

- Observation equipment / tools are used as required (i.e. range-finding binoculars, whale ID prompts etc.)
- Escalation process carried out if PBW are identified including alerting bridge crew so that appropriate response can be initiated
- Make and maintain records including the date, time and approximate distance from the vessel, and the action taken to comply with EPS

Records will be maintained as evidence of the personnel who have completed PBW observation training.

Completion of PBW Observation Training is a minimum requirement for those performing observations relevant to adaptive management measures in this EP (such as C 3.2, C 3.3 and C 3.4).

For any trained crew who haven't conducted PBW observations for greater than 12 months, refresher training is required prior to undertaking the role.

7.6.5 Management of Training Requirements

All personnel on the MODU and project vessels are required to be competent to perform their assigned positions. This may be in the form of external or 'on the job' training. The vessel Safety Training Coordinator (or equivalent) is responsible for identifying training needs, keeping records of training performed and identifying minimum training requirements.

7.7 Monitoring, Auditing, Management of Non-conformance and Review

7.7.1 Monitoring

Woodside and its contractors will perform a program of periodic monitoring during the Petroleum Activities Program – starting at mobilisation of each activity and continuing through the duration of each activity to activity completion. This information will be collected using the tools and systems outlined below, developed based on the EPOs, controls, standards and MC in this EP. The tools and systems will collect, as a minimum, the data (evidence) referred to in the MC in **Section 6** and **Appendix D**.

The collection of this data (against the MC) will form part of the permanent record of compliance maintained by Woodside and will form the basis for demonstrating that the EPOs and standards are met, which will be summarised in a series of routine reporting documents.

7.7.1.1 Source-based Impacts and Risks

The tools and systems to monitor environmental performance, where relevant, will include:

- Daily reports which include leading indicator compliance.
- Periodic review of waste management and recycling records.
- Use of contractor's risk identification program that requires recording and submitting safety and environment risk observation cards routinely (frequency varies with contractor).
- Collection of evidence of compliance with the controls detailed in the EP relevant to offshore activities by the Woodside Offshore HSE Adviser (other compliance evidence is collected onshore).
- Environmental discharge reports that record volumes of planned and unplanned discharges downhole (in the well), to ocean and atmosphere.
- Monitoring of progress against the Drilling and Completions function scorecard for KPIs.
- Internal auditing and assurance program as described in **Section 7.6.2**.

Throughout this activity, Woodside will continuously identify new source-based risks and impacts through the Monitoring and Auditing systems and tools described above and in **Section 7.6.2**.

7.7.1.2 Management of Knowledge

Review of knowledge relevant to the existing environment is undertaken in order to identify changes relating to the understanding of the environment or legislation that supports the risk and impact assessments for EPs (in-force and in-preparation). Relevant knowledge is defined as:

- Environmental science supporting the description of the existing environment.
- Socio-economic environment and stakeholder information.
- Environmental legislation.

The frequency and documentation of reviews, communication of relevant new knowledge and consideration of management of change are documented in the WMS Environment Plan Guideline.

Any relevant new information on cultural values will be assessed using the EP Management of Change Process (refer to **Section 7.7**).

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.

7.7.2 Auditing

Environmental performance auditing will be performed to:

- Identify potential new or changes to existing environmental impacts and risk, and methods for reducing those to ALARP.
- Confirm that mitigation measures detailed in this EP are effectively reducing environmental impacts and risk, that mitigation measures proposed are practicable and provide appropriate information to verify compliance.
- Confirm compliance with the Performance Outcomes, Controls and Standards detailed in this EP.

Internal auditing will be performed to cover each key project activity as summarised below.

7.7.2.1 MODU Activities

Internal auditing is performed on a MODU-specific schedule, rather than a schedule to align with each well. This enables continuous review and improvement of environmental performance over the term of the MODU contract. The following internal audits, inspections and reviews will be performed to review the environmental performance of the activities:

- Survey environment rig equipment for a newly contracted MODU (if not previously contracted to Woodside within the last two years) against Woodside's Engineering Standard – Rig Equipment. This standard covers functional and technical requirements for Woodside contracted rigs and their associated equipment. An environment rig equipment survey scope typically includes mud and solids control systems, environmental discharge control (including drainage management), and loss of containment management.
- Complete a minimum of monthly environmental inspection (conducted by offshore Woodside personnel or a delegate) which may include verifying:
  - bunkering/transfers between support vessels and MODU/project vessels
  - environment containment including chemical storage, spill response equipment and housekeeping
  - general MODU environment risks including waste management, drilling fluids oil/water separation, and inspection of subsea and moonpool areas.
- Perform environment audits quarterly during the Petroleum Activities Program, while the MODU is on location (by a Woodside Environment Adviser or delegate), which may include:
  - operational compliance audits relevant to environmental risk of activities which may include compliance with training commitments, discharge requirements, bunkering activities, verification of use of approved chemicals, and satisfactory close out of items from previous audits
  - inspection of selected risk areas/activities (which may include shaker house, drill floor and mud management while commencing riser drilling or reservoir interception) during routine MODU visits throughout the MODU campaign, determined by risk, previous incidents or operation specification requirements.
  - audit findings relevant to continuous improvement of environmental performance will be tracked through the MODU or vessel compliance action register, a contractor register between the MODU operator or vessel contractor and Woodside.

7.7.2.2 Subsea Scope Activities

The following internal assurance 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 installation vessels associated with the above scopes will be audited by Woodside. Support or transport vessels will be assessed on a risk-based approach, but will be audited via the primary subsea installation contractor's process.
- At least one operational compliance audit relevant to applicable EP commitments will be conducted by a Woodside Environment Adviser for the subsea campaign. 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 (e.g. pipelay).
- 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 7.6.1**, and collection of evidence for MC are used to assess EPOs and standards.

As part of Woodside's EMS and/or assurances processes, activities may also be periodically selected for environmental audits as per Woodside's internal auditing process. Audit, inspection and review findings relevant to continuous improvement of environmental performance are tracked through the Environmental Commitments and Actions Register.

This Environmental Commitments and Actions Register is used to track subsea support vessel and subsea activity compliance with EP commitments, including any findings and corrective actions.

Non-conformances identified will be reported and/or tracked in accordance with **Section 7.6.3**.

7.7.2.3 Marine Assurance

Woodside's marine assurance is managed by the Marine Assurance Team of the Logistics Function in accordance with Woodside's Marine Offshore Vessel Assurance Procedure. The Woodside process is based on industry standards and consideration of guidelines and recommendations from recognised industry organisations such as Oil Companies International Marine Forum and International Maritime Contractors Association.

Woodside's Marine Offshore Assurance process is mandatory for all vessels (other than Tankers and Floating Production Storage and Offloading vessels) that are chartered directly by or on behalf of Woodside, including for short term hires (i.e. <3 months in duration). It defines applicable marine offshore assurance activities, ensuring all vessel operators operate seaworthy vessels that meet the requirements for a defined scope of work and are managed with a robust Safety Management System.

The process is multi-faceted and encompasses the following marine assurance activities:

- Safety Management System Assessment
- Dynamic Positioning (DP) System Verification

- Vessel Inspections
- Project support for tender review, evaluation and pre/post contract award.

Vessel inspections are used to verify actual levels of compliance with the company's Safety Management System, the overall condition of the vessel and the status of the planned maintenance system onboard. Woodside Marine Assurance Specialist will conduct a risk assessment on the vessel to determine the level of assurance applied and the type of vessel inspection required.

Methods of vessel inspection may include, and are not limited to:

- Woodside Marine Vessel Inspection
- OCIMF OVID Inspection
- IMCA CMID Inspection
- Marine Warranty Survey

Upon completion of the marine assurance process, to confirm that identified concerns are addressed appropriately and conditions imposed are managed, the Woodside Marine Assurance Team will issue the vessel a statement of approval. Should a vessel not meet the requirements of the Woodside Marine Offshore Vessel Assurance Process and be rejected, there does exist an opportunity to further scrutinise the proposed vessel.

Where a vessel inspection and/or OVMSA Verification Review is not available and all reasonable efforts based on time and resource availability to complete an vessel inspection and/or OVMSA Verification Review are performed (i.e. short term vessel hire), the Marine Assurance Specialist Offshore may approve the use of an alternate means of inspection, known as a risk assessment.

7.7.2.4 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.

7.7.3 Management of Non-conformance

Woodside classifies non-conformances with EPOs and standards in this EP as environmental incidents. Woodside employees and contractors are required to report all environmental incidents, and these are managed as per Woodside's internal event recording, investigation and learning requirements.

An internal computerised database called First Priority is used to record and report these incidents. Details of the event, immediate action taken to control the situation, investigation outcomes and corrective actions to prevent reoccurrence are all recorded. Corrective actions are monitored using First Priority and closed out in a timely manner.

Woodside uses a consequence matrix for classification of environmental incidents, with the significant categories being A, B and C (as detailed in **Section 2.3**). Detailed investigations are completed for all categories A, B, C and high potential environmental incidents.

7.7.4 Review

7.7.4.1 Management Review

Within the Environment Function, senior management regularly monitor and review environmental performance and the effectiveness of managing environmental risks and performance. Within each Function and Business Unit Leadership Team (e.g. Drilling and Completions, Subsea and Developments/Projects), managers review environmental performance regularly, including through quarterly HSE review meetings.

Woodside's Drilling and Completions Environment Team will perform six-monthly reviews of the effectiveness of the implementation strategy and associated tools. This will involve reviewing the:

- Drilling and Completions environment KPIs (leading and lagging).
- Tools and systems to monitor environmental performance (detailed in **Section 7.6.1**)
- Lessons learned about implementation tools and throughout each campaign.

Reviews of oil spill arrangements and testing are performed in accordance with **Section 7.10**.

7.7.4.2 Learning and Knowledge Sharing

Learning and knowledge sharing occurs via a number of different methods including:

- Event investigations.
- Event bulletins.
- After action review conducted at the end of each well, including review of environmental incidents as relevant.
- Ongoing communication with MODU operators.
- Formal and informal industry benchmarking.
- Cross asset learnings.
- Engineering and technical authorities discipline communications and sharing.

7.7.4.3 Review of Impacts, Risks and Controls Across the Life of the EP

In the unlikely case that activities described in this EP do not occur continuously or sequentially, before recommencing activities after a cessation period greater than 12 months, impacts, risks and controls will be reviewed.

The process will identify or review impacts and risks associated with the newly-commencing activity, and will identify or review controls to ensure impacts and risks remain/are reduced to ALARP and acceptable levels. Information learned from previous activities conducted under this EP will be considered. Controls which have previously been excluded on the basis of proportionality will be reconsidered. Any required changes will be managed by the MOC process outlined below (**Section 7.7**).

7.8 Management of Change and Revision

7.8.1 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 consultation (**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.

7.8.2 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 7.7.1**). 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.

7.9 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.

7.10 Reporting

To meet the EPOs and standards outlined in this EP, Woodside reports at a number of levels, as outlined in the next sections.

7.10.1 Routine Reporting (Internal)

7.10.1.1 Daily Progress Reports and Meetings

Daily reports for drilling activities are prepared and issued to key support personnel and stakeholders, by relevant managers responsible for the well. The report provides performance information about drilling activities, heath, safety and environment, and current and planned work activities.

Meetings between key personnel are used to transfer information, discuss incidents, agree plans for future activities and develop plans and accountabilities for resolving issues.

7.10.1.2 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.

7.10.1.3 Performance Reporting

Monthly and quarterly performance reports are developed and reviewed by the Function and Business Unit Leadership Teams (e.g. Drilling and Completions). 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.

7.10.2 Routine Reporting (External)

7.10.2.1 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.

7.10.2.2 Environmental Performance Review and Reporting

In accordance with applicable environmental legislation for the activity, Woodside is required to report information about environmental performance to the appropriate regulator. Regulatory reporting requirements are summarised in **Table 7-6.**

Table 7-6: Routine external reporting requirements

Report	Recipient	Frequency	Content
Monthly Recordable Incident Reports (**Appendix E**)	NOPSEMA	Monthly, by the 15th of each month.	Details of recordable incidents that have occurred during the Petroleum Activities Program for previous month (if applicable).
Environmental Performance Report	NOPSEMA	Annually, with the first report submitted within 12 months of the commencement of the Petroleum Activities Program covered by this EP (as per the requirements of Regulation 14(2)).	Compliance with EPOs, controls and standards outlined in this EP, in accordance with the Environment Regulations.

7.10.2.3 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.

7.10.3 Incident Reporting (Internal)

The process for reporting environmental incidents is described in **Section 7.10.4** 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.

7.10.4 Incident Reporting (External) – Reportable and Recordable

7.10.4.1 Reportable Incidents

Definition

A reportable incident is defined under Regulation 4 of the Environment Regulations as:

- 'an incident relating to the activity that has caused, or has the potential to cause, moderate to significant environmental damage'.

A reportable incident for the Petroleum Activities Program is:

- an incident that has caused environmental damage with a Consequence Level of Moderate (C) or above (as defined under Woodside's Risk Table [refer to **Section 2.3.2**]).
- an incident that has the potential to cause environmental damage with a Consequence Level of Moderate (C) or above (as defined under Woodside's Risk Table [refer to **Section 2.3.2**]).

The environmental Risk assessment for the Petroleum Activities Program (**Section 6**) has not identified any risks with a potential consequence level of C+ for environment. All incidents with actual or potential environmental consequences will be investigated fully. Where an actual or potential environment consequence of C+ is identified this incident will still be classified as a reportable incident and appropriate notifications completed.

Any such incidents represent potential events which would be reportable incidents. Incident reporting is performed with consideration of NOPSEMA (2014) guidance stating, 'if in doubt, notify NOPSEMA', and assessed on a case-by-case basis to determine if they trigger a reportable incident as defined in this EP and by the Regulations.

Notification

NOPSEMA will be notified of all reportable incidents, according to the requirements of Regulations 26, 26A and 26AA of the Environment Regulations. Woodside will:

- Report all reportable incidents to the regulator (orally) ASAP, but within two hours of the incident or of its detection by Woodside.
- Provide a written record of the reported incident to NOPSEMA, the National Offshore Petroleum Titles Administrator (NOPTA) and the Department of the responsible State Minister (DMIRS) ASAP after orally reporting the incident.
- Complete a written report for all reportable incidents using a format consistent with the NOPSEMA Form FM0831 – Reportable Environmental Incident (**Appendix E**) which must be submitted to NOPSEMA ASAP, but within three days of the incident or of its detection by Woodside.
- Provide a copy of the written report to the NOPTA and DMIRS, within seven days of the written report being provided to NOPSEMA.

AMSA will be notified of oil spill incidents ASAP after their occurrence, and DAWE notified if MNES are to be affected by the oil spill incident.

7.10.4.2 Recordable Incidents

Definition

A recordable incident as defined under Regulation 4 of the Environment Regulations is an incident arising from the activity that 'breaches an environmental performance outcome or environmental performance standard, in the EP that applies to the activity, that is not a reportable incident'.

Notification

NOPSEMA will be notified of all recordable incidents, according to the requirements of Regulation 26B(4), no later than 15 days after the end of the calendar month using the NOPSEMA Form – Recordable Environmental Incident Monthly Summary Report (**Appendix E**) detailing:

- All recordable incidents that occurred during the calendar month.
- All material facts and circumstances concerning the recordable incidents that the operator knows or is able, by reasonable search or enquiry, to find out.
- Any action taken to avoid or mitigate any adverse environment impacts of the recordable incidents.
- The corrective action that has been taken, or is proposed to be taken, to prevent similar recordable incidents.
- The action that has been taken, or is proposed to be taken, to prevent a similar incident occurring in the future.

7.10.4.3 Other External Incident Reporting Requirements

In addition to the notification and reporting of environmental incidents defined under the Environment Regulations and Woodside requirements, **Table 7-7** describes the incident reporting requirements that also apply in the PAA.

Table 7-7: External Incident Reporting Requirements

Event	Responsibility	Notifiable party	Notification requirements	Contact	Contact detail
Any marine incidents during Petroleum Activities Program	Vessel Master	AMSA	Incident Alert Form 18 as soon as reasonably practicable* Within 72 hours after becoming aware of the incident, submit Incident Report Form 19	AMSA	reports@amsa.gov.au
Oil pollution incidents in Commonwealth waters	Vessel Master	AMSA Rescue Coordination Centre (RCC)	As per Article 8 and Protocol I of MARPOL within two hours via the national emergency 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	DAWE	Reported verbally, ASAP	Director of National Parks	Phone: 02 6274 2220
Activity causes unintentional death of or injury to fauna species listed as Threatened or Migratory under the EPBC Act	Vessel Master	DAWE	Within seven days of becoming aware	Secretary of the DAWE	Phone: 1800 803 772 Email: protected.species@environment.gov.au

The following activities should also be reported to AMSA via RCC Australia by the Vessel Master:

- loss of plastic material
- garbage disposed of in the sea within 12 nm of land (garbage includes food, paper, bottles, etc)
- any loss of hazardous materials.

For oil spill incidents, other agencies and organisations will be notified as appropriate to the nature and scale of the incident as per procedures and contact lists in the Oil Pollution Emergency Arrangements (Australia) and the Scarborough Drilling and Completions Oil Pollution First Strike Plan (**Appendix H**).

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.

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.

7.11 Ongoing Consultation

In accordance with Regulation 14 (9) of the Environment Regulations, the implementation strategy must provide for appropriate consultation with relevant authorities of the Commonwealth, a State or Territory and other relevant interested persons or organisations.

Woodside proposes to undertake the engagements with directly impacted relevant persons and additional persons listed **Table 7-8**. Any relevant new information identified during ongoing consultation will be assessed using the EP Management of Knowledge (refer to **Section 7.7.1.2**) and Management of Change Process (refer to **Section 7.7**).

Woodside hosts community forums at which members are provided updates on Woodside activities on a regular basis (for example community reference group meetings). Representatives are from community and industry and include, Woodside, State Government (for instance relevant Regional Development Commissions), Local Government, Indigenous Groups, Industry representative bodies, Community and industry organisations.

Woodside has developed a Program of Ongoing Engagement with Traditional Custodians (**Appendix J**), 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 on its activities.

Relevant persons, additional persons and those who are interested in the activities, can remain up to date on this activity through subscribing to our website.

Table 7-8: Ongoing consultation engagements

Report/ Information	Recipient	Purpose	Frequency	Content
Program of Ongoing Engagement with Traditional Custodians (**Appendix J**)	Relevant cultural authorities	Identification, assessment and consideration of cultural values relevant to the	Ongoing	Assessment of cultural values Any relevant new information on cultural values will be assessed using the EP Management of Knowledge (refer to **Section 7.7.4.2**) and

Report/ Information	Recipient	Purpose	Frequency	Content
		Operational Area or EMBA		Management of Change Process (refer to **Section 7.7**).
Notification (email)	AHO	As requested by AMSA during consultation.	No less than 4 weeks prior to commencement.	**PS 4.3** (**Section 6.7.1)** Date of activity start.
Updates (email)			As required.	Changes to planned activities
Notification (email)	AMSA	As requested by AMSA during consultation	At least 24–48 hours before operations commence.	**PS 4.5** (**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.	**PS 4.8** (**Section 6.7.1**) Date of activity start.
Notification (email)	DMIRS	As required by DMIRS	At least 10 days prior to commencement	Activity start date and end date
Notification (email)	AFMA Individual fishery licence holders that have the potential to be directly impacted by planned activities in the Operational Area (no relevant fisheries identified at time of EP submission) Recfishwest WAFIC CFA DPIRD DAFF - Fisheries	Good practice or as requested during consultation	No less than 4 weeks prior to commencement and following completion of activities.	**PS 4.4** (**Section 6.7.1**) Date of activity start and end.
Notification (email)	Eni	As requested during consultation	At least 10 days prior to commencement of activities	**PS 4.4**
Notification (email)	All Relevant Persons and Additional Persons for the Proposed Activity	Notification of significant change	As appropriate	Notification of significant change Any relevant new information will be assessed using the EP Management of Knowledge (ref to **Section 7.7.4.2**) and Management of Change Process (refer to **Section 7.7**).

Report/ Information	Recipient	Purpose	Frequency	Content
Emails / Meetings	Persons or organisations who provide feedback to Woodside post EP submission	Identification, assessment and consideration of feedback, claims and / or objections	As appropriate	Assessment of claims and / or objections. Relevant new information will be assessed using the EP Management of Knowledge (ref to **Section 7.7.4.2**) and Management of Change Process (refer to **Section 7.7**).
Notification (email)	WA Museum (as requested during EP consultation) Australasian Underwater Cultural Heritage Database Any other stakeholders as required in the Unexpected Finds Procedure (**Section 7.4)**	Report any unexpected finds of potential Underwater Cultural Heritage	If triggered by Unexpected Finds Procedure (**Section 7.4**)	Refer to Unexpected Finds Procedure (**Section 7.4) and C 5.6**

At the time of EP submission, a number of specific activities as part of ongoing consultation regarding the activity are planned with Traditional Custodian Relevant Persons. These are described in Appendix J– Program of Ongoing Engagement with Traditional Custodians.

If any of these activities result in cultural values or heritage features being newly identified, EPO 28 will be implemented to ensure potential impacts are reduced to Acceptable and ALARP Levels.

7.12 Emergency Preparedness and Response

7.12.1 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 7-9**.

Table 7-9: 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**)

Content	Environment Regulations Reference	Document/Section Reference
Describes the OPEP	Regulation 14(8)	EP: Woodside's oil pollution emergency plan has the following components: • Woodside Oil Pollution Emergency Arrangements (Australia) • Oil Pollution First Strike Plan (**Appendix H**) • Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**)
Details the arrangements for responding to and monitoring oil pollution (to inform response activities), including control measures	Regulation 14(8AA)	Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**) Oil Pollution First Strike Plan (**Appendix H**)
Details the arrangements for updating and testing the oil pollution response arrangements	Regulation 14(8), (8A), (8B), (8C)	EP: **Section 7.12** Oil Spill Preparedness and Response Mitigation Assessment (**Appendix D**)
Details of provisions for monitoring impacts to the environment from oil pollution and response activities	Regulation 14(8D)	Oil Spill Preparedness and Response Mitigation Assessment **(Appendix D**)
Demonstrates that the oil pollution response arrangements are consistent with the national system for oil pollution preparedness and control	Regulation 14(8E)	Oil Pollution Emergency Arrangements (Australia)

7.12.2 Emergency Response Training

Regulation 14(5) requires that the implementation strategy includes measures to ensure that employees and contractors have the appropriate competencies and training. Woodside has conducted a risk-based training needs analysis on positions required for effective oil spill response. Following the mapping of training to Woodside identified competencies, training was then mapped to positions based on their required competencies.

Table 7-10: Minimum levels of competency for key IMT positions

IMT Position	Minimum Competency
Corporate Incident Coordinate Centre (CICC) Leader	• Incident and Crisis Leadership Development Program (ICLDP) • Oil Spill Response Skills Enhancement Course (OSREC – internal course) • Participation in L2 oil spill exercise (initial) • Participation in L2 oil spill exercise (refresher)
Security & Emergency Manager Duty Manager	• ICLDP • OSREC • IMO2 or equivalent spill response specialist level with an oil spill response organisation (OSRO) • Participation in L2 oil spill exercise (initial) • Participation in L2 oil spill exercise (refresher)
Operations, Planning, Logistics, Safety	• OSREC • ICC Fundamentals Course (internal course)

IMT Position	Minimum Competency
	• Participation in L2 oil spill exercise (initial) • Participation in L2 oil spill exercise (refresher)
Environment Coordinator	• ICC Fundamentals • OSREC • IMO2 or equivalent spill response specialist level with an OSRO • Participation in L2 oil spill exercise (initial) • Participation in L2 oil spill exercise (refresh)
Note on competency/equivalency	
In 2018 Woodside undertook a review of incident and crisis systems, processes and tools to assess whether these were fit-for purpose and has rolled out a change to the Incident and Crisis Management training and the oil spill response training requirements for both ICC and field-based roles. The revised ICC Fundamentals training Program and Incident and Crisis Leaders Development Program (ICLDP) align with the performance requirements of the *PMAOMIR320 – Manage Incident Response Information* and *PMAOM0R418 - Coordinate Incident Response.* Regarding training specific equivalency: • ICLDP is mapped to *PMAOM0R418* (and which is equivalent to IMOIII when combined with Woodside's OSREC course) and ensures broader incident management principles aligned with Australasian Inter-service Incident Management System (AIIMS). • The revised ICC Fundamentals Course is mapped to *PMAOMIR320* (and which is equivalent to IMOII). The blended learning program offers modules aligned to IMOIII, IMOII, IMOI and AMOSC Core Group Training Oil Spill Response Organisation Specialist Level training. • OSREC involves the completion of two (2) online AMSA Modules (Introduction to National Plan and Incident management; and Introduction to oil spills) as well as elements of IMOI and IMOII tailored to Woodside specific OSR capabilities. Woodside Learning Services (WLS) are responsible for collating and maintaining personnel training records. The HSP Dashboard reflects the competencies required for each oil spill role (IMT/operational).	

7.12.3 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 drilling activity, the ERP will be a bridging document to the contracted rig's emergency documentation. This document summarises the emergency command, control and communications processes for the integrated operation and management of an emergency. It is developed in collaboration with the contracted rig and ensures roles and responsibilities between the contracted rig 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:

- On the MODU the OIM will assume overall onsite command and act as the Incident Controller (IC). All persons aboard the MODU will be required to act under the IC's directions. The MODU/vessels will maintain communications with the onshore Drilling

Superintendent 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.

- 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 MODU and project vessels will have on-board equipment for responding to emergencies including medical equipment, fire-fighting equipment and oil spill response equipment.

7.12.4 Oil and Other Hazardous Materials Spill

A significant hydrocarbon spill during the proposed Petroleum Activities Program is unlikely, but should such an event occur, it has the potential to result in a serious safety or environmental incident and cause asset and reputational damage if not managed properly. The Woodside Oil Pollution Emergency Arrangements (Australia) document, supported by the Oil Pollution First Strike Plan (**Appendix H**) which provides tactical response guidance to the activity/area and **Appendix D** this EP, cover spill response for this Petroleum Activities Program.

The Security and Emergency Management Function is responsible for managing Woodside's hydrocarbon spill response equipment and for maintaining oil spill preparedness and response documentation. In the event of a major spill, Woodside will request that AMSA (administrator of the National Plan) provides support to Woodside through advice and access to equipment, people and liaison. The interface and responsibilities, as defined under the National Plan, are described in the Woodside Oil Pollution Emergency Arrangements (Australia). AMSA and Woodside have a Memorandum of Understanding in place to support Woodside in the event of an oil spill.

The Oil Pollution First Strike Plan provides immediate actions required to commence a response (**Appendix H**).

The MODU and 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**.

7.12.5 Emergency and Spills Response

Woodside categorises incidents and emergencies in relation to response requirements as follows:

7.12.5.1 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.

7.12.5.2 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.

7.12.5.3 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.

7.12.6 Source Control Response Capability

Source Control IMT Structure

The Woodside Incident and Crisis Management Structure is outlined in the Woodside Oil Pollution Emergency Arrangements (Australia). In a Level 3 Incident, the Source Control Functional Support Team (FST) will be formed reporting to the Operations Coordinator. The structure of the Source Control FST is shown in **Table 7-2**.

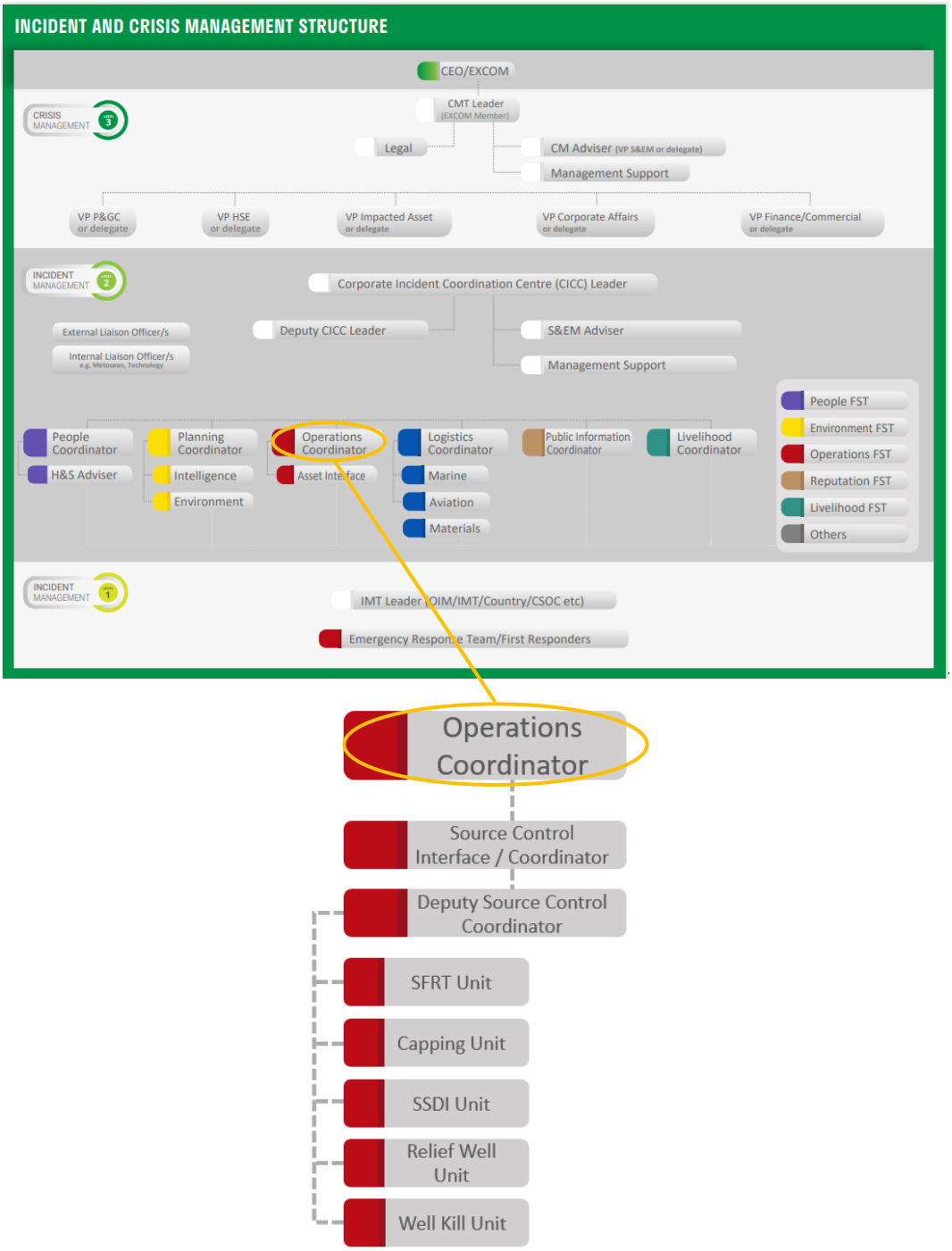


Figure 7-2: Source Control Functional Support Team Structure

Roles and responsibilities of the Source Control FST Leaders are summarised in **Table 7-11.**

Table 7-11: Source Control Functional Support Team roles and responsibilities

Role	Key Responsibilities
Source Control Coordinator	• Activate Source Control responses • Approve operational plans • Manage Source Control FST

Role	Key Responsibilities
	• Report to Operations Coordinator
Deputy Source Control Coordinator	• Approve operational plans • Manage Source Control Function and ensure coordination among groups/units
Subsea First Response Toolkit (SFRT) Unit Coordinator	• Mobilise vessel with work class ROVs • Survey and attempt to function BOP • Debris clearance survey and operations
Capping Unit Coordinator	• Mobilise capping stack and support equipment • Assemble and test capping stack for deployment • Hydrate remediation • Capping stack operations as required
Subsea Dispersant Injection (SSDI) Unit Coordinator	• Develop dispersant application and monitoring plans • Apply for local Government approvals • Conduct subsea dispersant application and monitoring operations
Relief Well Unit Coordinator	• Determine if impacted rig may be utilised for relief rig or capping stack deployment • Determine number of relief wells to be drilled • Obtain and assess information on reservoir and wellbore geometry • Coordinates mobilisation of relief well rig(s) and execution of relief well(s)
Well Kill Unit Coordinator	• Obtain and review reservoir and wellbore data • Determine kill weights and pumping rates • Develop the well kill plan • Conduct kill operations

The Source Control units described in **Table 7-11**, may include the following support positions:

- HSE Adviser/s
- Well Delivery Manager/s
- Subsea Manager/s
- D&C Superintendent/s
- Subsea Vessel Superintendent/s
- Lead D&C and Subsea Engineers
- D&C Engineering support, as required
- Subsea Engineering support, as required
- Contractor Representatives including source control contractors
- Logistics Coordinator/s

7.12.6.1 Source Control Response Personnel Resourcing and Competency

All Source Control unit leader positions will be filled with Woodside personnel from the Subsea and Pipeline (SSPL) and Drilling and Completions (D&C) Departments.

All personnel will hold a relevant tertiary qualification, well control certifications and industry experience commensurate with the position being held.

Initial Source Control functional response will typically be led by a Subsea and Pipeline Manager or Well Delivery Manager in the role of the Source Control Coordinator and the remaining FST roles

would be filled by suitably experienced people, sourced from the operational team and across the broader SSPL and D&C functions.

The Source Control teams will be scaled with additional resources depending on the specifics of the scenario. As the emergency response duration increases suitable arrangements will be made to establish shifts and duty roster cycles to ensure ongoing functional support. Woodside has access to sufficient personnel to cover 24 hour operations on a rolling roster through existing personnel capabilities.

The Source Control IMT response structure indicated in **Figure 7-2** is estimated to require from 4–12 positions per shift varying with the scale of response, 8–24 positions for 24-hour coverage. For an prolonged response resources to provide on/off weekly cycles, an additional 8–24 positions will be required, totalling 16–48 positions over the scale of response. These numbers are indicative and will vary depending on scale and complexity of operations.

The current organisational review indicates Woodside has >80 internal staff members to support the Source Control IMT positions. In the event of a level 3 incident, response activities will be given priority and other projects may be reduced or suspended allowing reallocation of significant additional resources. Woodside would require access to external resources primarily for Specialist Services and Expertise in Source Control / Well Control operations.

Additional personnel to support the Source Control FST will be filled through the following avenues:

- Well Control Specialists through existing contracts e.g. Wild Well Control, Add Energy
- Secondment of Personnel from other Titleholders through APPEA Industry Memorandum of Understanding (2021)
- Engineering support through call-off frame agreements.

Following personnel call-off, online briefings will be held for external personnel prior to commencing work. If building access is required, onboarding will commence as per the Woodside`s Office Access Management Procedures. In the event of an emergency, building access can be expedited at the discretion of the CICC or identified senior leaders and facilities for remote operations would also be set up.

7.12.7 Emergency and Spill Response Drills and Exercises

Woodside's capability to respond to incidents will be tested periodically, in accordance with the Emergency and Crisis Management Procedure. The scope, frequency and objective of these tests is described in **Table 7-12**. Emergency response testing is aligned to existing or developing risks associated with Woodside's operations and activities. Corporate hazards/risks outlined in the corporate risk register, respective Safety Cases or project Risk Registers, are reference points developing and scheduling emergency and crisis management exercises. External participants may be invited to attend exercises (e.g. government agencies, specialist service providers, oil spill response organisations, or industry members with which Woodside has mutual aid arrangements).

The overall objective of exercises is to test procedures, skills and the teamwork of the Emergency Response and Command Teams in their ability to respond to major accident / major environment events. After each exercise, the team holds a debriefing session, during which the exercise is reviewed. Any lessons learned or areas for improvement are identified and incorporated into revised procedures, where appropriate.

Table 7-12: Testing of response capability

Response Category	Scope	Response Testing Frequency	Response Testing Objective
Level 1 Response	Exercises are MODU/ vessel specific	One Level 1 'First Strike' drill conducted within two weeks of commencing activity. [Note: a Level 1 drill must be conducted within two weeks of the campaign commencing and then at least every 6 month hire period thereafter]	Comprehensive exercises test elements of the Oil Pollution First Strike Plan (**Appendix H**). Emergency drills are scheduled to test other aspects of the Emergency Response Plan.
Level 2 Response	Exercises are MODU specific	A minimum of one Emergency Management exercise per MODU per campaign [Note: must be conducted within one month of campaign commencing and at least one Level 2 exercise per 6-month hire period].	Testing both the facility IMT response and/or that of the CICC following handover of incident control. Exercises may include testing of Source Control Response Strategies.
Level 3 Response	Exercises are relevant to all Woodside assets	The number of CMT exercises conducted each year is determined by the Chief Executive Officer, in consultation with the Vice President of Security and Emergency Management.	Test Woodside's ability to respond to and manage a crisis level incident

7.12.8 Hydrocarbon Spill Response Testing of Arrangements

There are a number of arrangements which, in the event of a spill, will underpin Woodside's ability to implement a response across its petroleum activities. In order to ensure these arrangements are adequately tested, the Capability Development Team within Security and Emergency Management ensures tests are conducted in alignment with the Hydrocarbon Spill Testing of Arrangements Schedule.

Woodside's arrangements for spill response are common across its Australian operating assets and activities to ensure the controls are consistent. The overall objective of testing these arrangements is to ensure that Woodside maintains an ability to respond to a hydrocarbon spill, specifically to:

Ensure relevant responders, contractors and key personnel understand and practise their assigned roles and responsibilities.

Test response arrangements and actions to validate response plans.

Ensure lessons learned are incorporated into Woodside's processes and procedures and improvements are made where required.

If new response arrangements are introduced, or existing arrangements significantly amended, additional testing is undertaken accordingly. Additional activities or activity locations are not anticipated to occur; however, if they do, testing of relevant response arrangements will be undertaken as soon as practicable.

In addition to the testing of response capability described in **Appendix D,** up to eight formal exercises are planned annually, across Woodside, to specifically test arrangements for responding to a hydrocarbon spill to the marine environment.

7.12.8.1 Testing of Arrangements Schedule

Woodside's Testing of Arrangements Schedule aligns with international good practice for spill preparedness and response management; the testing is compatible with the IPIECA Good Practice Guide and the Australian Institute for Disaster Resilience (AIDR) Australian Emergency

Management Arrangements Handbook. If a spill occurs, enacting these arrangements will underpin Woodside's ability to implement a response across its petroleum activities.

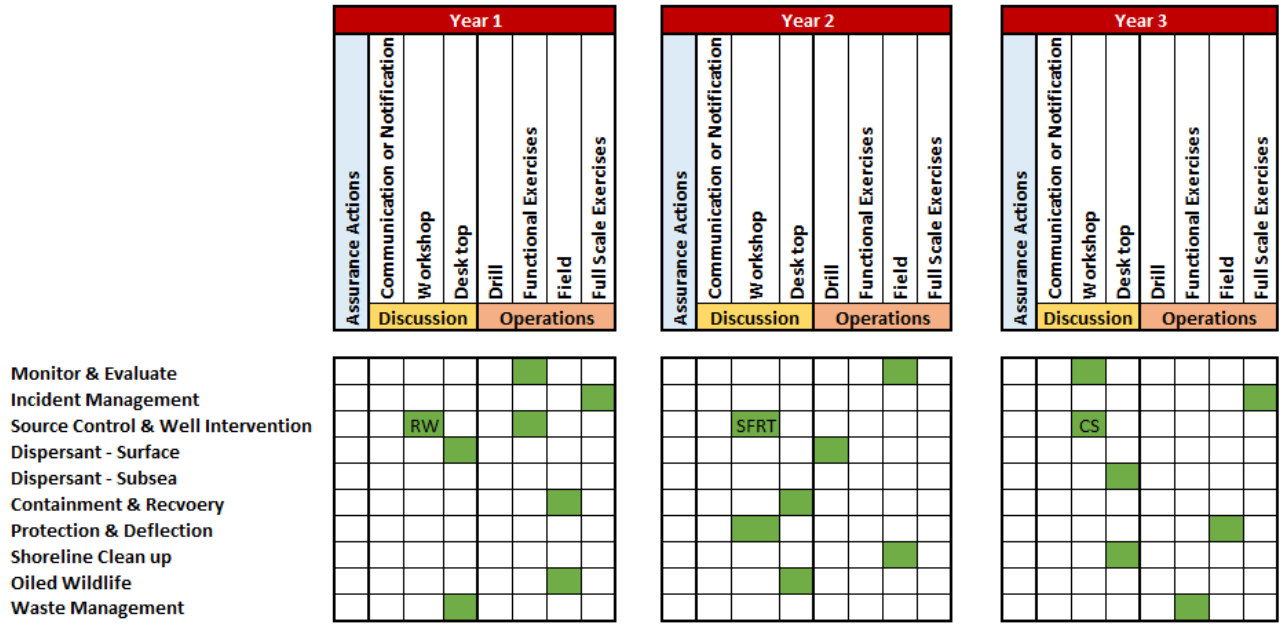


Figure 7-3: Indicative 3-yearly testing of arrangements schedule

The hydrocarbon spill arrangements shown in the rows of the schedule are tested against Woodside's regulatory commitments. Each arrangement has a support agency/company and an area to be tested (e.g., capability, equipment and personnel). For example, an arrangement could be to test Woodside's personnel capability for conducting scientific monitoring, or the ability of the Australian Marine Oil Spill Centre to provide response personnel and equipment.

The vertical columns relate to how hydrocarbon spill arrangements will be tested over the 3-year rolling schedule. The sub-heading for the column describes the standard method of testing likely to be undertaken (e.g., discussion exercise, desktop exercise), and the green cells indicate the arrangements that could be tested for each method.

Some arrangements may be tested across multiple exercises (e.g., critical arrangements) or via other 'additional assurance' methods outside the formal Testing of Arrangements Schedule that also constitute sufficient evidence of testing of arrangements (e.g., audits, no-notice drills, internal exercises, assurance drills).

7.12.8.2 Source Control testing and exercise arrangements

This section aims to present the testing and exercise arrangements for Source Control techniques as recommended in the recent industry guidelines such as the APPEA Australian Offshore *Titleholders Source Control Guideline* (issued June 2021) and the NOPSEMA Information Paper: *Source Control Planning and Procedures* (issued June 2021)

The paragraphs below elaborate on the scope, testing frequency, objectives and close-out processes applicable to testing/ exercises for Source Control techniques.

Scope, objectives and KPIs

- The objective of tests/exercises is to verify the capability of Woodside and/or contractors to manage and deliver elements of the Source Control Plans presented in OPEP.

- Tests may include specific elements of the response cycle for source control strategy, e.g. activation of arrangements, mobilisation of equipment and personnel and if relevant, testing of specific operational plans (e.g. SFRT, capping and relief well).
- Objectives typically include; testing of IMT capabilities, communications requirements, testing of source control response plans and evaluating specific aspects of source control arrangements, e.g. number of personnel, equipment, mobilisation plans and timeframes for response.
- An example of test objectives from recent exercise are presented below for reference –
  - Objective 1 – Exercising Source Control IMT against worst case credible loss of containment scenario
  - Objective 2 – Sourcing of Relief well MODU
  - Objective 3 – Verify key equipment and services availability to support Relief well operations.
  - Objective 4 – Delivery of xx day Relief well as per Activity SCERP.
- KPIs are taken from the ALARP commitments as stated in the OSPRMA (**Appendix D**).
- The exercises are planned utilising SMEs from the function with independent observers/ agencies as available (e.g. AMOSC, OSRL) along with Industry collaboration as available/ permitted.
- Formal exercise plans are produced prior to tests and exercises to document the scope, objectives, allocate resources and select relevant plans and previous lessons learnt for the test or exercise.
- **Table 7-11**: Testing of Response Capability provides indicative scope, testing frequency and objectives of the emergency and spill response drills and exercises which includes Source Control response techniques.

Frequency of tests

In addition to Testing of Arrangements for all responses listed in the schedule, source control techniques are tested on an annual basis; at least one technique per year. The schedule for testing of Source Control techniques is described in **Section 7.12.8.1**.

Woodside has tested the below response techniques in last two years:

- SSDI and relief well response in 2019
- SFRT response (joint industry exercise hosted by Woodside) in 2020

Woodside plans to test capping response in Q4 2021. In addition, Woodside Source Control team members participate in joint industry exercises on source control as available for continuous improvements to response plans.

Close out Processes

Post-exercise debriefs are held with the exercise team to identify gaps and capture learnings. The recommendations and actions are documented and assigned to the relevant function within the organisation and tracked until close-out. Close-out reports are distributed to relevant function leads and captured under Woodside's document management systems and relevant processes. Lessons learned are incorporated into Woodside's processes and procedures and improvements are made where required.

7.12.9 Cyclone and Dangerous Weather Preparation

As the timing of some activities associated with the Petroleum Activities Program are not yet determined, it is possible drilling and subsea activities will overlap with the cyclone season (November to April, with most cyclones occurring between January and March). If drilling in cyclone season, the MODU contractor and 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 MODU and 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 stakeholdings 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

Term	Meaning
dB re 1 µPa^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 mPa2/Hz), or over a broadband that has not been filtered. Where a frequency is not specified, it can be assumed that the measurement is a broadband measurement.
dB re 1 µPa².s	Normal unit for sound exposure level
Demersal	Living close to the floor of the sea (typically of fish)
Drill casing	Steel pipe placed in the well as drilling progresses to isolate particular formations or zones, prevent the wall of the well bore formations from caving in, providing pressure integrity as the well is constructed to deeper depths
Drilling fluids	The main functions of drilling fluids are to control formation pressures, remove cuttings from the wellbore, seal permeable formations encountered while drilling, cool and lubricate the drill bit, transmit hydraulic energy to downhole tools and the bit and, maintain wellbore stabilit
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_{50}	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 starfishes, sea urchins and sea cucumbers, that have an internal calcareous skeleton and are often covered with spines
Endemic	A species that is native to or confined to a certain region
Environment	The surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelations (Source: ISO 14001)
Environment Regulations	OPGGS (Environment) Regulation 2009
Environmental approval	The action of approving something, which has the potential to have an adverse impact on the environment. Environmental impact assessment is generally required before environmental approval is granted.
Environmental 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 *Environmental Impact Assessment Administrative Procedures 2010*)
EP	Prepared in accordance with the *OPGGS (Environment) Regulations 2009*, which must be assessed and accepted by the Designated Authority (NOPSEMA) before any petroleum-related activity can be performed
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth legislation designed to promote the conservation of biodiversity and protection of the environment.
Epifauna	Benthic animals that live on the surface of a substrate
Fauna	Collectively, the animal life of a particular region
Flora	Collectively, the plant life of a particular region
IC_{50}	A measure of the effectiveness of a compound in inhibiting biological or biochemical function

Term	Meaning
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_{50}	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.
Sessile	Organism that is fixed in one place; immobile
Stereo-BRUVS	Stereo-baited remote underwater video systems
Syngnathids	Family of fish which includes the seahorses, the pipefishes, and the weedy and leafy sea dragons
Teleost	A fish belonging to the Teleostei or Teleostomi, a large group of fishes with bony skeletons, including most common fishes. The teleosts are distinct from the cartilaginous fishes such as sharks, rays, and skates.
Thermocline	A temperature gradient in a thermally stratified body of water
Zooplankton	Plankton consisting of small animals and the immature stages of larger animals

9.2 Abbreviations

Abbreviation	Meaning
µm	Micrometer
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ACS	Australian Custom Service
AFFF	Aqueous Film Forming Foam
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AHO	Australian Hydrographic Office
AHV	Anchor Handling Vessels
AIIMS	Australasian Inter-service Incident Management System
AIMS	Australian Institute of Marine Science
AIS	Automatic Identification System
ALARP	As Low As Reasonably Practicable
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
API	American Petroleum Institute
APPEA	Australian Petroleum Production and Exploration Association
AS (NZS)	Australian Standard (New Zealand Standard)
ASAP	As soon as practicable
ASL	Above sea level
ATSB	Australian Transport Safety Bureau
AusSAR	Australian Search and Rescue
bbl	Oil barrel
BC	Bioconcentration
BCF	Bioconcentration Factor
BIA	Biologically Important Area
BOD	Biological Oxygen Demand
BoM	Bureau of Meteorology
BOP	Blow-out Preventer
BRUVS	Baited Remote Underwater Video System
CALM	Department of Conservation and Land Management
CAR	Campaign Action Register
CCL	Casing Collar Locator
CCP	Cyclone Contingency Plan
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CFA	Commonwealth Fisheries Association
CH4	Methane
CICC	Corporate Incident Coordination Centre

Abbreviation	Meaning
CMT	Crisis Management Team
CO	Carbon Monoxide
CO2	Carbon Dioxide
CoA	Commonwealth of Australia
COLREGS	International Regulations for Prevention of Collisions at Sea
CS	Cost/Sacrifice
CSIRO	Commonwealth Scientific and Industrial Research Organisation
Cth	Commonwealth
CV	Company Values
DAA	Department of Aboriginal Affairs
DAWE	Department of Agriculture, Water and the Environment
DAWR	Department of Agriculture and Water Resources (now DAWE)
dB	Decibel
DEC	Department of Environment and Conservation
DEWHA	Department of Environment, Water, Heritage and the Arts
DGPS	Differential Global Surface Positioning System
DIIS	Department of Industry Innovation and Science
DMIRS	Department of Mines, Industry Regulation and Safety
DMP	Department of Mines and Petroleum
DNP	Director of National Parks
DoD	Department of Defence
DoEE	Department of the Environment and Energy
DoF	Department of Fisheries (now part of DMIRS)
DoT	Department of Transport
DP	Dynamically Positioned
DPIRD	Department of Primary Industries and Regional Development
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EC_{50}	half maximal effective concentration
EDS	Emergency Disconnect Sequence
EEZ	Exclusive Economic Zone
EHU	Electrohydraulic umbilical
EMBA	Environment that May Be Affected
EMS	Environmental Management System
ENVID	Environmental hazard Identification
EP	Environment Plan
EPO	Environmental Performance Outcome
EPS	Environmental Performance Standard
ERM	Environmental Resource Management

Abbreviation	Meaning
ERP	Emergency Response Plans
ERT	Emergency Response Team
ESD	Ecological Sustainable Development
F	Control Feasibility
FEWD	Formation Evaluation While Drilling
FFFP	Film Forming Fluroprotein Foams
FLNG	Floating Liquefied Natural Gas units
FPSO	Floating Production, Storage and Offtake vessel
FRDC	Fisheries Research and Development Centre
FSP	First Strike Plan
g/m²	Grams per square metre
GDSF	Gascoyne Demersal Scalefish Fishery
GHG	Greenhouse Gas
GP	Good Practice
GR	Gamma Ray
GWA	Goodwyn Alpha
HDPE	High Density Polyethylene
HF	High Frequency
HFC	Hydrofluorocarbons
HFO	Heavy Fuel Oil
HOCNF	Harmonised Offshore Chemical Notification Format
HQ	Hazard Quotient
HSE	Health, Safety and Environment
HSPU	Hydrocarbon Spill Preparedness Unit
IAP	Incident Action Plan
IAPP	International Air Pollution Prevention
IC	Incident Controller
IC_{50}	Half maximal inhibitory concentration
ICLDP	Incident and Crisis Leadership Development Program
IMMR	Inspection, Maintenance, Monitoring, Repair
IMO	International Marine Organisation
IMS	Invasive Marine Species
IOPP	International Oil Pollution Prevention
IPIECA	International Petroleum Industry Environmental Conservation Association
IS	Implementation Strategy
ISPP	International Sewage Pollution Prevention Certificate
ITF	Indonesian Through Flow
ITOPF	International Tanker Owners Pollution Federation

Abbreviation	Meaning
IUCN	International Union for Conservation of Nature
IUTB	Infield umbilical termination basket
JRCC	Joint Rescue Coordination Centre
JSA	Job Safety Analysis
KBGFC	King Bay Game Fishing Club
KEF	Key Ecological Feature
kHz	Kilohertz
km	Kilometre
kPa	Kilopascal
KPI	Key Performance Indicator
L	Litres
LARS	Launch and Recovery Systems
LBL	Long Baseline
LC_{50}	Lethal concentration, 50%
LCS	Legislation, Codes and Standards
LF	Low Frequency
LNG	Liquefied Natural Gas
LOEC	Lowest Observable Effect Concentration
LWI	Light Well Intervention
MARPOL	International Convention for the Prevention of Pollution from Ships
MC	Measurement Criteria
MCDA	Multi Criteria Decision Assessment
MDO	Marine Diesel Oil
MEG	Mono-ethylene Glycol
MF	Mid Frequency
MFO	Marine Fauna Observers
MIMI	Japan Australia LNG Pty Ltd
MMA	Marine Management Area
MMSI	Maritime Mobile Service Identity
MNES	Matters of National Environmental Significance
MOC	Management of Change
MODU	Mobile Offshore Drilling Unit
MoU	Memorandum of Understanding
MP	Marine Park
MPA	Marine Protected Areas
MPRA	Marine Parks and Reserves Authority
ms^{1}	Metres per second
MSIN	Maritime Safety Information Notifications

Abbreviation	Meaning
N_2O	Nitrous Oxide
NBSFC	Nickol Bay Sport Fishing Club
NCDSF	North Coast Demersal Scalefish Fishery
NGERS	National Greenhouse and Energy Reporting
NICNA'S	National Industrial Chemicals Notification ad Assessment Scheme
NIMS	Non-indigenous Marine Species
nm	Nautical mile (1,852 m) a unit of distance on the sea
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observed Effect Concentration
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
NORM	Naturally Occurring Radioactive Material
NOx	Oxides of Nitrogen
NRC	North Rankin Complex
NTM	Notice to Mariners
NWBM	Non Water-Based Mud
NWMR	North-west Marine Region
NWP	Northwest Province
NWS	North-west Shelf
NWSTF	North West Slope Trawl Fishery
OCNS	Offshore Chemical Notification Scheme
OEM	Original Equipment Manufacturer
OILMAP	Oil Spill Mapping and Analysis Program
OIM	Offshore Installation Manager
OIW	Oil in Water
OOC	Oil on cuttings
OPEP	Oil Pollution Emergency Plan
OPGGS	Offshore Petroleum and Greenhouse Gas Storage
OPP	Offshore Project Proposal
OSPAR	Oslo and Paris Commission for the Convention for the Protection of the Marine Environment of the North-East Atlantic
OSREC	Oil Spill Response Skills Enhancement Course
OSRO	Oil Spill Response Organisation
OVID	Offshore Vessel Inspection Database
OVMSA	Offshore Vessel Safety Management System assessment
OWS	Oily Water Separator
PAA	Petroleum Activity Area

Abbreviation	Meaning
PAH	Polyaromatic Hydrocarbon
PBA	Pre-emptive Baseline Areas
PFC	Perfluorocarbons
PIC	Person In Charge
PJ	Professional Judgement
PLONOR	OSPAR definition of a substance Poses Little Or NO Risk to the environment
PM10	Particulate Matter less than 10 microns
PMST	Protected Matters Search Tool
PNEC	Predicted No Effect Concentration
PPA	Pearl Producers Association
ppb	Parts Per Billion
ppm	Parts Per Million
PS	Performance Standards
PSD	Particle Size Distribution
psi	Pounds per square inch
PSU	Practical Salinity Unit
PTS	Permanent Threshold Shift
PTW	Permit To Work
RBA	Risk Based Analysis
RBI	Risk-Based Inspection
RCC	Rescue Coordination Centre
RMR	Riserless Mud Recovery
RMS	Root Mean Square
RO	Reverse Osmosis
ROV	Remotely Operated Vehicle
SA	South Australia
S-BRUVS	Stereo-baited Remote Underwater Video System
SBTF	Southern Bluefin Tuna Fishery
SCE	Solids Control Equipment
SCERP	Source Control Emergency Response Plan
SEEMP	Ship Energy Efficiency Management Plan
SF6	Sulphur hexafluoride
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	Simultaneous Operations
SMPEP	Spill Monitoring Programme Execution Plan
SO2	Sulphur Dioxide
SOLAS	Safety of Life at SEA
SOPEP	Ship Oil Pollution Emergency Plan

Abbreviation	Meaning
SPL	Sound Pressure Levels
SSIV	Subsea Isolation Valve
SV	Societal Values
SW	Southwest
SWMR	South-west Marine Region
TPS	Total Petroleum Hydrocarbons
TSS	Total Suspended Solids
TTS	Temporary Threshold Shift
UK	United Kingdom
USBL	Ultra-short baseline
USIT	Ultrasonic Imaging Tool
VLS	Vertical Lay System
VOC	Volatile Organic Hydrocarbons
WA	Western Australia
WAF	Water Accommodated Fraction
WAFIC	Western Australian Fishing Industry Council
WBM	Water-Based Mud
WCBD	Well Control Bridging Document
WCC	Woodside Communication Centre
WDTF	Western Deepwater Trawl Fishery
WEL	Woodside Energy Ltd
WHA	World Heritage Area
WLS	Woodside Learning Service
WMP	Waste Management Plan
WMS	Woodside Management System
WOMP	Well Operation Management Plan
Woodside	Woodside Energy Ltd
XPT	Formation Pressures

APPENDIX A. WOODSIDE CORPORATE POLICIES

WOODSIDE POLICY

Woodside Energy

Environment and Biodiversity Policy

OBJECTIVE

Woodside recognises the intrinsic value of nature and the importance of conserving biodiversity and ecosystem services to support the sustainable development of our society. We are committed to doing our part. We understand and embrace our responsibility to undertake activities in an environmentally sustainable way.

PRINCIPLES

Woodside commits to:

- Implementing a systematic approach to the management of the impacts and risks of our operating activities on an ongoing basis, including emissions and air quality, discharge and waste management, water management, biodiversity and protected areas.
- Applying the mitigation hierarchy principle (avoid, minimise, restore) and a continuous improvement approach to ensure we maintain compliance, improve resource use efficiency and reduce our environmental impacts.
- Embedding environmental and biodiversity management, and opportunities, in our business planning and decision making processes.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Not undertaking new exploration or development of hydrocarbons within the boundaries of natural sites on the UNESCO World Heritage List (as specified at 1 December 2022). Existing activity may continue if compatible with maintenance of the listed outstanding universal values.
- Not undertaking new exploration or development of hydrocarbons within IUCN Protected Areas (as specified at 1 December 2022) unless compatible with management plans in place for the area. Existing activity may continue if compatible with management plans in place for the area.
- Achieving net zero deforestation1 associated with new projects that take a Final Investment Decision (FID) after 1 December 2022.
- Developing Biodiversity Action Plans for all new major projects (CAPEX >USD$2 billion) that take a FID after 1 December 2022.
- Supporting positive biodiversity outcomes in regions and areas in which we operate.
- Setting targets and publicly reporting on our environmental and biodiversity performance.

APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Approved by the Woodside Energy Group Ltd Board in December 2022.

[1] Definition of Forest: 'trees higher than 5 meters and a canopy cover of more than 10 percent on the land to be cleared'

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WOODSIDE POLICY

Woodside Energy

Health and Safety Policy

OBJECTIVES

At Woodside we believe that process and personal safety related incidents, and occupational illnesses are preventable. We strive to be an industry leader in health and safety and are committed to managing our activities to minimise adverse health and safety risk related impacts.

PRINCIPLES

Woodside will achieve this by:

- Implementing a systematic approach to health, personal safety, and process safety risk management.
- Maintaining a culture in which everybody is aware of their health and safety obligations and are empowered to speak up and intervene on health and safety issues.
- Identifying current and emerging hazards across the value chain activities to reduce risks to as low as reasonably practicable.
- Embedding health and safety management in our business planning and decision-making processes.
- Integrating health, personal safety and process safety requirements when designing, purchasing, constructing, and modifying equipment and facilities including requiring our contractors to comply with our HSE expectations in a mutually beneficial manner.
- Complying with relevant laws and regulations and applying responsible standards where laws do not exist.
- Setting targets and publicly reporting on our health and safety performance to help us continually improve.

APPLICABILITY

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside leaders are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Revised by the Woodside Energy Group Ltd Board in December 2022

WOODSIDE POLICY

Woodside Energy

Risk Management Policy

OBJECTIVES

Woodside recognises that risk is inherent in our business and the effective management of risk is vital to deliver our strategic objectives, continued growth and success. We are committed to managing risks in a proactive and effective manner as a source of competitive advantage.

Our approach protects us against potential negative impacts, enables us to take risk for reward and improves our resilience against emerging risks. The objective of our risk management framework is to provide a single consolidated view of risks across the company to understand our full risk exposure and prioritise risk management and governance.

The success of our approach lies in the responsibility placed on everyone at all levels to proactively identify, assess and treat risks relating to the objectives they are accountable for delivering.

PRINCIPLES

Woodside achieves these objectives by:

- Applying a structured and comprehensive framework for the identification, assessment and treatment of current risks and response to emerging risks;
- Ensuring line of sight of financial and non-financial risks at appropriate levels of the organisation;
- Demonstrating leadership and commitment to integrating risk management into our business activities and governance practices;
- Recognising the value of stakeholder engagement, best available information and proactive identification of potential changes in external and internal context;
- Embedding risk management into our critical business processes and control framework;
- Understanding our exposure to risk and tolerance for uncertainty to inform our decision making and assure that Woodside is operating with due regard to the risk appetite endorsed by the Board; and
- Evaluating and improving the effectiveness and efficiency our approach.

APPLICABILITY

The Managing Director of Woodside is accountable to the Board of Directors for ensuring this Policy is effectively implemented.

Responsibility for the application of this Policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control. Woodside managers are also responsible for promotion of this Policy in non-operated joint ventures.

This Policy will be reviewed regularly and updated as required.

Reviewed by the Woodside Energy Group Ltd Board in December 2022.

APPENDIX B. RELEVANT REQUIREMENTS

The table below refers to Commonwealth Legislation related to the activity

Commonwealth Legislation	Legislation Summary
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	The Act seeks "to preserve and protect places, areas and objects of particular significance" to Aboriginal people. Under the Section 9 and 10 provisions of the Act, the Minister for the Environment may declare significant Aboriginal areas temporarily or permanently protected if they are considered under threat. Similar declarations regarding Aboriginal objects can be made under Section 12. Under Section 22 of the Act, the contravention of any of these declarations is an offence. Additionally, the discovery of any Aboriginal remains must be reported to the Minister under Section 20. Damage or interference with Aboriginal objects or places is not an offence under the ATSIHP Act except within Victoria under Section 21U.
Air Navigation Act 1920 • Air Navigation Regulations 1947 • Air Navigation (Aerodrome Flight Corridors) Regulations 1994 • Air Navigation (Aircraft Engine Emissions) Regulations 1995 • Air Navigation (Aircraft Noise) Regulations 1984 • Air Navigation (Fuel Spillage) Regulations 1999	This Act relates to the management of air navigation.
Australian Maritime Safety Authority Act 1990	This Act establishes a legal framework for the Australian Maritime Safety Authority (AMSA), which represents the Australian Government and international forums in the development, implementation and enforcement of international standards including those governing ship safety and marine environment protection. AMSA is responsible for administering the Marine Orders in Commonwealth waters.
Australian Radiation Protection and Nuclear Safety Act 1998	This Act relates to the protection of the health and safety of people, and the protection of the environment from the harmful effects of radiation.
Biosecurity Act 2015 • Quarantine Regulations 2000 • Biosecurity Regulation 2016 • Australian Ballast Water Management Requirements 2017	This Act provides the Commonwealth with powers to take measures of quarantine, and implement related programs as are necessary, to prevent the introduction of any plant, animal, organism or matter that could contain anything that could threaten Australia's native flora and fauna or natural environment. The Commonwealth's powers include powers of entry, seizure, detention and disposal. This Act includes mandatory controls on the use of seawater as ballast in ships and the declaration of sea vessels voyaging out of and into Commonwealth waters. The Regulations stipulate that all information regarding the voyage of the vessel and the ballast water is declared correctly to the quarantine officers.

Commonwealth Legislation	Legislation Summary
Environment Protection and Biodiversity Conservation Act 1999 • Environment Protection and Biodiversity Conservation Regulations 2000	This Act protects matters of national environmental significance (NES). It streamlines the national environmental assessment and approvals process, protects Australian biodiversity and integrates management of important natural and culturally significant places. Under this Act, actions that may be likely to have a significant impact on matters of NES must be referred to the Commonwealth Environment Minister.
Environment Protection (Sea Dumping) Act 1981 • Environment Protection (Sea Dumping) Regulations 1983	This Act provides for the protection of the environment by regulating dumping matter into the sea, incineration of waste at sea and placement of artificial reefs.
Industrial Chemicals (Notification and Assessment Act) 1989 • Industrial Chemicals (Notification and Assessment) Regulations 1990	This Act creates a national register of industrial chemicals. The Act also provides for restrictions on the use of certain chemicals which could have harmful effects on the environment or health.
National Environment Protection Measures (Implementation) Act 1998 • National Environment Protection Measures (Implementation) Regulations 1999	This Act and Regulations provide for the implementation of National Environment Protection Measures (NEPMs) to protect, restore and enhance the quality of the environment in Australia and ensure that the community has access to relevant and meaningful information about pollution. The National Environment Protection Council has made NEPMs relating to ambient air quality, the movement of controlled waste between states and territories, the national pollutant inventory, and used packaging materials.
National Greenhouse and Energy Reporting Act 2007 • National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015	This Act and associated Rule establishes the legislative framework for the NGER scheme for reporting greenhouse gas emissions and energy consumption and production by corporations in Australia.
Navigation Act 2012 • Marine order 12 – Construction – subdivision and stability, machinery and electrical installations • Marine order 30 - Prevention of collisions • Marine order 47 – Offshore Industry units • Marine order 57 - Helicopter operations • Marine order 91 - Marine pollution prevention—oil • Marine order 93 - Marine pollution prevention—noxious liquid substances • Marine order 94 - Marine pollution prevention—packaged harmful substances • Marine order 96 - Marine pollution prevention—sewage • Marine order 97 - Marine pollution prevention—air pollution	This Act regulates navigation and shipping including Safety of Life at Sea (SOLAS). The Act will apply to some activities of the MODU and project vessels. This Act is the primary legislation that regulates ship and seafarer safety, shipboard aspects of marine environment protection and pollution prevention.

Commonwealth Legislation	Legislation Summary
Offshore Petroleum and Greenhouse Gas Storage Act 2006 • Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 • Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011 • Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009	This Act is the principal Act governing offshore petroleum exploration and production in Commonwealth waters. Specific environmental, resource management and safety obligations are set out in the Regulations listed.
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 • Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995	This Act provides for measures to protect ozone in the atmosphere by controlling and ultimately reducing the manufacture, import and export of ozone depleting substances (ODS) and synthetic greenhouse gases, and replacing them with suitable alternatives. The Act will only apply to Woodside if it manufactures, imports or exports ozone depleting substances.
Protection of the Sea (Powers of Intervention) Act 1981	This Act authorises the Commonwealth to take measures for the purpose of protecting the sea from pollution by oil and other noxious substances discharged from ships and provides legal immunity for persons acting under an AMSA direction.
Protection of the Sea (Prevention of Pollution from Ships) Act 1983 • Protection of the Sea (Prevention of Pollution from Ships) (Orders) Regulations 1994 • Marine order 91 - Marine pollution prevention—oil • Marine order 93 - Marine pollution prevention—noxious liquid substances • Marine order 94 - Marine pollution prevention—packaged harmful substances • Marine order 95 - Marine pollution prevention—garbage • Marine order 96 - Marine pollution prevention—sewage • Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007 • MARPOL Convention	This Act relates to the protection of the sea from pollution by oil and other harmful substances discharged from ships. Under this Act, discharge of oil or other harmful substances from ships into the sea is an offence. There is also a requirement to keep records of the ships dealing with such substances. The Act applies to all Australian ships, regardless of their location. It applies to foreign ships operating between 3 nautical miles (nm) off the coast out to the end of the Australian Exclusive Economic Zone (200 nm). It also applies within the 3 nm of the coast where the State/Northern Territory does not have complementary legislation. All the Marine Orders listed, except for Marine Order 95, are enacted under both the *Navigation Act 2012* and the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. This Act is an amendment to the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. This amended Act provides the protection of the sea from pollution by oil and other harmful substances discharged from ships.
Protection of the Sea (Harmful Antifouling Systems) Act 2006 • Marine order 98—(Marine pollution—anti-fouling systems)	This Act relates to the protection of the sea from the effects of harmful anti-fouling systems. It prohibits the application or reapplication of harmful anti-fouling compounds on Australian ships or foreign ships that are in an Australian shipping facility.
Recycling and Waste Reduction (Mandatory Product Stewardship—Mercury-added Products) Rules 2021 (Minamata Convention on Mercury 2017)	This convention is an agreement to protect human and environmental health from the effects of releases of mercury and mercury-containing compounds to the environment. The convention is not yet ratified by Australia, and hence is not currently implemented in Commonwealth law. Australia has signed the convention and is currently undertaking an assessment process prior to ratification.

Commonwealth Legislation	Legislation Summary
Underwater Cultural Heritage Act 2018 • Underwater Cultural Heritage Guidance for Offshore Developments • DRAFT Guidelines to Protect Underwater Cultural Heritage	The Act prescribes penalties for damage to protected underwater cultural heritage without a permit under Section 30 or in contravention of a permit under Section 28. Protected underwater cultural heritage is prescribed in Section 16 to automatically include the remains and associated artefacts of any vessel or aircraft that has been in Australian waters for 75 years, whether known or unknown. This protection is also extended to underwater cultural heritage in Commonwealth waters specified by the Environment Minister under Section 17. Without a declaration under this section, Aboriginal underwater cultural heritage is not protected under the UCH Act.

APPENDIX C. EPBC ACT PROTECTED MATTERS SEARCH

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 04-Apr-2023

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	14
Listed Migratory Species:	26

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	17
Whales and Other Cetaceans:	25
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	18
Key Ecological Features (Marine):	1
Biologically Important Areas:	1
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
EEZ and Territorial Sea

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
SHARK		
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Migratory Marine Species		
[Balaenoptera bonaerensis](#) Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Carcharhinus longimanus](#) Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Reptile		
Aipysurus laevis		
Olive Seasnake [1120]		Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Disteira kingii		
Spectacled Seasnake [1123]		Species or species habitat may occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
Pelamis platurus		
Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		

Current Scientific Name	Status	Type of Presence
[Balaenoptera acutorostrata](#) Minke Whale [33]		Species or species habitat may occur within area
[Balaenoptera bonaerensis](#) Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Kogia sima as Kogia simus Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Not controlled action			
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Not controlled action (particular manner)			
2D marine seismic survey	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region

Name	Region
Exmouth Plateau	North-west

Biologically Important Areas

Scientific Name	Behaviour	Presence
Whales		
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Distribution	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 16-Jan-2023

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	27
Listed Migratory Species:	43

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	68
Whales and Other Cetaceans:	30
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	3
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	98
Key Ecological Features (Marine):	4
Biologically Important Areas:	9
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
EEZ and Territorial Sea
Extended Continental Shelf

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
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
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pterodroma mollis		
Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
FISH		
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat may occur within area
REPTILE		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat may occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Chitulia ornata as Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Leioselasma czeblukovi as Hydrophis czeblukovi Fine-spined Seasnake, Geometrical Seasnake [87374]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Current Scientific Name	Status	Type of Presence
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat may occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Indopacetus pacificus](#) Longman's Beaked Whale [72]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima as Kogia simus](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
[Lagenodelphis hosei](#) Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Species or species habitat known to occur within area
[Mesoplodon densirostris](#) Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area

Current Scientific Name	Status	Type of Presence
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Multiple Use Zone (IUCN VI)
Gascoyne	National Park Zone (IUCN II)

Habitat Critical to the Survival of Marine Turtles		
Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Nov - May		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
Construct and operate LNG & domestic gas plant including	2008/4469	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
onshore and offshore facilities - Wheatston			
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Development of Coniston/Novara fields within the Exmouth Sub-basin	2011/5995	Controlled Action	Post-Approval
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development	2003/1294	Controlled Action	Post-Approval
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Not controlled action			
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed
Cazadores 2D seismic survey	2004/1720	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
Agrippina 3D Seismic Marine Survey	2009/5212	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular Manner)	Completed
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Leopard 2D marine seismic survey	2005/2290	Not Controlled Action (Particular Manner)	Post-Approval
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Rydal-1 Petroleum Exploration Well, WA	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval
Salsa 3D Marine Seismic Survey	2010/5629	Not Controlled Action (Particular Manner)	Post-Approval
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular Manner)	Post-Approval
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	North-west
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west

Biologically Important Areas

Scientific Name	Behaviour	Presence
Marine Turtles		
Caretta caretta		
Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Chelonia mydas		
Green Turtle [1765]	Internesting buffer	Known to occur
Natator depressus		
Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		

Scientific Name	Behaviour	Presence
Ardenna pacifica		
Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sharks		
Rhincodon typus		
Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Distribution	Known to occur
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae		
Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

APPENDIX D. OIL SPILL PREPAREDNESS AND RESPONSE STRAETEGY SELECTION AND EVALUATION

Oil Spill Preparedness and Response Mitigation Assessment for Scarborough Drilling and Completions

Corporate HSE
Hydrocarbon Spill Preparedness

June 2023
Revision 0a

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FIGURES

TABLES

EXECUTIVE SUMMARY

Woodside Energy Ltd (Woodside) has developed its oil spill preparedness and response position for the Scarborough Drilling and Completions Activity, hereafter known as the Petroleum Activities Program (PAP). This document demonstrates that the risks and impacts from an unplanned hydrocarbon release, and the associated response operations, are controlled to As Low As Reasonably Practicable (ALARP) and Acceptable levels. It achieves this by evaluating response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the Environment Plan (EP). This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness.

A summary of the key facts and references to additional detail within this document are presented below.

Table 0-1: Summary of the key details for assessment

Key details of assessment	Summary	Reference to additional detail
Worst Case Credible Scenario	**Credible Scenario-01 (CS-01): Instantaneous hydrocarbon release of marine diesel caused by vessel collision.** A short-term (instantaneous) uncontrolled release of 250 m^3 of marine diesel from a vessel, representing a fuel tank rupture after a collision.	**Section 2.2**
Other Credible Scenario	**Credible Scenario-03 (CS-03): Loss of well control during drilling of development well** Dry gas – no liquid hydrocarbon is expected at atmospheric temperatures.	
Hydrocarbon Properties	**Marine diesel** 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. 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%). **Dry gas** The Scarborough reservoir properties are dry gas, primarily methane (approximately 95%) and nitrogen (approximately 4%), with some ethane, CO_2 contents and limited heavier hydrocarbon components. No liquid hydrocarbons are expected at atmospheric conditions. Furthermore, worst case discharge rate ('blowout' rate) modelling predicts that the gas plume will not breach the water's surface.	Section 6.7.2 of the EP Appendix A of the First Strike Plan
Modelling Results	**Stochastic modelling** A quantitative, stochastic assessment has been undertaken for CS-01 to help assess the environmental risk of a hydrocarbon spill. A total of 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. The stochastic modelling did not predict the threshold concentrations required to trigger deterministic modelling. Deterministic modelling was therefore not undertaken and stochastic modelling has been used to scale the response. No receptors are predicted to be contacted by floating oil concentrations at the 10 g/m^2 threshold. Deterministic modelling was not undertaken for CS-01.	**Section 2.3**

<table>
<tr><th>Key details of assessment</th><th>Summary</th><th>Reference to additional detail</th></tr>
<tr><td></td><td>No stochastic or deterministic hydrocarbon spill modelling was undertaken for CS-03.</td><td></td></tr>
<tr><td></td><td>
<table>
<tr><td></td><td>CS-01: Hydrocarbon release caused by vessel collision (instantaneous release of 250 m^3 marine diesel)</td><td>CS-03: Loss of well control during drilling of development well
Dry gas release – no liquid hydrocarbon.</td></tr>
<tr><td>Minimum time to shoreline contact (above 100 g/m^2)</td><td>No contact at threshold</td><td>N/A – dry gas</td></tr>
<tr><td>Largest volume ashore at any single Response Priority Area (RPA) (above 100g/m^2)</td><td>No contact at threshold</td><td>N/A – dry gas</td></tr>
<tr><td>Largest total shoreline accumulation (above 100g/m^2) all shorelines</td><td>No contact at threshold</td><td>N/A – dry gas</td></tr>
</table>
</td><td></td></tr>
<tr><td>Net Environmental Benefit Assessment</td><td>Techniques identified as potentially having a net environmental benefit (dependent on the actual spill scenario) and carried forward for further assessment are:
monitor and evaluate
source control via vessel SOPEP (Shipboard Oil Pollution Emergency Plan)
source control via capping stack
source control via relief well drilling
oiled wildlife response</td><td>Section 4</td></tr>
<tr><td>ALARP evaluation of selected response techniques</td><td>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 Section 2, without the implementation of considered additional, alternative or improved control measures.</td><td>Section 7</td></tr>
</table>

1 INTRODUCTION

1.1 Overview

Woodside Energy Ltd (Woodside) has developed its oil spill preparedness and response position for the Scarborough Drilling and Completions 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 Drilling and Completions Environment Plan (EP)
- Oil Pollution Emergency Arrangements (OPEA) (Australia)
- The Scarborough Drilling and Completions Oil Pollution Emergency Plan (OPEP) including;
  - First Strike Plan (FSP)
  - Relevant Operations Plans
  - Relevant Tactical Response Plans (TRPs, also see ANNEX E: Tactical Response Plans)
  - 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 dry gas loss of well control (LOWC), and the associated response operations, are controlled to ALARP and Acceptable levels. It achieves this by evaluating response options to address the potential environmental risks and impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the EP. This document then outlines Woodside's decisions and techniques for responding to a hydrocarbon release event and the process for determining its level of hydrocarbon spill preparedness. It should be read in conjunction with the documents listed in **Table 1-1**. The location of the Petroleum Activity Program 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 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.

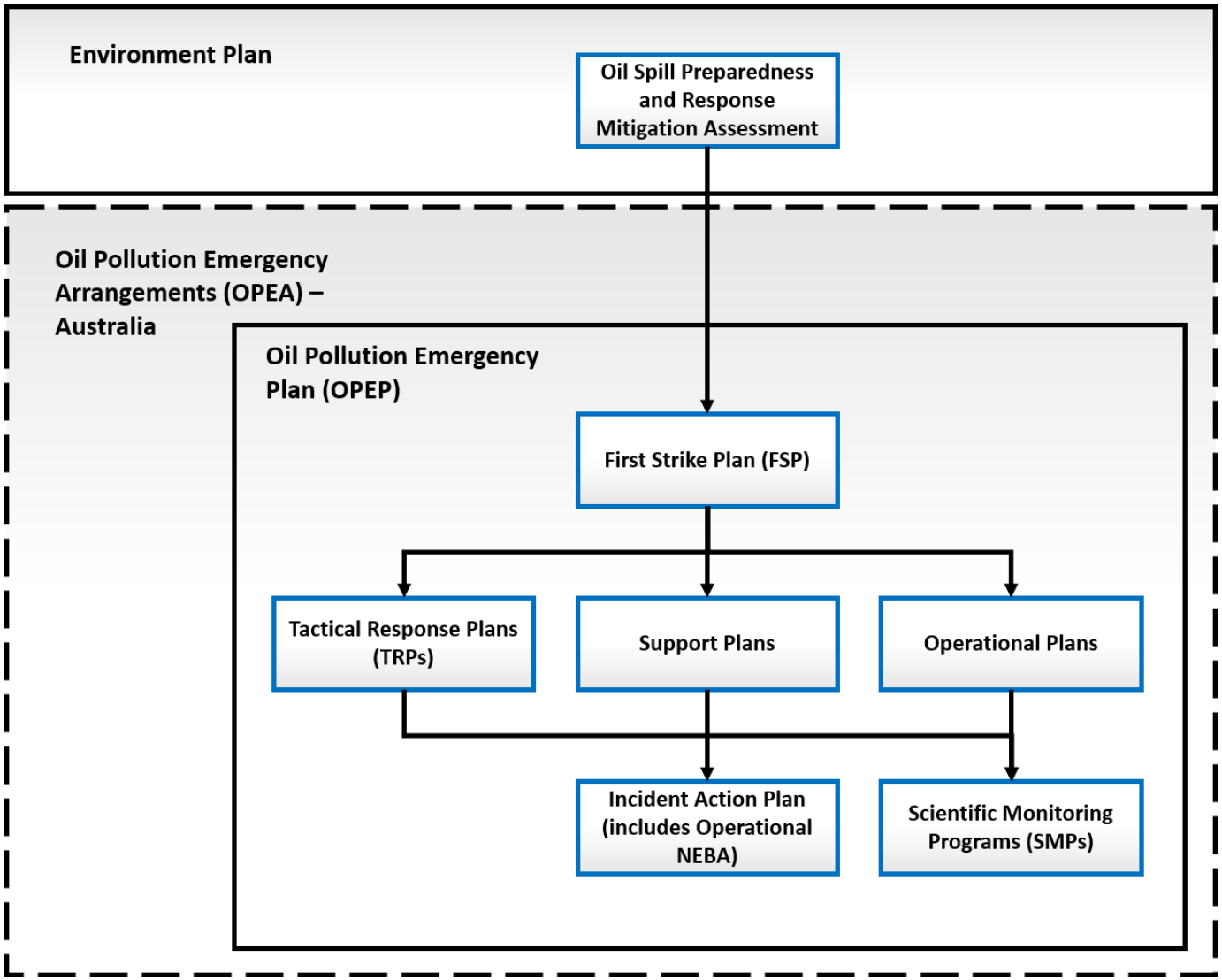

Figure 1-1: Woodside hydrocarbon spill document structure

Table 1-1: Hydrocarbon Spill preparedness and response – document references

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Scarborough Drilling and Completions Environment Plan (EP)	Demonstrates that potential adverse impacts on the environment associated with Scarborough Drilling and Completions activities (during both routine and non-routine operations) are mitigated and managed to ALARP and will be of an acceptable level.	NOPSEMA Woodside internal	EP Section 6 (Identification and evaluation of environmental risks and impacts, including credible spill scenarios) EP Section 6 (Performance outcomes, standards and measurement criteria) EP Section 7 (Implementation strategy – including emergency preparedness and response) EP Section 7 (Reporting and compliance)	
Oil Pollution Emergency Arrangements (OPEA) Australia	Describes the arrangements and processes adopted by Woodside when responding to a hydrocarbon spill from a petroleum activity.	Regulatory agencies Woodside internal	All	Link
Oil Spill Preparedness and Response Mitigation Assessment for the Scarborough Drilling and Completions (this document)	Evaluates response options to address the potential environmental impacts resulting from an unplanned loss of hydrocarbon containment associated with the PAP described in the EP.	Regulatory agencies Corporate Incident Management Team (CIMT): Control function in an ongoing spill response for activity-specific response information.	All Performance outcomes, standards and measurement criteria related to hydrocarbon spill preparedness and response are included in this document.	

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Scarborough Drilling and Completions Oil Pollution First Strike Plan	Facility specific document providing details and tasks required to mobilise a first strike response. Primarily applied to the first 24 hours of a response until a full IAP specific to the event is developed. Oil Pollution First Strike Plans are intended to be the first document used to provide immediate guidance to the responding IMT.	Site-based IMT for initial response, activation and notification. CIMT for initial response, activation and notification. CIMT: Control function in an ongoing spill response for activity-specific response information.	Initial notifications and reporting required within the first 24 hours of a spill event. Relevant spill response options that could be initiated for mobilisation in the event of a spill. Recommended pre-planned tactics. Details and forms for use in immediate response. Activation process for oil spill trajectory modelling (OSTM), aerial surveillance and oil spill tracking buoy details.	
Operational Plans	Lists the actions required to activate, mobilise and deploy personnel and resources to commence response operations. Includes details on access to equipment and personnel (available immediately) and steps to mobilise additional resources depending on the nature and scale of a release. Relevant operational plans will be initially selected based on the Oil Pollution First Strike Plan; additional operational plans will be activated depending on the nature and scale of the release.	CIMT: Operations and Logistics functions for first strike activities. CIMT: Planning Function to help inform the IAP on resources available.	Locations from where resources may be mobilised. How resources will be mobilised. Details of where resources may be mobilised to and what facilities are required once the resources arrive. Details on how to use resources to undertake a response.	Operational Monitoring Plan Source Control Emergency Response Plan Oiled Wildlife Scientific Monitoring

Document	Document overview	Stakeholders	Relevant information	Document subsections (if applicable)
Tactical Response Plans	Provides options for response techniques in selected RPAs. Provides site, access and deployment information to support a response at the location.	CIMT: Planning Function to help develop IAPs, and Logistics Function to assist with determining resources required.	Indicative response techniques. Access requirements and/or permissions. Relevant information for undertaking a response at that site. Where applicable, may include equipment deployment locations and site layouts.	For full list of relevant Tactical Plans, refer to **ANNEX E: Tactical Response Plans**.
Support Plans	Support Plans detail Woodside's approach to resourcing and the provision of services during a hydrocarbon spill response.	CIMT: Operations, Logistics and Planning functions.	Technique for mobilising and managing additional resources outside of Woodside's immediate preparedness arrangements.	Marine Logistics People & Global Capability Surge Labour Requirement Plan Health & Safety Aviation IT Response Plan Communications Response Plan Stakeholder Engagement Accommodation & Catering Waste Management Guidance for Oil Spill Claims Management Security Support Plan Hydrocarbon Spill Responder Health Monitoring Guideline

2 RESPONSE PLANNING PROCESS

This document details Woodside's process for identifying potential response options for the hydrocarbon release scenarios, identified in the EP. **Figure 2-1** outlines the interaction between Woodside's response, planning/preparedness and selection process.

This structure has been used because it shows how the planning and preparedness activities inform a response and provides indicative guidance on what activities would be undertaken, in sequential order, if a real event were to occur. The process also evaluates alternative, additional and/or improved control measures specific to the PAP.

The Scarborough Drilling and Completions First Strike Plan then summarises the outcome of the response planning process and provides initial response guidance and a summary of ongoing response activities, if an incident were to occur.

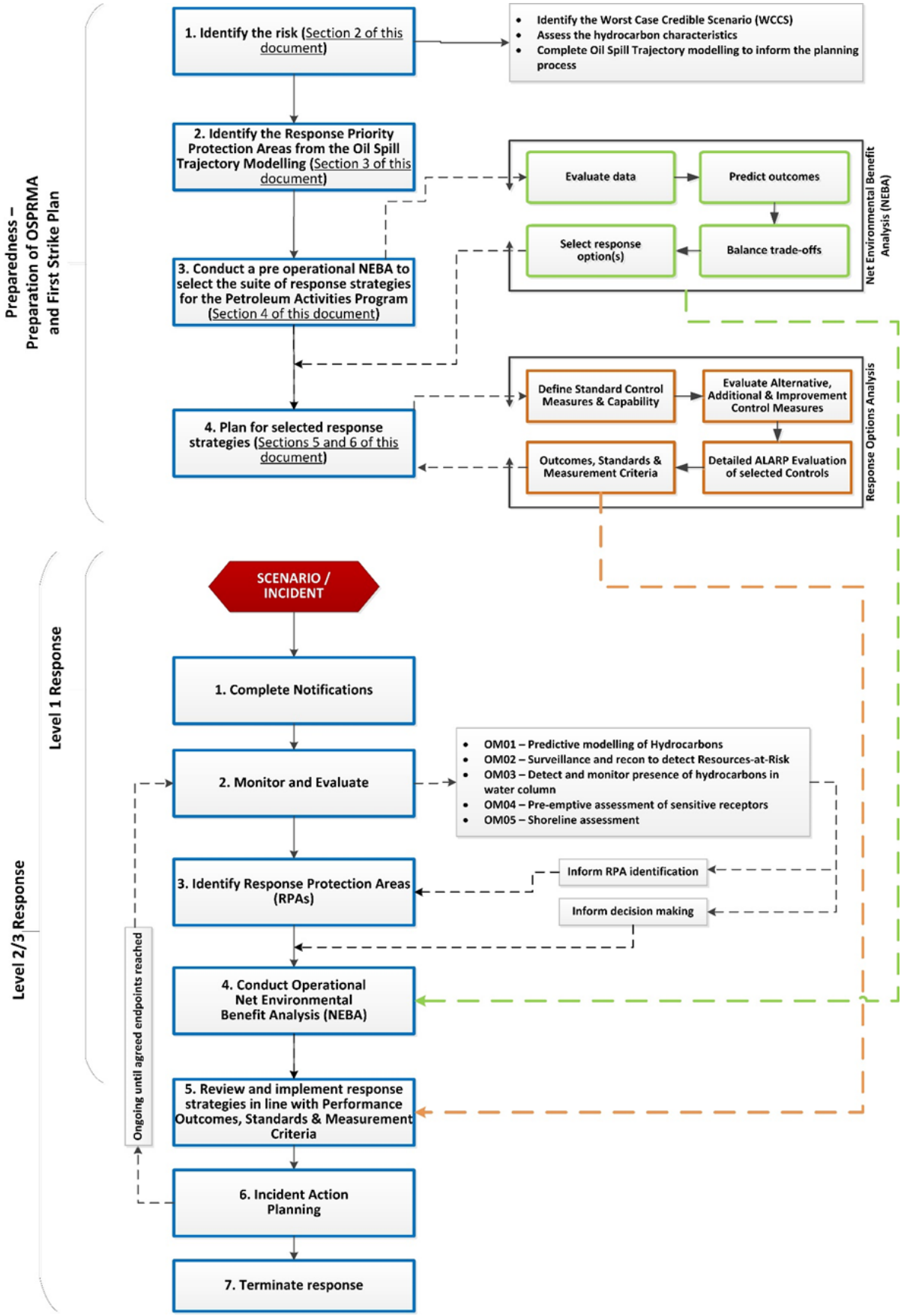

Figure 2-1: Response planning and selection process

2.1 Response planning process outline

This document is expanded below to provide additional context on the key steps in determining capability, evaluating ALARP and hydrocarbon spill response requirements.

Section 1. INTRODUCTION

Section 2. RESPONSE PLANNING PROCESS

- Identification of worst-case credible scenario(s) (WCCS)
- Spill modelling for WCCS.

Section 3. IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

- Areas predicted to be contacted at concentration >100 g/m^2.[1]

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

[1] 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

For the purpose of defining terms related to response planning and timing, the following definitions have been developed:

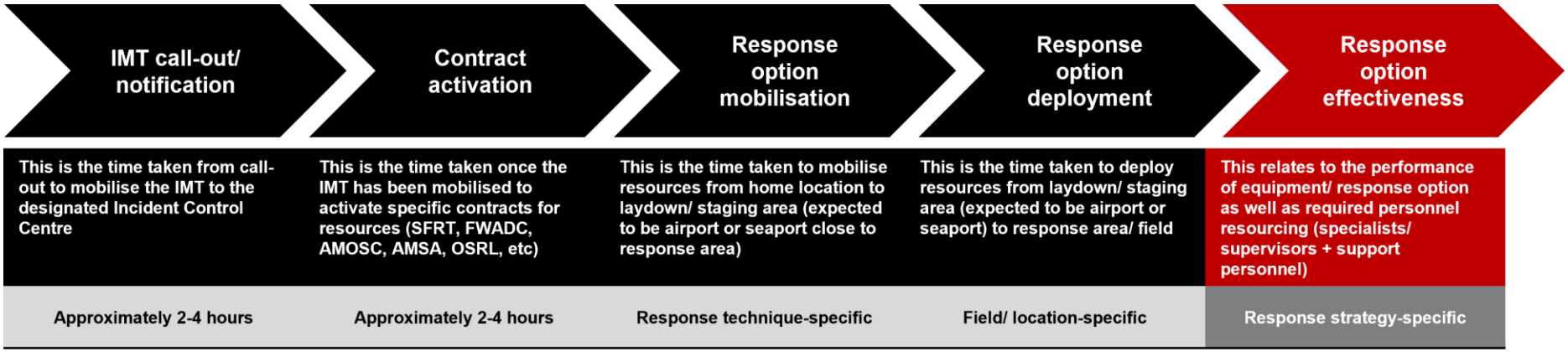

Figure 2-2: Response Planning Assumptions – Timing, Resourcing and Effectiveness

2.2 Environment plan risk assessment (credible spill scenarios)

Potential hydrocarbon release scenarios from the PAP have been identified during the risk assessment process (Section 6 of the EP). Further descriptions of risk, impacts and mitigation measures (which are not related to hydrocarbon preparedness and response) are provided in Section 6 of the EP. Three unplanned events or credible spill scenarios for the PAP have been selected as representative across types, sources and incident/response levels, up to and including the WCCS.

Table 2-1 presents the credible scenarios for the PAP. The WCCS for the activity is then used for response planning purposes, as all other scenarios are of a lesser scale and extent. By demonstrating capability to manage the response to the WCCS, Woodside assumes other scenarios that are smaller in nature and scale can also be managed by the same capability. Response performance measures have been defined based on a response to the WCCS.

- CS-01, the surface release of marine diesel caused by vessel collision, is considered the worst case when responding to floating hydrocarbons, given the large volume released instantaneously.
- CS-02, marine fuel loss during bunkering, has a significantly smaller marine diesel release volume and is considered to be within the risk profile and spill response capability requirements of CS-01.
- CS-03, a loss of well control, has also been considered, however, this scenario involves dry gas with no liquid hydrocarbon thus only operational monitoring and source control techniques are applicable.

Table 2-1: Petroleum Activities Program credible spill scenarios

Scenarios	Scenario selected for planning purposes	Scenario description	Maximum credible volume released (liquid m^3)[1]	Incident Level	Hydrocarbon (HC) type	Residual proportion	Residual volume (liquid m^3)
Credible Scenario-01 (CS-01) (Worst Case)	Yes	Hydrocarbon release caused by marine vessel collision. Instantaneous release of 250 m^3 of marine diesel within the Operational Area.	Instantaneous release of 250 m^3 marine diesel	Level 2	Marine Diesel	5%	12.5
Credible Scenario-02 (CS-02)	No	Marine Fuel Loss during bunkering	Instantaneous release of 8 m^3 marine diesel	Level 1	Marine diesel	5%	0.4 m^3
Credible Scenario-03 (CS-03)	Yes	Loss of well control during drilling of development well	Dry gas release – no liquid hydrocarbons	Level 3	Dry gas	N/A	N/A

2.2.1 Hydrocarbon characteristics

Marine Diesel (~American Petroleum Institute (API) 35) (CS-01)

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.

Dry gas (CS-03)

The Scarborough reservoir properties are dry gas, primarily methane (approximately 95%) and nitrogen (approximately 4%), with some ethane, CO_2 contents and limited heavier hydrocarbon components. No liquid hydrocarbons are expected at atmospheric conditions. Furthermore, worst case discharge rate ('blowout' rate) modelling predicts that the gas plume will not breach the water's surface.

2.3 Hydrocarbon spill modelling

Oil spill trajectory modelling tools are used for environmental impact assessment and during response planning to understand spatial scale and timeframes for response operations. Woodside recognises that there is a degree of uncertainty related to the use of modelling data and has subsequently utilised conservative approaches to volumes, weathering, spatial areas, timing and response effectiveness to scale capability to need.

The Oil Spill Model and Response System (OILMAP) and Integrated Oil Spill Impact Model System (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 CS-01 outlined in **Table 2-1**, to help assess the environmental consequences of a hydrocarbon spill. A total of 200 replicate simulations were completed for the scenario to test for trends and variations in the trajectory and weathering of the spilled oil over an annual period, with an even number of replicates completed using samples of metocean data that commenced within each month. Further details relating to the assessments for the scenario can be found in Section 6 of the EP.

No stochastic modelling was carried out for a dry gas spill from CS-03, as no liquid hydrocarbon are expected to be released at atmospheric temperatures.

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 environment that maybe affected and environmental impacts

Threshold	Description
10 g / m^2	Surface hydrocarbon
100 ppb	Entrained hydrocarbon (ppb)
50 ppb	Dissolved aromatic hydrocarbon (ppb)
100 g / m^2	Shoreline accumulation

2.3.2 Deterministic Modelling

Deterministic modelling is undertaken where initial stochastic modelling has indicated that floating oil is present at an impact threshold of 50 g/m^2 and/or where there is shoreline accumulations at an impact threshold of 100 g/m^2. The deterministic modelling outputs are then used to scale the required capability for the offshore (containment and recovery and dispersant) and/or shoreline responses.

The stochastic modelling used as a representative of this PAP did not predict the threshold concentrations required to trigger the undertaking of deterministic modelling. Deterministic modelling was therefore not undertaken and stochastic modelling has been used to scale the response.

2.3.3 Response Planning Thresholds for Surface and Shoreline Hydrocarbon Exposure

Thresholds to determine the EMBA are used to predict and assess environmental impacts and inform the 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 spill modelling results are then used to assess the nature and scale of a response.

In the event of an actual response, existing modelling would be reviewed for suitability and additional modelling would be conducted using real-time data and field information to inform Incident Management Team decisions.

The spill modelling outputs are presented at response planning thresholds for surface hydrocarbons for the WCCS. Surface spill concentrations are expressed as grams per square metre (g/m^2). The thresholds used are derived from oil spill response planning literature and industry guidance and are summarised below.

2.3.3.1 Surface hydrocarbon concentrations

Table 2-3: Surface hydrocarbon thresholds for response planning

Surface hydrocarbon concentration (g/m^2)	Description	Bonn Agreement Oil Appearance Code (BAOAC)	Mass per area (g/m^2)
>10	Predicted minimum threshold for commencing operational monitoring	Code 3 – Dull metallic colours	5 to 50
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application [2]	Code 4 – Discontinuous true oil colour	50 to 200
100	Predicted optimum floating oil threshold for containment and recovery and surface dispersant application	Code 5 – Continuous true oil colour	>200
Shoreline hydrocarbon concentration (g/m^2)	**Description**	**National Plan Guidance on Oil Contaminated Foreshores**	**Mass per area (g/m^2)**
100	Predicted minimum shoreline accumulation threshold for shoreline assessment operations	Stain	>100
250	Predicted minimum threshold for commencing shoreline clean-up operations	Level 3 - Thin Coating	200 - 1000

The surface thickness of oil at which dispersants are typically effective is approximately 100 g/m^2. However, substantial variations occur in the thickness of the oil within the slick, and most fresh crude oils spread within a few hours, so that overall the average thickness is 0.1 mm (or approx. 100 g/m^2) (International Tanker Owners Pollution Federation [ITOPF] 2011). Additionally, the recommended rate of application for surface dispersant is typically 1-part dispersant to 20 or 25 parts of spilled oil. These figures assume a 0.1 mm slick thickness, averaged over the thickest part of the spill, to 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 that spreading of spills of Group II or III products will rapidly decrease slick thickness over the first 24 hours of a spill resulting in the potential requirement of up to a ten (10) fold increase in capability on day 2 to achieve the same level of performance.

[2] At $50g/m^2$, 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.

Further guidance from the European Maritime Safety Authority (EMSA) states that spraying the 'metallic' looking area of an oil slick (Bonn Agreement Oil Appearance Code [BAOAC] 3, approx. 5 – 50 µm) with dispersant from spraying gear designed to treat an oil layer 0.1 mm (100 µm) thick, will inevitably cause dispersant over-treatment by a factor of 2 to 20 times (EMSA 2012).

Therefore, dispersant application should be concentrated on the thickest areas of an oil slick and Woodside intends on applying surface dispersants to only BAOAC 4 and 5. Spraying areas of oil designated as BAOAC Code 4 (Discontinuous true oil colour) with dispersant will, on average, deliver approximately the recommended treatment rate of dispersant.

Spraying areas of oil designated as BAOAC Code 5 with dispersant (Continuous true oil colour and more than 0.2 mm thick) will, on average, deliver approximately half the recommended treatment rate of dispersant. Repeated application of these areas of thicker oil, or increased dosage ratios, will be required to achieve the recommended treatment rate of dispersant (EMSA 2012).

Guidance from the National Oceanic and Atmospheric Administration (NOAA) in the United States is found in the document: *Characteristics of Response Techniques: A Guide for Spill Response Planning in Marine Environments 2013 (NOAA 2013).* This guide outlines advice for response planning across all common techniques, including surface dispersant spraying and containment and recovery. It states that oil thickness can vary by orders of magnitude within distinct areas of a slick, thus the actual slick thickness and oil distribution of target areas are crucial for determining response method feasibility. Further to this, ITOPF also states that in terms of oil spill response, sheen can be disregarded as it represents a negligible quantity of oil, cannot be recovered or otherwise dealt with to a significant degree by existing response techniques, and is likely to dissipate readily and naturally (ITOPF, 2014).

Figure 2-3 below from AMSA's Identification of Oil on Water – Aerial Observation and Identification Guide (AMSA, 2014) shows expected percent coverage of surface hydrocarbons as a proportion of total surface area. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

From this information and other relevant sources (Allen and Dale, 1996, EMSA, 2012, Spence, 2018) the surface threshold of 50g/m^2 was chosen as an average / equilibrium thickness (50g/m^2 is an average is 50% coverage of 0.1mm Bonn Agreement Code 4 - discontinuous true oil colour, or 25% coverage of 0.2mm Bonn Agreement Code 5 – continuous true oil colour which would represent small patches of thick oil or wind-rows.

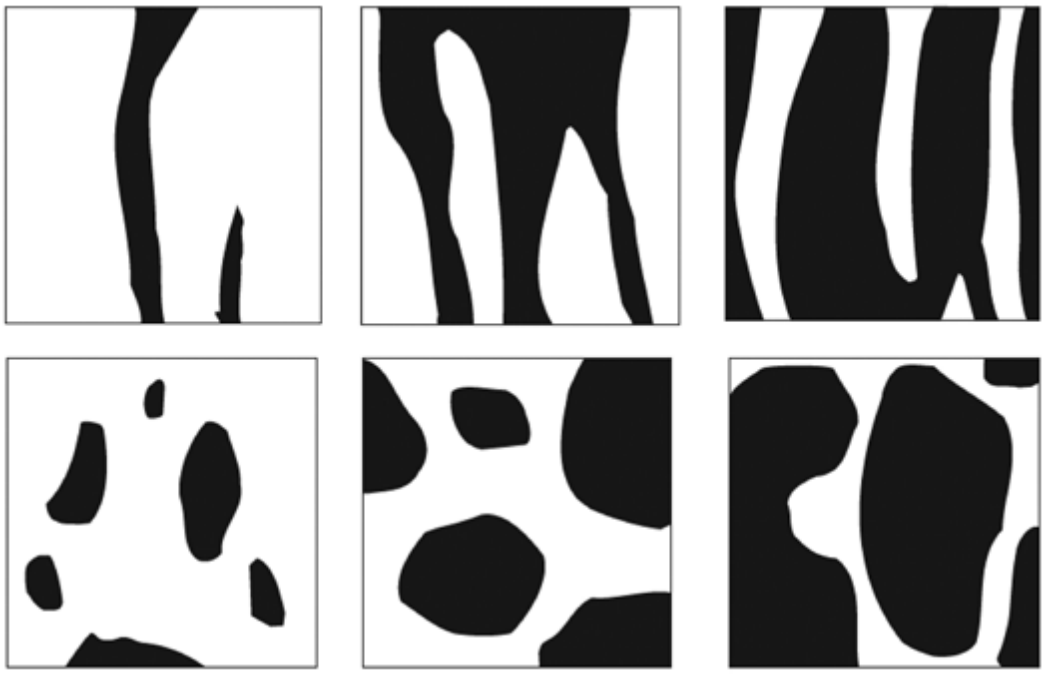

Figure 2-3: Proportion of total area coverage (AMSA, 2014)

Figure 2-4 illustrates the general relationships between on-water response techniques and slick thickness. Wind-rows, heavy oil patches and tar balls, for example, must be considered, as they influence oil encounter rates, chemical dosages and ignition potential. Each method has different thickness thresholds for effective response.

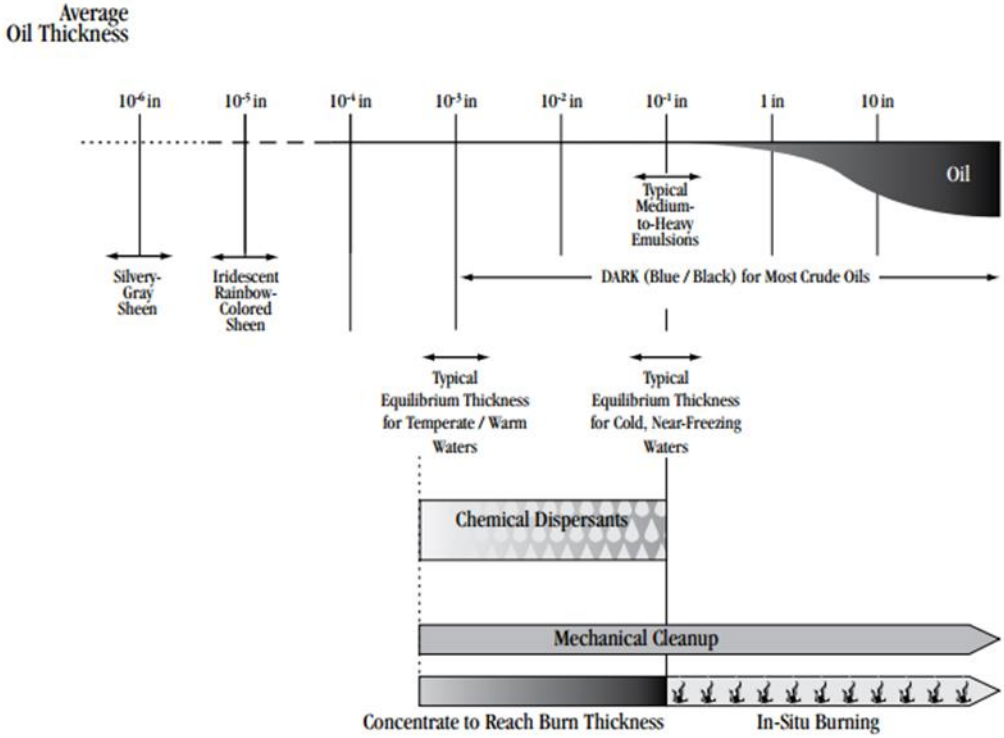

Figure 2-4: Oil thickness versus potential response options (from Allen & Dale 1996)

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.

2.3.3.2 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.

This includes the following statements; “It has been known for many years that it is more difficult to disperse a high viscosity oil than a low or medium viscosity oil. Laboratory testing had shown that the effectiveness of dispersants is related to oil viscosity, being highest for modern “Concentrate, UK Type 2/3” dispersants at an oil viscosity of about 1,000 or 2,000 mPa.s (1,000 – 2,000 cSt) and then declining to a low level with an oil viscosity of 10,000 mPa.s (10,000 cSt). It was considered that some generally applicable viscosity limit, such as 2,000 or 5,000 mPa.s (2,000 – 5,000 cSt), could be applied to all oils.”

However, modern oil spill dispersants are generally effective up to an oil viscosity of 5,000 mPa.s (5,000 cSt) or more, and their performance gradually decreases with increasing viscosity; oils with a viscosity of more than 10,000 are, in most cases, no longer dispersible. Guidance from EMSA (2012) also indicates that products with a range of 500 – 5,000 cSt at sea temperature are generally possible to disperse, while 5,000 – 10,000 cSt at sea temperature above pour point are sometimes possible to disperse, with products beyond 10,000 cSt at sea temperature below pour point are generally impossible to disperse.

To support decision making and response planning, a threshold of 10,000 cSt at sea temperature was chosen as a conservative estimate of maximum viscosity for surface dispersant spraying operations.

The thresholds described above are compared with the modelling results for the WCCS (**Table 2-5**).

2.3.4 Spill modelling results

Details of the scenario, selected stochastic modelling inputs and results are included in **Table 2-5**.

Table 2-5: Worst case credible scenario modelling results

Response parameter	Modelled result	
	CS-01: Marine diesel release caused by vessel collision	**CS-03: Loss of well control during drilling of development well**
Maximum instantaneous liquid hydrocarbon release rate and duration	Modelled instantaneous surface release of 250 m^3 marine diesel.	N/A – dry gas with no liquid hydrocarbons
Maximum residual surface hydrocarbon after weathering	12.5 m^3	N/A – dry gas
Modelling results		
Minimum time to commencement of hydrocarbon accumulation at any shoreline receptor (at a threshold of 100 g/m^2)	No contact at threshold	N/A – dry gas
Minimum time to floating hydrocarbon contact with the offshore edge(s) of any shoreline receptor polygon (at a threshold of 10 g/m^2)	No contact at threshold	N/A – dry gas
Maximum cumulative hydrocarbon volume accumulated at any individual shoreline receptor	No contact at threshold	N/A – dry gas
Maximum cumulative hydrocarbon volume accumulated across all shoreline receptors contacted by accumulated hydrocarbons (including those contacted at <100 g/m^2 accumulation concentration)	No contact at threshold	N/A – dry gas
Minimum time to entrained/dissolved hydrocarbon contact with the offshore edges of any receptor polygon (at a threshold of 100 ppb/50 ppb)	55 hours at Gascoyne Australian Marine Park (AMP) for entrained hydrocarbon contact/ No contact at threshold for dissolved hydrocarbon	N/A – dry gas

The stochastic modelling results for the worst case credible scenario are summarised as follows:

- Surface hydrocarbon concentrations equal to or greater than 10 g/m^2 are predicted to extend up to 52 km from the release location. No contact with sensitive receptors is predicted at this threshold.
- No shoreline receptors are predicted to be contacted by floating oil concentrations at any of the assessed thresholds.
- No accumulation of oil on shorelines is predicted.
- The Gascoyne Australian Marine Park (AMP) is predicted to receive entrained oil concentrations at the 100 ppb threshold with a probability of 4% after 55 hours.

Spreading and weathering of the surface oil occurs rapidly due to the loss of light, volatile components and the spreading. Dispersant application and containment and recovery are not appropriate for use on spills of marine diesel due to these weathering characteristics.

3 IDENTIFY RESPONSE PROTECTION AREAS (RPAs)

In a response, operational monitoring programs – including trajectory modelling and vessel/aerial observations – would be used to predict RPAs that may be impacted. For the purposes of planning and appropriately scaling a response, modelling has been used to identify RPAs as outlined below in Figure 3-1.

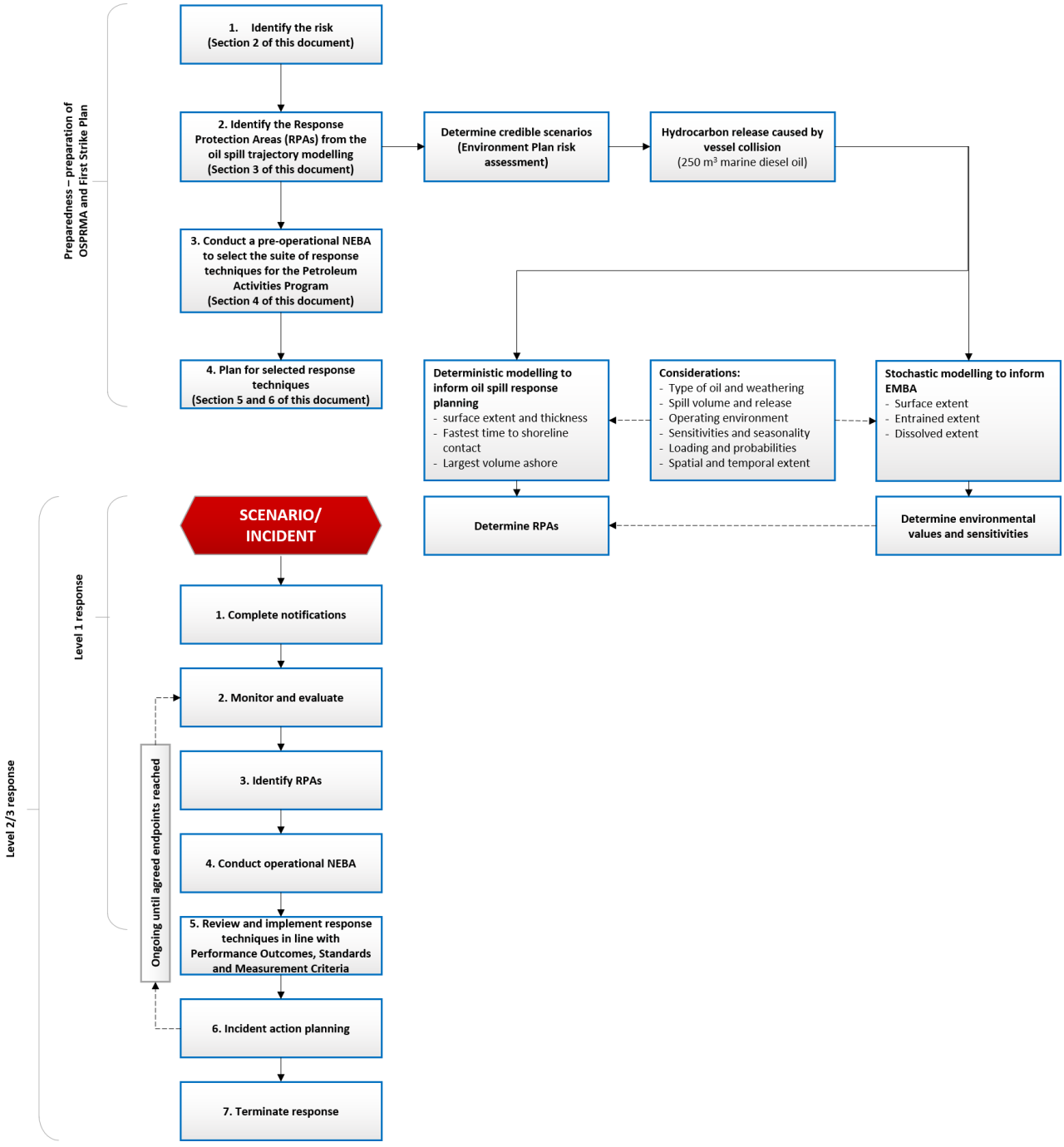

Figure 3-1: Identify RPAs flowchart

3.1 Identified Sensitive Receptor Locations

Section 6 of the EP includes the list of sensitive receptor locations that have been identified by stochastic modelling as meeting the requirements outlined below:

- Receptors with the potential to incur surface, entrained or shoreline accumulation contact above environmental impact thresholds.
- Receptors within the EMBA which meet the following:
  - A number of priority protection criteria/categories
  - International Union of Conservation of Nature (IUCN) marine protected area categories
  - High conservation value habitat and species
  - Important socio-economic/heritage value.

3.1.1 Identify Response Protection Areas

From the identified sensitive receptors described in Section 6 of the EP, only those which a shoreline response could feasibly be conducted (accumulation >100 g/m^2 for shoreline assessment and/or contact with surface slicks >10 g/m^2 for operational monitoring) are selected for response planning purposes.

3.1.2 Response Protection Areas

Response Protection Areas (RPAs) are selected on the basis of their environmental (ecological, social, economic, cultural and heritage) values and sensitivities and considering the minimum response thresholds and the ability to conduct a response based on the minimum response thresholds (**Section 2.3.3**).

Contact from floating hydrocarbons above 10 g/m^2 is not predicted for any shoreline receptor based on the stochastic modelling. Additionally, accumulation above 100 g/m^2 on any shoreline is not predicted and no accumulated volume of hydrocarbons is predicted at any shorelines. Consequently, no RPAs have been selected for response planning.

For this PAP deterministic modelling was not required because the stochastic spill modelling predicted no contact with shoreline from floating oil.

4 NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

A 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.

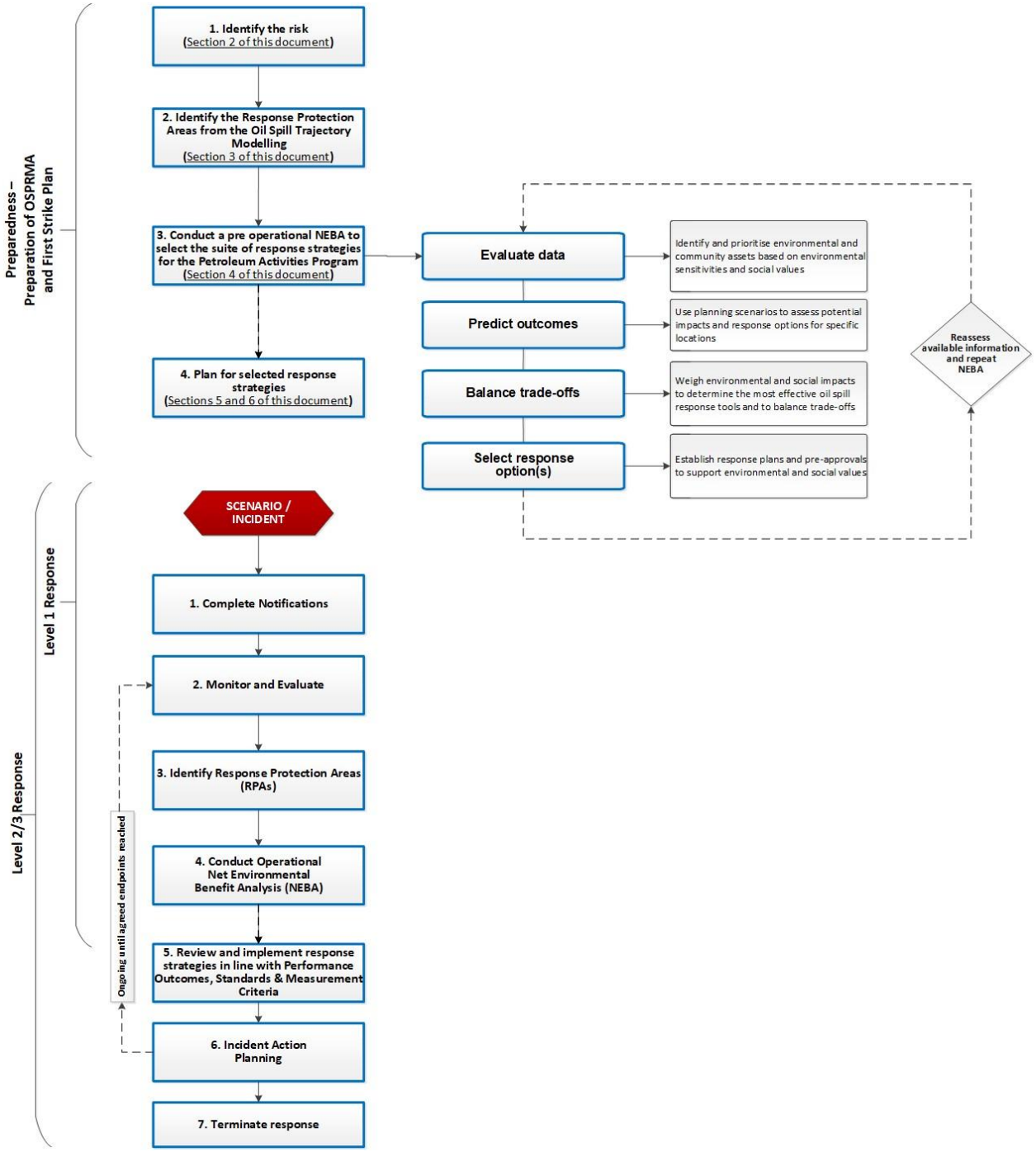

Figure 4-1: Net Environmental Benefit Assessment (NEBA) flowchart

4.1 Pre-operational / strategic NEBA

The pre-operational NEBA identifies positive and negative impacts to sensitive receptors from implementing the response techniques. Feasibility is considered by assessing the receptors potentially impacted above response thresholds (Section 2.3.3).

Completing a pre-operational NEBA is a key response planning control that reduces the environmental risks and impacts of implementing the selected response techniques. Comprehensive details of the pre-operational NEBA for this PAP are contained in **ANNEX A: Net Environmental Benefit Analysis detailed outcomes**.

4.2 Stage 1: Evaluate data

Woodside identifies and prioritises environmental and community assets based on environmental sensitivities and social values, informed through the use of trajectory modelling. Interpretation of stochastic oil spill modelling determines the EMBA for the release, which defines the spatial area that may be potentially impacted by the PAP activities.

4.2.1 Define the scenario(s)

Woodside uses scenarios identified from the risk assessment in the EP to assess potential impacts and response options for specific locations. The WCCS is then selected for deterministic modelling (if required) and is used for this pre-operational NEBA. For this PAP deterministic modelling was not required because the stochastic spill modelling did not predict floating oil at >50 g/m^2 or contact with shoreline at 100 g/m^2.

Outlier locations with potential environmental impacts, selected from the stochastic modelling may also be included for assessment. Response thresholds and modelling results are then used to assess the feasibility/effectiveness and scale of the response.

Table 4-1: Scenario summary information (WCCS)

Scenario summary information (CS-01)	
Scenario	Short-term uncontrolled release of marine diesel from a vessel collision
Location	19° 55’ 33.60”, S 113° 14’ 31.20” E
Oil Type	Marine Diesel
Fate and Weathering	Refer to **Section 2.2.1**
Volume of release	250 m^3 - instantaneous
Scenario summary information (CS-03)	
Scenario	Loss of well control during drilling of development well
Location	19° 55’ 33.60”, S 113° 14’ 31.20” E
Oil Type	Dry gas
Fate and Weathering	N/A – dry gas
Volume of release	Dry gas release – no liquid hydrocarbon.

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)
- Vessel source control
- Source control
  - Remotely operated vehicle (ROV) intervention
  - debris clearance and/or removal
  - capping stack
  - containment dome
  - relief well drilling
- Subsea dispersant injection
- Surface dispersant application:
  - aerial dispersant application
  - vessel dispersant application
- Containment and recovery
- Mechanical dispersion
- In-situ burning
- Shoreline protection and deflection:
  - protection
  - deflection
- Shoreline clean-up:
  - Phase 1 – Mechanical clean-up
  - Phase 2 – Manual clean-up
  - Phase 3 – Final polishing
- Oiled wildlife response
- Waste management
- Post spill monitoring/scientific monitoring

An assessment of which response options are feasible for the scenarios is included below in Table 4-2. Against the scenario's parameters, including oil type, volume and characteristics, prevailing weather conditions, logistical support, and resource availability to determine their deployment feasibility.

A shortlist of the feasible response options is then carried forward for the ALARP assessment with a justification for the exclusion of other response techniques included in Section 4.2.3. This assessment will typically result in a range of available options, that are deployed at different areas (at-source, offshore, nearshore and onshore) and times through the response. The NEBA process assists in prioritising which options to use where and when and timings throughout the response.

Table 4-2: Response technique evaluation – Marine Diesel (CS-01)

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: Marine Diesel				
Monitor and Evaluate	Will be effective in tracking the location of the spill, predicting potential impacts and triggering further monitoring and response techniques as required. Operational Monitoring (OM) techniques include: • OM01 Predictive modelling of hydrocarbons – used throughout spill. 'Ground-truthed' using the outputs of all other monitoring techniques. • OM02 Surveillance and reconnaissance to detect hydrocarbons and resources at risk – from outset of spill. • OM03 Monitoring of hydrocarbon presence, properties, behaviour and weathering in water – from outset of spill. • OM04 Pre-emptive assessment of sensitive receptors at risk – triggered once OM01, OM02 and OM03 inform likely RPAs at risk. • OM05 Shoreline assessment – once OM02, OM03 and OM04 inform which RPAs have been impacted.	Monitoring of a Marine Diesel spill is a feasible response technique and outputs will be used to guide decision making on the use of other monitoring/response techniques and providing information to regulatory agencies including AMSA and Western Australia's Department of Transport (WA DoT).	**Yes**	Monitoring the spill will be necessary to: • Validate trajectory and weathering models • Determine the behaviour of the oil in water • Determine the location and weathering condition of the slick • Provide forecasts of spill trajectory • Determine appropriate response techniques • Determine effectiveness of response techniques • Confirm impact pathways to receptors
Source Control (vessel)	Controlling the spill of diesel at source would be the most effective way to limit the quantity of hydrocarbon entering the marine environment.	A spill of diesel from a vessel collision will be instantaneous and source control will be limited to what the vessel can achieve whilst responding to the incident.	**Yes**	Ability to stop the spill at source will be dependent upon the specific spill circumstances and whether or not it is safe for response personnel to access/isolate the source of the spill.
Surface Dispersant Application	Dispersants are not considered effective when applied on thin surface films such as marine diesel as the dispersant droplets tend to pass through the surface films without binding to the hydrocarbon.	Marine diesel is prone to rapid spreading and evaporation thus the use of dispersant would be deemed an unnecessary response technique.	**No**	The application of dispersant to marine diesel is unnecessary as the diesel will rapidly evaporate and would thus unnecessarily introduce additional chemical substances to the marine environment. The additional entrainment would also increase exposure of subsea species and habitats to hydrocarbons.
Containment and Recovery	Containment and recovery has an effective recovery rate of 5-10% when a hydrocarbon encounter rate of 25-50% is achieved at BAOAC 4 and 5. Containment and recovery requires a spill to be BAOAC 4 or 5 with a 50-100% coverage of 100 g/m^2 to 200 g/m^2.	Marine diesel is prone to rapid spreading and evaporation thus reducing the feasibility of containment and recovery as a response technique.	**No**	Containment and recovery would be an inappropriate response technique as the coverage requirements would not be achieved by a marine diesel spill. In addition, most of the spilled diesel would have been subject to rapid evaporation and entrainment prior to the commencement of containment and recovery operations.
Mechanical dispersion	Mechanical dispersion involves the use of a vessel's prop wash and/or fire hose to target surface hydrocarbons to achieve dispersion into the water column. However, this technique is of limited benefit in an open ocean environment where wind and wave action are likely to deliver similar advantages.	Although the technique is feasible, highly volatile hydrocarbons are likely to weather, spread and evaporate quickly. The volatile nature of the oil is also likely to lead to unsafe conditions in the vicinity of fresh hydrocarbon. Additionally, any vessel used for mechanical dispersion activities would be contaminated by the hydrocarbon and could potentially cause secondary contamination of unimpacted areas when exiting the spill area. The decontamination of a vessel used for mechanical dispersion activities would result in additional quantities of oily waste requiring appropriate handling and treatment.	**No**	Given the limited benefit of mechanical dispersion over natural wind and wave action, secondary contamination and waste issues, and the associated safety risk of implementing the response for this activity, this strategy is deemed unsuitable.
In-situ Burning	In-situ burning is only effective where minimum slick thickness can be achieved.	Use of in-situ burning as a response technique for marine diesel is unfeasible as the minimum slick thickness cannot be attained due to rapid spreading. In addition, there is a limited window of opportunity in which this technique can be applied (prior to evaporation of the volatiles) which is unlikely to be achieved. Furthermore, entering a volatile environment to undertake this technique would be unsafe for response personnel.	**No**	Diesel characteristics are not appropriate for the use of in-situ burning as the minimum thickness will not be attained due to rapid spreading. Furthermore, it would unnecessarily cause an increase in the release of atmospheric pollutants.
Shoreline Protection and Deflection	Shoreline protection and deflection can be effective at preventing contamination of at-risk areas.	Use of shoreline protection and deflection for a spill of marine diesel is unlikely to provide any significant environmental benefit as the diesel will be subject to rapid spreading and evaporation prior to contact with any sensitive areas.	**No**	The modelling undertaken predicts that no shorelines will be impacted thus it is unlikely that this technique would be required.

Response Technique	Effectiveness	Feasibility	Decision	Rationale for the decision
		The modelling undertaken predicts no shoreline receptors are to be contacted by floating oil concentrations at any of the assessed thresholds and no accumulation of oil on shorelines, therefore shoreline protection and deflection does not require consideration.		
Shoreline Clean up	Shoreline clean-up is an effective means of hydrocarbon removal from contaminated shorelines where coverage is at an optimum level of 250 g/m^2.	A marine diesel spill would be prone to rapid spreading and evaporation prior to impacting any sensitive receptors. Operational monitoring will, however, be deployed from the outset of a spill to track the spill location and fate in real-time. The modelling undertaken predicts no shoreline receptors are to be contacted by floating oil concentrations at any of the assessed thresholds and no accumulation of oil on shorelines, therefore shoreline protection and deflection does not require consideration.	**No**	The modelling undertaken predicts that no shorelines will be impacted thus it is unlikely that this technique would be required.
Oiled Wildlife	Oiled wildlife response is an effective response technique for reducing the overall impact of a release on wildlife. This is mostly achieved through hazing to prevent additional wildlife from being contaminated and through rehabilitation of those already subject to contamination. 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.	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.	**Potentially**	The modelling undertaken predicts that no sensitive areas will be impacted thus it is unlikely that this technique would be required. However, in the event that wildlife are at risk of contamination, oiled wildlife response will be undertaken as and where required.

Table 4-3: Response technique evaluation – dry gas release from loss of well control (CS-03)

Response technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: Dry Gas				
Monitor and evaluate	For a dry gas release, established (liquid hydrocarbon) spill monitoring techniques are not applicable. Monitoring the gas plume via the ROV sonar tool may be effective, in conjunction with other well information, in determining appropriate source control techniques. If the plume breaches the surface, gas monitoring at the surface will be effective in ensuring atmospheric volatiles remain below safe operating levels and may be used to direct simultaneous operations (SIMOPS).	Monitoring the gas plume may be feasible where safe access via the ROV can be achieved and line of (sonar) sight is achievable to observe the gas plume. Outputs may be used to guide decision making on the use of source control techniques including options for safe and effective capping stack deployment, and relief well execution. Although modelling of the gas release for CS-03 predicts the plume will not breach the water's surface, gas monitoring at the surface is a feasible practice and may be undertaken via the support vessels' gas monitoring equipment.	**Yes**	If feasible and safe, monitoring the gas plume via ROV and gas monitoring at the surface may: • determine the behaviour of the plume • monitor the surface plume (if water's surface is breached) • determine appropriate source control response techniques • inform on effectiveness of response techniques • ensure safety of response personnel • guide SIMOPS
Source control via blowout preventer (BOP) intervention	Controlling a loss of well containment at source via BOP intervention would be the most effective way to limit the quantity of methane being released.	In the event of the worst-case scenario with a loss of well control during drilling operations, ROV operations to locally operate the BOP would be attempted.	**Yes**	The use of source control intervention via ROV may be feasible and would reduce quantity of methane released. This is the primary, feasible option to stop the flow from the well.
Source control via debris clearance and capping stack	Controlling a loss of well containment at source via capping stack would be an effective way to limit the quantity of hydrocarbon entering the marine environment. If the ROV intervention on the BOP is unsuccessful, the deployment of a capping stack will be the secondary feasible option to stop the flow from the well.	Woodside has developed a project specific capping stack deployment plan and also commissioned an independent, capping stack landing study for the Scarborough wells (Wild Well Control Inc (WWCI), 2021). The study indicates that deployment of the capping stack is feasible. Woodside maintains several frame agreements with various vessel service providers and maintains the ability to call off services with a capping stack and debris clearance agreement. The location of suitable vessels for capping stack deployment are monitored monthly. The supply arrangements and reliability to achieve the required mobilisation time will be revalidated prior to spud. Consideration to mobilise the capping stack from the supplier on a suitable vessel but then hand over to another vessel to conduct the capping activity will also be made to meet response time frames. A site-specific landing force analysis through	**Yes**	Conventional/vertical capping stack deployment with a heavy lift vessel is feasible once metocean conditions (wind, waves etc) are appropriate for safe deployment. Since the produced gas does not breach the sea surface, the response to the incident should not be unduly hampered by plume conditions.

Response technique	Effectiveness	Feasibility	Decision	Rationale for the decision
Hydrocarbon: Dry Gas				
		computational fluid dynamic (CFD) modelling confirms the ability to land the capping stack on either a Xmas tree or BOP.		
Source control via relief well drilling	A subsea release of methane will be stopped approximately 65.3 days after the release. Relief well drilling will be the tertiary option to stop the flow from the well.	Relief well drilling is a widely accepted and utilised technique. The modelled worst-case discharge rate ('blowout rate') will require additional equipment to deliver the required kill rate to the relief well; this includes a second mobile offshore drilling unit (MODU), subsea well kill spools and hoses.	**Yes**	Relief well drilling is a proven technique employed to control a loss of well containment event should the other containment measures be unsuccessful.
Subsea Dispersant Injection	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	**No**	Not applicable for a dry gas LOWC.
Surface dispersant application	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	**No**	Not applicable for a dry gas LOWC.
Mechanical dispersion	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	**No**	Not applicable for a dry gas LOWC.
In-situ burning	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	**No**	Not applicable for a dry gas LOWC.
Containment and recovery	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	**No**	Not applicable for a dry gas LOWC.
Shoreline protection and deflection	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	**No**	Not applicable for a dry gas LOWC.
Shoreline clean-up	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	**No**	Not applicable for a dry gas LOWC.
Oiled wildlife response	Not applicable for a dry gas LOWC.	Not applicable for a dry gas LOWC.	**No**	Not applicable for a dry gas LOWC.

4.2.3 Exclusion of response techniques

Response techniques that are not feasible for a hydrocarbon loss of containment are detailed in the subsections below, and are therefore excluded from further assessment within this document.

4.2.3.1 Subsea dispersant application

Subsea dispersant application is not applicable for surface release of marine diesel.

Subsea dispersant application is not applicable for dry gas release.

4.2.3.2 Surface dispersant application

Modelling results for a hydrocarbon release of marine diesel caused by a vessel collision (CS-01) show that surface thresholds for surface dispersant application will not be reached. Given the prediction of rapid and 95% evaporation of the oil dispersant surface application will be ineffective.

Surface dispersant application is not applicable for dry gas release.

4.2.3.3 Containment and recovery

Modelling results for a marine diesel release from a vessel collision indicate that surface thresholds required for containment and recovery (>50g/m^2) will not be reached. The effectiveness of containment and recovery is predicted to be very low based on offshore met-ocean conditions in the region, the inherent inefficiency of containment and recovery operations, and the light, volatile nature of the marine diesel.

Containment and recovery is not applicable for dry gas release.

4.2.3.4 In-situ burning

This technique requires calm sea state conditions as are required for containment and recovery operations, which limits its feasibility offshore of Exmouth. 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 offshore Exmouth it is expected that the ability to contain oil may be limited as the sea state may exceed the optimum conditions.

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.

Until further operational and environmental information becomes available, Woodside will not consider this option.

In-situ burning is not applicable for dry gas release.

4.2.3.5 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.

Mechanical dispersion is not applicable for dry gas release.

4.2.3.6 Shoreline protection and deflection

Shoreline surface contact (above thresholds), as a result of a hydrocarbon spill modelling conducted for this petroleum activity program, is not expected to occur. Therefore, shoreline protection and deflection is not considered to be required.

Shoreline protection and deflection is not applicable for dry gas release.

4.2.3.7 Shoreline clean-up

Shoreline surface contact (above thresholds), as a result of a hydrocarbon spill modelling conducted for this petroleum activity program, is not expected to occur. Therefore, shoreline clean-up is not considered to be required.

Shoreline clean-up is not applicable for dry gas release.

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.

4.5 Stage 4: Select best response options

To select the response technique, all the other stages in the NEBA process are considered and used to establish response plans and any pre-approvals to support protection of identified environmental and social values.

The response techniques implemented may vary according to a particular spill. The hydrocarbon type released and the sensitivities of the receptors (both ecological and socio-economic) may influence the response. The pre-operational NEBA broadly evaluates each response technique and supports decisions on whether they are feasible and of net environmental benefit. Response techniques that are not feasible or beneficial are rejected at this stage and not progressed to planning.

Further risks and impacts from implementing these selected response options are outlined in Section 7.

Table 4-4: Selection and prioritisation of response techniques

Response planning scenario	Key characteristics for response planning (times are minimum times to contact for first receptor and/or shoreline contacted above response threshold)	Feasibility of response techniques													Outline response technique
		Monitor and evaluate	Debris clearance	Source control – capping stack	Source control on the vessel	Source control – relief well drilling	Subsea dispersant injection	Surface dispersant application	Mechanical dispersion	In-situ burning	Containment and recovery	Shoreline protection and deflection	Shoreline cleanup	Oiled wildlife response	
CS-01: Instantaneous release of up to 250 m^3 marine diesel from a vessel collision (residual component of 0.4 m^3)	No shoreline accumulation above 100 g/m^2	Yes	N/A	N/A	Yes	N/A	N/A	No	No	No	No	No	No	Potentially	Monitor and evaluate. Initiate vessel source control if feasible. Plan for oiled wildlife response and implement if oiled wildlife is observed.
CS-03: Loss of well control during drilling of development well Dry gas release – no liquid hydrocarbon	N/A – dry gas	Potentially	Yes	Yes	N/A	Yes	No	No	No	No	No	No	No	No	Consider whether monitor and evaluate, via ROV and surface gas monitoring, is required an feasible. Initiate debris clearance. Initiate source control via capping stack. Initiate relief well drilling.

From the NEBA undertaken on the WCCS identified for the PAP, the primary response techniques are;

- Monitor and evaluate (CS-01, potentially feasible for CS-03)
- Source control – vessel SOPEP (CS-01)
- Debris clearance (CS-03)
- Source control – capping stack (CS-03)
- Source control – relief well drilling (CS-03)
- Oiled wildlife response (CS-01)

Additional response strategies would be considered based on the inputs and field reports from the monitoring activities. This may include:

- Waste management (all scenarios)
- Scientific monitoring programs (all scenarios)

5 HYDROCARBON SPILL ALARP PROCESS

Woodside's hydrocarbon spill ALARP process is aligned with guidance provided by NOPSEMA in *Oil Spill Risk Management Guidance Note N-04750-GN1488* (2021) and is set out in the 'Woodside Hydrocarbon 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^2) and available surface hydrocarbon volumes (m^3) against existing Woodside capability.
2. Considers alternative, additional, and improved options for each response technique/control measure by providing an initial and, if required, detailed evaluation of
    - Predicted cost associated with adopting the control measure,
    - Predicted change/environmental benefit, 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:

- Response techniques are considered the control measures that reduce consequences from hydrocarbon spill events. The terms ‘response technique’ and ‘control measure’ are used interchangeably.
- Cost is defined as the time, effort and/or trouble taken in financial, safety, design/storage/installation, capital/lease, and/or operations/maintenance terms to adopt a control measure.
- Where the predicted change to environmental impact is compared against standard environmental values and sensitivities impacts using positive or negative criteria from the NEBA Impact Ranking Classification Guidance in **ANNEX A: Net Environmental Benefit Analysis detailed outcomes**.

5.1 Monitor and evaluate (including operational monitoring)

Monitor and evaluate includes the gathering and evaluation of data to inform the oil spill response planning and operations. It includes fate and trajectory modelling, spill tracking, weather updates and field observations. This response option is deployed in some capacity for every hydrocarbon spill event. These techniques are not applicable for a dry gas, loss of well control event i.e. CS-03 and thus only apply to CS-01.

Table 5-1 below provides the operations monitoring plans that support the successful execution of this response technique.

Table 5-1: Description of supporting operational monitoring plans

ID	Title
OM01	Predictive modelling of hydrocarbons to assess resources at risk
OM02	Surveillance and reconnaissance to detect hydrocarbons and resources at risk
OM03	Monitoring of hydrocarbon presence, properties, behaviour and weathering in water
OM04	Pre-emptive assessment of sensitive receptors at risk
OM05	Shoreline assessment

Woodside maintains an *Operational Monitoring Operational Plan*. If shoreline contact is predicted, RPAs will be identified and assessed before contact. If shorelines are contacted, a shoreline assessment survey will be completed to guide effective shoreline clean-up operations. This plan includes the process for the IMT to mobilise resources depending on the nature and scale of the spill.

The proximity of Exmouth 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:

- No receptors are predicted to be contacted by floating oil concentrations at the 10 g/m^2 threshold.
- No shoreline receptors are predicted to be contacted by floating oil concentrations at any of the assessed thresholds.
- No accumulation of oil on shorelines is predicted.
- The time to contact for oil at concentrations of entrained hydrocarbons greater than 100 ppb at shoreline receptors is 55 hours at the Gascoyne AMP.
- Arrangements for support organisations who provide specialist services or resources should be tested regularly.
- Plans, procedures and support documents need to be in place for Operational and additional support techniques. 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**
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 3rd party provider to enable access and analysis of satellite imagery. Imagery source/type requested on activation of service.	1, 3C, 4
		3.2	3rd party provider will confirm availability of an initial acquisition within 2 hours	1, 3B, 3C, 4
		3.3	First image received with 24 hours of Woodside confirming to 3rd party provider its acceptance of the proposed acquisition plan.	1
		3.4	3rd party provider to submit report to Woodside per image. Report is to include a polygon of any possible or identified slick(s) with metadata.	1
		3.5	Data received to be uploaded into Woodside COP daily to improve accuracy of other monitor and evaluate techniques.	1, 3B, 4
		3.6	Satellite Imagery services available and employed during response	1, 3C, 4
4	Aerial surveillance	4.1	Two trained aerial observers available to be deployed by day 1 from resource pool.	1, 2, 3B, 3C, 4
		4.2	One 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
5	Hydrocarbon detections in water	5.1	Activate 3rd party service provider as per first strike plan. Deploy resources within 2.5 days: • Three specialists in water quality monitoring • Two monitoring systems and ancillaries • One vessel for deploying the monitoring systems with a dedicated winch, A-frame or Hiab and ancillaries to deploy the equipment.	1, 2, 3C, 3D, 4
		5.2	Water monitoring services available and employed during response	1, 3C, 4
		5.3	Preliminary results of water sample as per contractor's implementation plan within 7 days of receipt of samples at the accredited lab	
		5.4	Daily fluorometry reports as per service provider's implementation plan will be provided to IMT to validate modelling and monitor presence/absence of entrained hydrocarbons.	
		5.5	Use of Autonomous Underwater Vehicles (AUVs) for hydrocarbon presence and detection may be used as a contingency if the operational NEBA confirms conventional methods are unsafe or not possible.	1, 2, 3C, 4
6	Pre-emptive assessment of sensitive receptors	6.1	Within 10 days, deployment of two specialists from resource pool in establishing the status of sensitive receptors.	1, 2, 3B, 3C, 4
		6.2	Daily reports provided to IMT on the status of the receptors to prioritise RPAs and maximise effective utilisation of resources	1, 3B, 4

Environmental Performance Outcome		To gather information from multiple sources to establish an accurate common operating picture as soon as possible and predict the fate and behaviour of the spill to validate planning assumptions and adjust response plans as appropriate to the scenario.		
Control measure		**Performance Standard**		**Measurement Criteria**
7	Management of environmental impact of the response risks	7.1	If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified.	1
		7.2	Shallow draft vessels will be used to access remote shorelines to minimise the impacts associated with seabed disturbance on approach to the shorelines	

The 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 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 that sufficient resources are available and are adequately tested to ensure implementation of the SOPEP in the event of a hydrocarbon spill.

5.3 Source control and well intervention

The worst-case credible scenario for a loss of well containment is considered to be loss of well control during drilling operations. This scenario would result in an uncontrolled flow of dry gas from the well as outlined in the EP. In the event of a loss of well containment, the primary response would be source control and well intervention.

The Scarborough *Source Control Emergency Response Plan* (SCERP) has been developed as part of the Woodside assurance plans and in alignment with the guidelines in the *NOPSEMA Source Control Planning and Procedures Information Paper* (N-04750-IP1979 A787102). It includes the process for the IMT to mobilise resources for BOP intervention, Subsea First Response Toolkit (SFRT) support, and capping support. This plan has pre-identified vessel specifications and contracts required for SFRT debris clearance work and Woodside monitors the availability and location of these vessels.

Woodside is a signatory to a MoU between Australian offshore operators to provide mutual aid to facilitate and expedite mobilising a MODU and drilling a relief well, if a loss of well containment incident were to occur. The MoU commits the signatories to share rigs, equipment, personnel and services to assist another operator in need. Moored and Dynamically Positioned (DP) MODUs are suitable for the Scarborough wells.

Source control operations cannot be implemented if the safety of response personnel cannot be guaranteed. Circumstances that limit the safe execution of this control measure include lower explosive limit (LEL) concentrations, volatile concentrations of hydrocarbons in the atmosphere, weather window, waves and/or sea states (>1.5m waves) and high ambient temperatures. As the dry gas plume for the PAP is not predicted to breach the water's surface, LEL concentrations and volatile concentrations of hydrocarbons in the atmosphere are unlikely to pose a safety issue for response personnel. Gas monitoring will, however, be undertaken in line with standard protocol.

5.3.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- Prior to any source control activities, Woodside will implement protocols to ensure that the site is safe including subsea ROV surveys and surface air monitoring.
- Hydrocarbons will flow from the well until one of the following interventions can be made:
  - closure of the tubing retrievable safety valve (TRSV) if present (only present after installation of the completion)
  - closure of a BOP ram (by ROV)
  - intervention with a capping stack
  - a relief well is drilled and first attempt at well kill within 65.3 days.
- Arrangements for support organisations who provide specialist services or resources should be tested regularly.
- Plans, procedures and support documents need to be in place for Operational and Support functions. These should be reviewed and updated regularly.
- The duration of the spill may be up to 65.3 days.

In addition, a number of assumptions are required to estimate the response need for source control. These assumptions have been described in the table below.

Table 5-3: Response Planning Assumptions – Source Control

Response planning assumptions	
Capping stack feasibility	Woodside has developed a project specific capping stack deployment plan and also commissioned an independent, capping stack landing study for the Scarborough wells (WWCI, 2021). The study indicates that the safe deployment of a capping stack is feasible.
Safety considerations	Source control operations cannot be implemented if the safety of response personnel cannot be guaranteed. This requires an initial and ongoing risk assessment of health and safety hazards and risks at the site, in accordance with the Woodside Management System (WMS). Personnel safety issues may include: • hydrocarbon gas and/or liquid exposure • high winds, waves and/or sea states • high ambient temperatures.
Feasibility considerations	Woodside's primary source control options would be ROV intervention and capping stack deployment. Relief well drilling operations will begin concurrently to provide an option to permanently abandon the well after the well flow is stopped. The following approaches outline Woodside's hierarchy approach for selecting suitable MODU's for relief well operations; • Primary – review internal drilling programs and MODU availability to source appropriate rig(s) operating within Australia with an approved Safety Case; • Alternate – source and contract MODUs through Australian Petroleum Production & Exploration Association (APPEA) Memorandum of Understanding (MoU) that is operating within Australia with an approved Safety Case; • Contingency – source and contract a MODU outside Australia with an approved Australian Safety Case

5.3.2 Environmental performance based on need

Table 5-4: Environmental Performance – Source Control

Environmental Performance Outcome		**To stop the flow of hydrocarbons into the marine environment**		
Control measure		**Performance Standard**		**Measurement Criteria**
8	Subsea First Response Toolkit (SFRT)	8.1	Oceaneering support staff available all year round, via contract, to assist with the mobilisation, deployment, and operation of the SFRT equipment.	1, 3B, 3C
		8.2	Intervention vessel with minimum requirement of a working class ROV and operator.	1, 3C
		8.3	Mobilised to site for deployment within 11 days.	1, 3B, 3C
		8.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
9	Well intervention	9.1	Frame agreements with ROV providers in place to be mobilised upon notification. ROV equipment deployed within 7 days.	1, 3B, 3C
		9.2	Source control vessel will have the following minimum specifications: • active heave compensated crane, rated to at least 150 T in shallower water and 250 T in deeper water • at least 90 m in length • deck has water/electricity supply • deck capacity to hold at least 110 T of capping stack.	1, 3B, 3C
		9.3	Identify source control vessel availability within 24 hours and begin contracting process. Vessel mobilised to site for deployment within 16 days for conventional capping.	1, 3B, 3C
		9.4	ROV available on MODU ready for deployment within 48 hours to attempt initial BOP well intervention.	1, 3B, 3C
		9.5	Hot Stab and/or well intervention attempt made using ROV and SFRT within 11 days.	1, 3B, 3C
		9.6	Capping stack on suitable vessel mobilised to site within 16 days. Deployment and well intervention attempt will be made once safety and metocean conditions are suitable.	1, 3C
		9.7	Wild Well Control Inc (WWCI) staff available all year round to assist with the mobilisation, deployment, and operation of the capping stack and well intervention equipment.	1, 3B, 3C
		9.8	MODU mobilised to site for relief well drilling within 21 days.	1, 3C
		9.9	First well kill attempt completed within 65.3 days.	1, 3B, 3C
		9.10	Open communication line(s) to be maintained between IMT and infield operations to ensure awareness of progress against plan(s).	1, 3A, 3B
		9.11	Relief Well Peer review undertaken during well design which includes screening and identification of suitable MODU(s) with in-force Australian safety cases for relief well drilling.	1, 3C
		9.12	Monthly monitoring of the availability of MODUs through existing market intelligence including current Safety Case history, to meet specifications for relief well drilling. Titleholders of suitable MODUs notified.	3C
		9.13	Prior to entering the reservoir, reconfirm that pre-identified/screened MODU(s) remain available for relief well drilling and engage titleholder.	1, 3C
		9.14	An activity-specific Source Control Emergency Response Plan will be in place prior to commencement of the campaign.	1, 3A, 3C
		9.15	An approved Relief Well Plan (as required by Relief Well Planning Procedure) shall exist prior to commencement of the campaign including: feasibility and any specific considerations for relief well kill and well capping.	1, 3A, 3C
10	Support vessels	10.1	Monthly monitoring of availability of larger vessels through existing Frame Agreements and market intelligence to meet specifications for source control.	3C
		10.2	Frame agreements for Infield Support Vessels (ISVs) require vessels maintain in-force safety case approvals covering ROV operations and provide support in the event of an emergency.	1, 3B, 3C
		10.3	MODU and vessel contracts include clause outlining requirement for support in the event if an emergency	1, 3C

Environmental Performance Outcome		To stop the flow of hydrocarbons into the marine environment		
Control measure		Performance Standard		Measurement Criteria
11	Safety case	11.1	Woodside will prioritise MODU or vessel(s) for intervention work(s) that have an existing safety case.	1, 3C
		11.2	Woodside Planning, Logistics, and Safety Officers (on-roster/ call 24/7) to assist in expediting the safety case assessment process as far as practicable.	1, 3C
		11.3	Woodside will maintain minimum safe operating standards that can be provided to MODU and vessel operators for safety case guidance.	1, 3C

The resulting source control capability has been assessed against the WCCS. The range of techniques provide a feasible and viable approach to well intervention and relief well drilling operations to stop the well flowing.

- The health and safety, financial, capital and operations/maintenance costs of implementing the alternative, additional or improved control measures identified and not carried forward are considered clearly disproportionate to the insignificant environmental benefit gained and/or not reasonably practicable for this PAP.
- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures. Where control measures have been selected and implemented, they are included in **Section 6.2**.

5.4 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.

5.3.1 Response need based on predicted consequence parameters

The following statements identify the key parameters upon which a response need can be based:

- Modelling predicts no shoreline impact from floating hydrocarbons >10 g/m^2
- No shoreline accumulation >100 g/m^2 threshold is expected.
- The offshore location of the release site is expected to initially result in low numbers of at-risk or impacted wildlife.
- Given there is no potential shoreline accumulation >100 g/m^2 and surface concentrations above 10g/m^2 are predicted to be limited to ~52 km from the release location, it is estimated that the oiled wildlife response would be between Level two and four, as defined in the WA OWRP (**Table 5-7**).

Table 5-5: Key at-risk species potentially in Protection Areas and open ocean

Species	Gascoyne AMP	Open ocean
Marine turtles (including foraging and inter-nesting areas and significant nesting beaches)	√	√
Whale sharks (migration to and from waters at Ningaloo)	√	√
Seabirds and/or migratory shorebirds	√	√
Cetaceans – migratory whales	√	√
Cetaceans – dolphins and porpoises	√	√
Sea snakes	√	√

The 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 5-6** below.

Table 5-6: 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 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.

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 Onslow have been identified.

To deploy a response that is 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 5-7**) and the resources likely to be needed at each increasing level of response.

Table 5-7: 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

5.4.1 Environmental performance based on need

Table 5-8: Environmental Performance – Oiled Wildlife Response

Environmental Performance Outcome		Oiled Wildlife Response is conducted in accordance with the Western Australian Oiled Wildlife Response Plan (WA OWRP) 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**
12	Wildlife response equipment	12.1	Contracted capability to treat 100 individual fauna for immediate mobilisation to RPAs	1, 3A, 3B, 3C, 4
		12.2	Contracted capability to treat up to an additional 250 individual fauna within a five-day period.	
		12.3	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
		12.4	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
		12.5	Facilities for the rehabilitation of oiled wildlife are operational 24/7 as per WA OWRP.	1, 3A, 4
13	Wildlife responders	13.1	3 wildlife divisional commanders to lead the oiled wildlife operations who have completed an Oiled Wildlife Response Management course	1, 2, 3B
		13.2	Wildlife responders to be accessed through resource pool and additional agreements with specialist providers	1, 2, 3A, 3B, 3C, 4
		13.3	Oiled wildlife operations (including hazing) would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA.	1
		13.4	Open communication line to be maintained between IMT and infield operations to ensure awareness of progress against plan(s)	1, 3A, 3B
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 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	

The resulting wildlife response capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to response at identified RPAs.

Under optimal conditions, during the 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 one central wildlife treatment and rehabilitation locations at Exmouth and Onslow in accordance with WA OWRP.
- No additional capability will be required for this activity, given the oiled wildlife response will be limited to open water.
- Recovered wildlife from open water would be transported to a central treatment location at Exmouth or Onslow.

5.5 Waste Management

Waste management is considered a support technique to oiled wildlife response, containment and recovery and shoreline clean-up. For the purposes of this OSPRMA, waste management may be required to support wildlife response. Waste generated and collected during the response that will require handling, management and disposal may consist of:

- Liquids (hydrocarbons and contaminated liquids) collected during wildlife response, and/or
- Solids/semi-solids (oily solids, garbage, contaminated materials) and debris collected during wildlife response.

Expected waste volumes during an event are likely to vary depending on oil type, volume released, response techniques employed and extent of weathering of hydrocarbons. Waste management, handling and capacity should be scalable to ensure continuous response operations can be maintained.

All waste management activities will follow the Environment Protection (Controlled Waste) Regulations 2004 and the waste will be managed to minimise final disposal volumes. Waste treatment techniques will consider contaminated solids treatment to allow disposal to landfill and solids with high concentrations of hydrocarbon will be treated and recycled where possible or used in clean fill if suitable.

The waste products would be transported from response locations to the nearest suitable staging area/waste transfer station for treatment, disposal or recycling. Waste will be transferred with appropriately licensed vehicles. Containers will be available for temporary waste storage and will be:

- labelled with the waste type
- provided with appropriate lids to prevent waste being blown overboard
- bunded if storing liquid wastes.
- processes will be in place for transfers of bulk liquid wastes and include:
  - inspection of transfer hose undertaken prior to transfer
  - watchman equipped with radio visually monitors loading hose during transfer
  - tank gauges monitored throughout operation to prevent overflow

The *Oil Spill Preparedness Waste Management Support Plan* details the procedures, capability and capacity in place between Woodside and its primary waste services contractor (Veolia Waste Management) to manage waste volumes generated from response activities.

5.5.1 Response Need Based on Predicted Consequence Parameters

Table 5-9: Response Planning Assumptions – Waste Management

Response planning assumptions: Waste management	
Waste loading per m^3 oil recovered (multiplier)	Oiled wildlife response – approx. 1 m^3 of oily liquid waste generated for each wildlife unit cleaned

5.5.2 Environmental Performance Based on Need

Table 5-10: 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**
15	Waste Management	15.1	Contract with waste management services for transport, removal, treatment and disposal of waste	1, 3A, 3B, 3C, 4
		15.2	Access to at least 50 m^3 of solid and liquid waste storage available within 1 week upon activation of 3rd party contract.	
		15.3	Recovered hydrocarbons and wastes will be transferred to licensed treatment facility for reprocessing or disposal.	
		15.4	Response teams will segregate liquid and solid wastes at the earliest opportunity.	
		15.5	Waste management provider support staff available year-round to assist in the event of an incident with waste management as detailed in contract.	
		15.6	Open communication line to be maintained between IMT and waste management services to ensure the reliable flow of accurate information between parties.	1, 3A, 3B
		15.7	Waste management to be conducted in accordance with Australian laws and regulations	1, 3A, 3B, 3C, 4
		15.8	Waste management services available and employed during response	

The resulting waste management capability has been assessed against the WCCS. The range of techniques provide an ongoing approach to waste management from oiled wildlife response.

It indicates that the waste management capability has the following expected performance:

- Woodside has assessed the existing capability available and considered potential alternative, additional and improved control measures.
- 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.

5.6 Scientific monitoring

A scientific monitoring program (SMP) would be activated following a level two or three unplanned oil spill, 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 scenarios or other identified unplanned hydrocarbon releases associated with the operational activities (refer to Table 2-5: PAP worse case credible spill scenarios).

The outputs of the stochastic hydrocarbon spill modelling were used to assess the environmental risk of the hydrocarbon affected area as delineated by the ecological impact EMBA and social-cultural EMBA based on exceedance of environmental and social-cultural hydrocarbon threshold concentrations (refer to **Table 2-2** and see Section 6 of the EP for further information on applicable thresholds and the EMBAs). The PAP worst-case credible spill CS-01: marine diesel release defines the EMBA and are the basis of the SMP approach presented in this section. The dry gas release (CS-03) would not result in the activation of a Scarborough SMP.

It should be noted that the resulting SMP receptor locations differ from the Response Protection Areas (RPAs) discussed in **Section 3** of this document due to the applicability of different hydrocarbon threshold levels. The SMP would be informed by the data collected via the operational monitoring program (OMP) studies, however, it differs from the OMP in being a long-term program independent of, and not directing, the operational oil spill response or monitoring of impacts from response activities (refer to **Section 5.1**, Monitor and Evaluate) for the operational monitoring overview.

Key objectives of the Woodside oil spill SMP are:

- Assess the extent, severity and persistence of the environmental impacts from the spill event; and
- Monitor subsequent recovery of impacted key species, habitats and ecosystems.

The SMP comprises ten targeted environmental monitoring programs to assess the condition of a range of physico-chemical (water and sediment) and biological (species and habitats) receptors including Environment Protection and Biodiversity Conservation Act (EPBC Act 1999) listed species, environmental values associated with protected areas and socio-economic values, such as fisheries. The ten SMPs are as follows:

- SM01 - Assessment of the presence, quantity and character of hydrocarbons in marine waters (linked to OM01 to OM03)
- SM02 - Assessment of the presence, quantity and character of hydrocarbons in marine sediments (linked to OM01 and OM05)
- SM03 – Assessment of impacts and recovery of subtidal and intertidal benthos
- SM04 - Assessment of impacts and recovery of mangroves/saltmarsh habitat
- SM05 - Assessment of impacts and recovery of seabird and shorebird populations
- SM06 - Assessment of impacts and recovery of nesting marine turtle populations
- SM07 - Assessment of impacts to pinniped colonies including haul-out site populations
- SM08 - Desktop assessment of impacts to other non-avian marine megafauna
- SM09 - Assessment of impacts and recovery of marine fish (linked to SM03)
- SM10 - Assessment of physiological impacts to important fish and shellfish species (fish health and seafood quality/safety) and recovery.

These SMPs have been designed to cover all key tropical and temperate habitats and species within Australian waters and broader, if required. A planning area for scientific monitoring is also identified to acknowledge potential hydrocarbon contact below the environmental threshold concentrations and beyond the EMBA. This planning area has been set with reference to the entrained low exposure value of 10 ppb detailed in the NOPSEMA Bulletin #1 Oil Spill Modelling (2019), as shown in **Figure 5-1**.

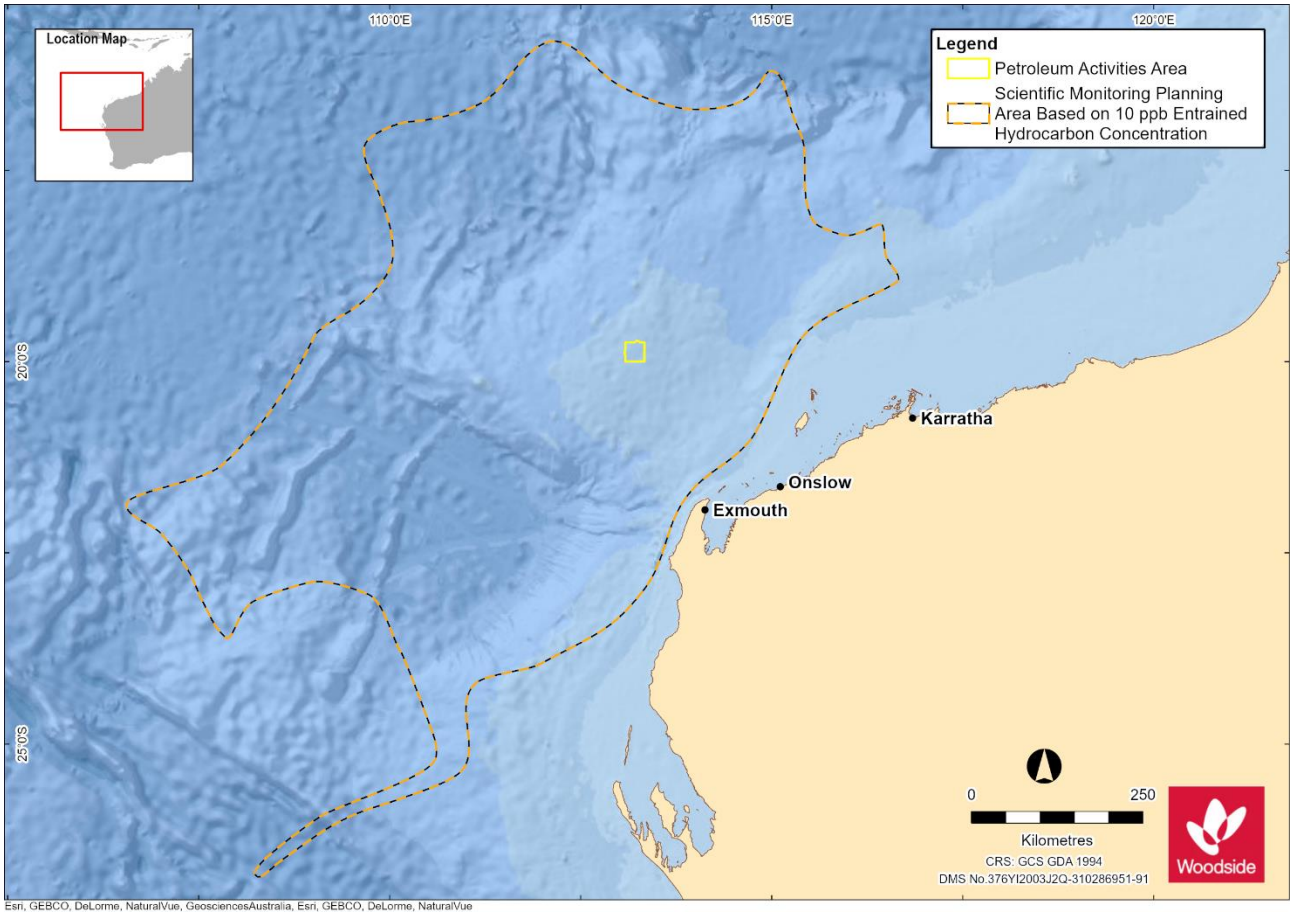

Figure 5-1:The planning area for scientific monitoring based on the area potentially contacted by the low exposure (below ecological impact) entrained hydrocarbon concentration of 10 ppb in the event of the worst-case credible spill scenario (CS-01: marine diesel release).

NOTE: Figure 5-1 represents the overall combined extent of the marine diesel spill model outputs based on a total of 200 replicate simulations over an annual period for the worst case credible scenario (CS-01) and therefore represents the largest spatial boundaries of the hydrocarbon spill combinations, not the spatial extent of a single hydrocarbon spill.

5.6.1 Scientific Monitoring Deployment Considerations

Table 5-11: Scientific monitoring deployment considerations

Scientific Monitoring Deployment Considerations	
Existing baseline studies for sensitive receptor locations predicted to be affected by a spill	PBAs of the following two categories: • PBAs within the predicted <10-day hydrocarbon contact time prediction: As part of this assessment, the approach was to conduct a desktop review of available and appropriate baseline data for key receptors for locations (if any) that are potentially impacted within ten days of a spill (based on the EMBA). Then investigate the need to conduct baseline data collection to address data gaps and demonstrate spill response preparedness (refer to ANNEX D: Scientific Monitoring Program and Baseline Studies for the Petroleum Activities Program). In the scenario, that baseline data needs are identified, planning for baseline data acquisition is typically commenced pre-PAP and execution of studies undertaken with consideration of weather, receptor type, seasonality and temporal assessment requirements. • PBAs >10 days' time to predicted hydrocarbon contact in the event of an unplanned hydrocarbon release (from the Scarborough Drilling and Completions operational activities). 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 >10 days' time of a hydrocarbon spill event and documented (refer to Section 5.5.2). SMP activation (as per the Scarborough Drillings and Completions FSP) directs the SMP team to follow the steps outlined in the SMP Operational Plan. The steps include: checking the availability and type of existing baseline data, with particular reference to any PBAs identified as >10 days to hydrocarbon contact. Such information is used to identify response phase PBAs and plan for the activation of SMPs for pre-emptive (i.e. pre-hydrocarbon contact) baseline assessment.
Pre-emptive Baseline in the event of a spill	Activation of SMPs in order to collect baseline data at sensitive receptor locations with predicted hydrocarbon contact time >10 days (as documented in ANNEX C).
Survey platform suitability and availability	In the event of the SMP activation, suitable survey platforms are available and can support the range of equipment and data collection methodologies to be implemented in nearshore and offshore marine environments.
Trained personnel to implement SMPs suitable and available.	Access to trained personnel and the sampling equipment contracted for scientific monitoring via a dedicated scientific monitoring program standby contract.
Met-ocean conditions	The following met-ocean conditions have been identified to implement SMPs: • Waves <1 m for nearshore systems • Waves <1.5 m for offshore systems • Winds <20 knots • Daylight operations only SMP implementation will be planned and managed according to HSE risk reviews and the met-ocean conditions on a day to day basis by SMP operations.

5.6.2 Response planning assumptions

Table 5-12: Scientific monitoring response planning assumptions

Response Planning Assumptions	
PBAs	PBAs identified through the application of defined hydrocarbon impact thresholds during the Quantitative Spill Risk Assessment process and a consideration of the minimum time to contact at receptor locations fall into two categories: • PBAs (≤ 10 days minimum time to contact) for which baseline data are planned for and data collection may commence pre-PAP, where identified as a gap. • PBAs (> 10 days minimum time to contact) for which baseline data may be collected in the event of an unplanned hydrocarbon release. Response phase PBAs are prioritised for SMP

	activities due to vulnerability (i.e. time to contact and environmental sensitivity) to potential impacts from hydrocarbon contact and an identified need to acquire baseline data. Time to hydrocarbon contact of >10 days has been identified as a minimum timeframe within which it is feasible to plan and mobilise applicable SMPs and commence collection of baseline (pre-hydrocarbon contact) data, in the event of an unplanned hydrocarbon release from the Scarborough Drillings and Completions Operations. PBAs for Scarborough Drillings and Completions Operations identified and listed in ANNEX D: Scientific Monitoring Program and Baseline Studies for the Petroleum Activities Program, Table D-1. The PBAs together with the situational awareness (from the operational monitoring) are the basis for the response phase SMP planning and implementation.
Pre-spill	A review of existing baseline data for receptor locations with potential to be contacted by entrained hydrocarbons at the environmental threshold within ≤10 days has identified the offshore open waters of the Commonwealth Marine Environment (MNES) but no submerged or shoreline sensitive receivers contacted by the hydrocarbon release. Australian Marine Parks (AMPs) potentially affected includes: • Gascoyne AMP All the Australian Marine Parks (AMPs) are located in offshore waters where hydrocarbon exposure is possible on surface waters and in the upper layers of the water column.
In the event of a spill	Locations with >10 days to hydrocarbon contact, as well as the wider area, will be investigated and identified by the SMP team (in the Environment Unit of the Corporate Incident Management Team (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). Based on the PAP worst case credible spill CS-01 (Table 2-5), the hydrocarbon spill affected area remains offshore (within the Commonwealth Marine Environment) with expanding hydrocarbon exposure in the upper water column of the Gascoyne AMP. In the event key receptors within geographic locations that are potentially impacted after 10 days following a spill event or commencement of the spill, and where adequate and appropriate baseline data are not available, there will be a response phase effort to collect baseline data for the following purposes: • Priority will be given to the collection of baseline data for receptors predicted to be within the spill affected area prior to hydrocarbon contact. The process is initiated with the investigation of available baseline and time to hydrocarbon contact (>10 days which is sufficient time to mobilise SMP teams and acquire data before hydrocarbon contact). • 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. Collect baseline data for receptors predicted to be outside the spill affected area so reference datasets for comparative analysis with impacted receptor types can be assessed post-spill.
Baseline Data	A summary of the spill affected area and receptor locations as defined by the EMBA for the PAP worst case credible spill CS-01 (Table 2-5), is presented in the Scarborough Drillings and Completions EP (refer to Section 6 of the EP). The key receptors at risk by location and corresponding SMPs based on the EMBA for the PAP are presented in ANNEX D: Scientific Monitoring Program and Baseline Studies for the Petroleum Activities Program, as per the PAP worse case credible spill scenario. 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. 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)[3] (refer to ANNEX C: Oil Spill Scientific monitoring Program).

[3] https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort

5.6.3 Summary – scientific monitoring

The resulting scientific monitoring capability has been assessed against the PAP worst case credible spill scenarios. The range of strategies provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of impacts. All known reasonably practicable control measures have been adopted with the cost and organisational complexity of these options determined to be moderate and the overall delivery effectiveness determined to be medium. The SMP's main objectives can be met, with no additional, alternative or improved control measures providing further benefit.

5.6.4 Response planning: need, capability and gap – scientific monitoring

The receptor locations identified in **ANNEX D**: Scientific 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 are:

- Gascoyne AMP

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, not immediately contacted by hydrocarbons. As the exact locations where hydrocarbon contact occurs may be unpredictable, SM01 would be mobilised as a priority to be able to detect hydrocarbons and track the leading edge of the spill to verify where hydrocarbon contact occurs which will assist with where SMP resources are a priority need to obtain pre-emptive baseline data.

The option analysis in **Section 6.6** considers ways to reduce the gap by considering alternate, additional, and/or improved control measures on each selected response strategy.

5.6.5 Environmental performance based on need

Table 5-13: 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**
16	• Woodside has an established and dedicated SMP team comprising the Environmental Science Team and additional Environment Advisers within the Health, Safety Environment (HSE) Function.	16.1	SMP team comprises a pool of competent Environment Advisers (stand up personnel) who receive training regarding the SMP, SMP activation and implementation of the SMP on an annual basis.	• Training materials. • Training attendance registers. Process that maps minimum qualification and experience with key SMP role competency and a tracker to manage availability of competent people for the SMP team including redundancy and rostering.
17	• Woodside has contracted SMP service provider to provide scientific personnel to resource a base capability of one team per SMP (SM01-SM10, see ANNEX C: Oil Spill Scientific monitoring Program Table C-2) as detailed in Woodside's SMP standby contractor Implementation Plan, to implement the oil spill scientific monitoring programs. The availability of relevant personnel is reported to Woodside on a monthly basis via a simple report on the base-loading availability of people for each of the SMPs comprising field work for data collection (SMP resourcing report register). • In the event of a spill and the SMP is activated, the base-loading availability of scientific personnel will be provided by SMP standby contractor for the individual SMPs and where gaps in resources are identified, SMP standby contractor/Woodside will seek additional personnel (if needed) from other sources including Woodside's Environmental Services Panel.	17.1	Woodside maintains the capability to mobilise personnel required to conduct scientific monitoring programs SM01 – SM10 (except desktop based SM08): • Personnel are sourced through the existing standby contract with SMP standby contractor, as detailed within the SMP Implementation Plan. • Scientific Monitoring Program Implementation Plan describes the process for standing up and implementing the scientific monitoring programs. • SMP team stand up personnel receive training regarding the stand up, activation and implementation of the SMP on an annual basis.	• Hydrocarbon Spill Preparedness Team Internal Control Environment tracks the quarterly review of the Oil Spill Contracts Master. • SMP resource report of personnel availability provided by SMP contractor on monthly basis (SMP resourcing report register. • Training materials. • Training attendance registers. • Competency criteria for SMP roles. • SMP annual arrangement testing and reporting.
18	• Roles and responsibilities for SMP implementation are captured in Table C-1 (ANNEX C) and the SMP team (as per the organisational structure of the CIMT) is outlined in SMP Operational Plan. Woodside has a defined Crisis and Incident Management structure including Source Control, Operations, Planning and Logistics functions to manage a loss of well containment response.	18.1	• Woodside has established an SMP organisational structure and processes to stand up and deliver the SMP.	• SMP Oil Spill Scientific Monitoring Operational Plan. • SMP Implementation Plan.

	• SMP Team structure, interface with SMP standby contractor and linkage to the CIMT is presented in Figure C-1, ANNEX C. • Woodside has a defined Command, Control and Coordination structure for Incident and Emergency Management that is based on the AIIMS framework utilised in Australia. • Woodside utilises an online Incident Management System (IMS) to coordinate and track key incident management functions. This includes specialist modelling programs, geographic information systems (GIS), as well as communication flows within the Command, Control and Coordination structure. • SMP activated via the FSP. • Step by step process to activation of individual SMPs provided in the SMP Operational Plan. • All decisions made regarding SMP logged in the online IMS (SMP team members trained in using Woodside's online Incident Management System). • SMP component input to the CIMT IAP as per the identified CIMT timed sessions and the SMP IAP logged on the online IMS. • Woodside Environmental Science Team provides awareness training on the activation and stand-up of the Scientific Monitoring Programme (SMP) for the Environment Advisers in Woodside who are listed on the SMP team on an annual basis. • Woodside Environmental Science Team provides awareness training on the activation and stand-up of the Scientific Monitoring Program (SMP) for the SMP Standby provider on an annual basis. • Woodside Environmental Science Team co-ordinates an annual SMP arrangement testing exercise performed by the SMP standby contractor. SMP standby contractor and the SMP arrangements (people and equipment availability) tested annually since 2016.			• SMP annual arrangement testing and reporting.
19	• Chartered and mutual aid vessels. • Suitable vessels would be secured from the Woodside support vessels, regional fleet of vessels operated by Woodside and other operators and the regional charter market. • Vessel suitability will be guided by the need to be equipped to operate grab samplers, drop camera systems and water sampling equipment (the individual vessel requirements are outlined in the relevant SMP methodologies (refer to Table C-2, ANNEX C). • Nearshore mainland waters could use the same approach as for open water. Smaller vessels may be used where available and appropriate. Suitable vehicles and machinery for onshore access to nearshore SMP locations would be provided by Woodside's transport services contract and sourced from the wider market.	19.1	Woodside maintains standby SMP capability to mobilise equipment required to conduct scientific monitoring programs SM01 – SM10 (except desktop based SM08): • Equipment is sourced through the existing standby contract with Standby SMP standby contractor, as detailed within the SMP Implementation Plan.	• Hydrocarbon Spill Preparedness Team Internal Control Environment tracks the quarterly review of the Oil Spill Contracts Master. • SMP standby monthly resource reports of equipment availability provided by SMP contractor (SMP resourcing report register). • SMP annual arrangement testing and reporting.

	• Dedicated survey equipment requirements for scientific monitoring range from remote towed video and drop camera systems to capture seabed images of benthic communities to intertidal/onshore surveying tools such as quadrats, theodolites and spades/trowels, cameras and binoculars (specific survey equipment requirements are outlined in the relevant SMP methodologies (refer to Table C-2, ANNEX C)). Equipment would be sourced through the existing SMP standby contract with Standby SMP contractor for SMP resources and if additional surge capacity is required this would be available through the other Woodside Environmental Services Panel Contractors and specialist contractors. Standby SMP contractor can also address equipment redundancy through either individual or multiple suppliers. MoUs are in place with marine sampling equipment suppliers and analytical laboratories (SMP resourcing report register). • Availability of SMP equipment for offshore/onshore scientific monitoring team mobilisation is within one week to ten days of the commencement of a hydrocarbon release. This meets the SMP mobilisation lead time that will support meeting the response objective of 'acquire, where practicable, the environmental baseline data prior to hydrocarbon contact required to support the post-response SMP.			
20	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. Woodside maintains knowledge of Environmental Baseline data through: • Documentation annual reviews of the Woodside Baseline Environmental Studies Database, and specific activity baseline gap analyses. • Accessing external databases such as the Department of Water and Environmental Regulation (WA) Index of Marine Surveys for Assessment (IMSA)[4] (refer to ANNEX C: Oil Spill Scientific monitoring Program).	20.1	• Annual reviews of environmental baseline data. • PAP specific Pre-emptive Baseline Area baseline gap analysis.	• Annual review/update of Woodside Baseline Environmental Studies Database. • Desktop review to assess the environmental baseline study gaps completed prior to EP submission. • Accessing baseline knowledge via the SMP annual arrangement testing.

[4] https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort

Environmental Performance Outcome		SMP plan to acquire response phase monitoring targeting pre-emptive data achieved.		
Control measure		**Performance Standard**		**Measurement Criteria**
21	Woodside's SMP approach addresses: • Scientific data acquisition for PBAs >10 days to hydrocarbon contact and activated in the response phase and • Transition into post-response SMP monitoring.	21.1	**PBA baseline data acquisition in the response phase** 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.	• Response SMP plan. • Woodside's online Incident Management System Records. • SMP component of the Incident Action Plan (IAPs).
		21.2	**Post Spill contact** For the receptors contacted by the spill in where baseline data are available, SMPs programs to assess and monitor receptor condition will be implemented post spill (i.e. after the response phase).	• SMP planning document. • SMP Decision Log. • IAPs.

Environmental Performance Outcome		Implementation of the SMP (response and post-response phases).		
Control measure		**Performance Standard**		**Measurement Criteria**
22	• Scientific monitoring will address quantitative assessment of environmental impacts of a level two or three spill or any release event with the potential to contact sensitive environmental receptors. The SMP comprises ten targeted environmental monitoring programs. • SMP supporting documentation: (1) Oil Spill Scientific Monitoring Operational Plan; (2) SMP Implementation Plan and (3) SMP Process and Methodologies Guideline. • The Oil Spill Scientific Monitoring Operational Plan details the process of SMP selection, input to the Incident Action Plan (IAP) to trigger operational logistic support services. Methodology documents for each of the ten SMPs are accessible detailing equipment, data collection techniques and the specifications required for the survey platform support. • The SMP standby contractor holds a Woodside SMP implementation plan detailing activation processes, linkage with the Woodside SMP team and the general principles for the planning and mobilisation of SMPs to deliver the individual SMPs activated. Monthly resourcing report are issued by the SMP standby contractor (SMP resourcing report register). All SMP documents and their status are tracked via SMP document register.	22.1	**Implementation of SM01** SM01 will be implemented to assess the presence, quantity and character of hydrocarbons in marine waters during the spill event in nearshore areas.	Evidence SM01 has been triggered: • Documentation as per requirements of the SMP Operational Plan. • Woodside's online Incident Management System Records. • SMP component of the IAP. • SMP data records from field.
		22.2	**Implementation of SM02-SM10** SM02-SM10 will be implemented in accordance with the objectives and activation triggers as per Table C-2 of ANNEX C.	Evidence SMPs have been triggered: • Documentation as per requirements of the SMP Operational Plan. • Woodside's online Incident Management System Records. • SMP component of the IAP. • SMP data records from field.
		22.3	**Termination of SMP plans** The Scientific Monitoring Program will be terminated in accordance with termination triggers for the SMP's detailed in Table C-2 of ANNEX C, and the Termination Criteria Decision-tree for Oil Spill Environmental Monitoring (Figure C-3 of ANNEX C):	Evidence of Termination Criteria triggered: • Documentation and approval by relevant persons/ organisations to end SMPs for specific receptor types.

5.7 Incident Management System (IMS)

The 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 spilt into the marine environment there is no direct relationship to the response planning need.

5.7.1 Incident action planning

The CIMT will be required to collect and interpret information from the scene of the incident to determine support requirements to the site-based IMT, develop an IAP and assist the IMT with the execution of that plan. The site-based incident controller (IC) may request the CIMT to complete notifications internally within Woodside, to relevant persons/ organisations and government agencies as required. Depending on the type and scale of the incident either the CIMT 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.

5.7.2 Operational NEBA process

In the event of a response Woodside will confirm that the response techniques adopted at the time of Environment Plan/Oil Pollution Emergency Plan (EP/OPEP) acceptance remain appropriate to reduce the consequences of the spill. This process verifies that there is a continuing net environmental benefit associated with continuing the response technique through the operational NEBA process. This process manages the environmental risks and impacts of response techniques during the spill response, an operational NEBA will be undertaken throughout the response, for each operational period.

The operational NEBA will consider the risks and benefits of conducting and response activity. For example, if vessels are required for access to nearshore or onshore areas, anchoring locations will be selected to minimise disturbance to benthic habitats. Vessel cleanliness would be commensurate with the receiving environment. The operational NEBA will consider the risks and benefits of conducting other response techniques.

The operational NEBA process is also used to terminate a response. Using data from operational and scientific monitoring activities the response to a hydrocarbon spill will be terminated in accordance with the termination process outlined in the Oil Pollution Emergency Arrangements (Australia). In effect the operational NEBA will determine whether there is net environmental benefit to continue response operations.

5.7.3 Consultation engagement process

Woodside will ensure relevant persons/ organisations are engaged during the spill response in accordance with internal standards as outlined in **Table 5-14**. This process requires that Woodside will:

- Undertake all required notifications (including government notifications) for relevant persons/ organisations in the region (identified in the First Strike Plan). This includes notification to mariners to communicate navigational hazards introduced through response equipment and personnel.
- In the event of a response, identify and engage with relevant persons/ organisations and continually assess and review.

5.7.4 Environmental performance based on need

Table 5-14: 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**
23	Operational NEBA	23.1	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
		23.2	Record the evidence and justification for any deviation from the planned response activities.	
		23.3	Record the information and data from operational and scientific monitoring activities used to inform the NEBA.	
24	Stakeholder engagement	24.1	Prompt and record all notifications (including government notifications) for elevant persons/ organisations in the region are made	
		24.2	In the event of a response, identification of relevant persons/ organisations will be re-assessed throughout the response period.	
		24.3	Undertake communications in accordance with: Woodside Crisis Management Functional Support Team Guideline – Reputation External Communication and Continuous Disclosure Procedure External Stakeholder Engagement Procedure	
25	Personnel required to support any response	25.1	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
		25.2	A duty roster of trained and competent people will be maintained to ensure that minimum manning requirements are met all year round.	3C
		25.3	Immediately activate the IMT with personnel filling one or more of the following roles: • Operations Duty Manager; • Operations Coordinator; • Deputy Operations Coordinator; • Planning Coordinator; • Logistics (materials, aviation, marine and support positions); • Management Support; • Health and Safety Advisor; • Environment Duty Manager; • People Coordinator; • Public Information Coordinator; • Intelligence Coordinator; and • Finance Coordinator.	1, 2, 3B, 3C, 4
		25.4	Collect and interpret information from the scene of the incident to determine support requirements to the site-based IMT, develop an IAP and assist with the execution of that plan.	
		25.5	Security and emergency management (S&EM) advisors will be integrated into CIMT to monitor performance of all functional roles.	
		25.6	Continually communicate the status of the spill and support Woodside to determine the most appropriate response by delivering on the responsibilities of their role.	
		25.7	Follow the OPEA, Operational Plans, FSPs, support plans and the IAPs developed.	1, 2, 3A, 4
		25.8	Contribute to Woodside's response in accordance with the aims and objectives set by the Duty Manager.	1, 2, 3B, 3C, 4

5.8 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 Emergency & Crisis Management Procedure. The IMS provides a near real-time, single source of information for monitoring and recording an incident and measuring the performance of those control measures.

The Emergency & 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.

IAP process formally documents and communicated 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 Security and Emergency Management (S&EM) competency dashboard records the number of trained and competent responders that are available across Woodside, and some external providers, to participate in a response.

This number varies dependent on expiry of competency certificates, staff attrition, internal rotations, leave and other absences. As such the Dashboard is designed to identify the minimum manning requirements and to identify sufficient redundancy to cater for the variances listed above.

Figure 5-2 shows the minimum manning numbers for the different hydrocarbon spill response roles and the number of qualified persons against those roles.

Woodside's pool of trained responders is composed of but not limited to personnel from the following organisations:

- Woodside internal
- Australian Marine Oil Spill Centre (AMOSC) core group
- AMOSC
- Oil Spill Response Limited (OSRL)
- Marine Spill Response Corporation (MSRC)
- AMSA
- Woodside contracted workforce

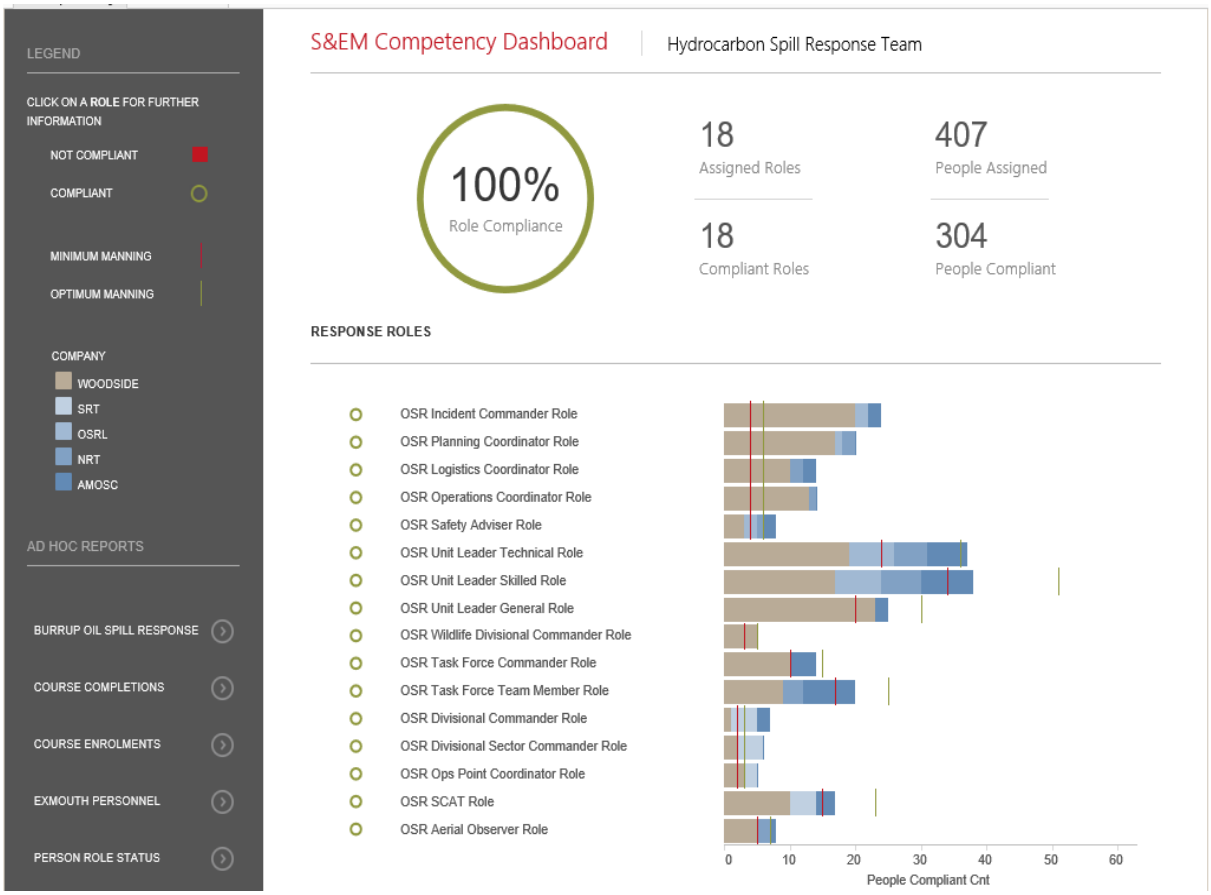

Figure 5-2: Example screen shot of the hydrocarbon spill preparedness (HSP) competency dashboard

The Dashboard is one of Woodside's key means of monitoring its readiness to respond. It also and shows that Woodside can meet the requirements of the environmental performance standard that relate to filling certain response roles.

Figure 5-3 shows deeper dive into the Ops Point Coordinator role and the training modules required to show competence.

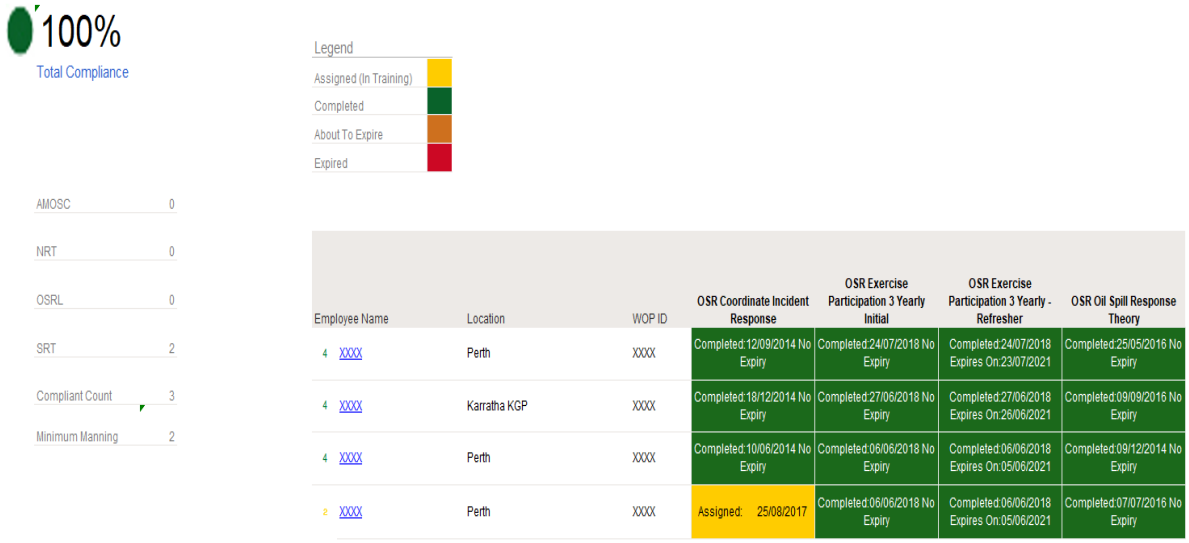

Figure 5-3: Example screen shot for the Ops Point Coordinator role

3. The hydrocarbon spill Preparedness ICE assurance process

The Hydrocarbon Spill Response Team has developed a Hydrocarbon Spill Preparedness and Response Internal Control Environment (ICE) process to align and feed into the Woodside Management System Assurance process for hydrocarbon spill. The process tracks compliance over four key control areas:

a) **Plans** – Ensures all plans (including: Oil Pollution Emergency Arrangements, first strike plans, operational plans, support plans and tactical response plans inANNEX E: Tactical Response Plans) are current and in line with regulatory and internal requirements.

b) **Competency** – Ensures the competency dashboard is up to date and there are the minimum competency numbers across CIMT, 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[5] 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 that the key assurance components are tracked and managed. Assurance activities (including Audits) conducted on memberships with key Oil Spill Response Organisations (OSROs) including AMOSC and OSRL are also tracked and recorded in the ICE.

The ICE assurance process records how each commitment listed in the performance tables above is managed to ensure ongoing compliance monitoring. The level of compliance can be reviewed in real time and is reported on a monthly basis through the S&EM Function.

The completion of the assurance checks (over and above the ICE process) is also applied via the Woodside Integrated Risk & 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

[5] 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 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 Monitor and Evaluate – Control Measure Options Analysis

6.1.1 Alternative Control Measures

Alternative Control Measures considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate cost**	**Assessment conclusions**	**Implemented**
Aerostat (or similar inflatable observation platform) for localised aerial surveillance.	Lead time to Aerostat surveillance is disproportionate to the environmental benefit. The system also provides a very limited field of visibility around the vessel it is deployed from.	Long lead time to access (>10 days). Each system would require an operator to interpret data and direct vessels accordingly. Requires multiple systems for shoreline use.	Purchase cost per system approx. 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

6.1.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate cost**	**Assessment conclusions**	**Implemented**
Additional personnel trained to use systems.	Current arrangement provides an environmental benefit in the availability of trained personnel facilitating access to monitoring data used to inform all other response techniques. No improvement required.	No improvement can be made, all personnel in technical roles e.g. intelligence unit are trained and competent on the software systems. Personnel are trained and exercised regularly. Use of the software and systems forms part of regular work assignments and projects.	Cost for training in-house staff would be approx. A$25,000.	This option is not adopted as the current capability meets the need.	No
Additional satellite tracking buoys to enable greater area coverage.	Increased capability does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	Tracking buoy on location at manned facility, additional needs are met from Woodside owned stocks in King Bay Support 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

6.1.3 Improved Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Environmental consideration**	**Feasibility**	**Approximate cost**	**Assessment conclusions**	**Implemented**
Faster turnaround time from modelling contractor.	Improved control measure does not provide an environmental benefit compared to the disproportionate cost in having an additional contract in place.	External contractor on CIMT roster to be called as soon as required. However initial information needs to be gathered by CIMT team to request an accurate model. External contractor has person on call to respond from their own location.	Modelling service with a faster activation time would be achieved via membership of an alternative modelling service at an annual cost of A$50,000 for 24hr access plus an initial A$5000 per modelling run.	This option is not adopted as the minimal environmental benefit gained is disproportionate to the cost and complexity of its implementation.	No
Night time aerial surveillance.	The risk of undertaking the aerial observations at night is disproportionate to the limited environmental benefit. The images would be of low quality and as such the variable is not adopted.	Flights will only occur when deemed safe by the pilot. The risk of night operations is disproportionate to the benefit gained, as images from sensors (IR, UV, etc) will be low quality. Flight time limitations will be adhered to.	No improvement can be made without risk to personnel health and safety and breaching Woodside's Golden Rules.	This option is not adopted as the safety considerations outweigh any environmental benefit gained.	No

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*					
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.	No

6.1.4 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

6.2 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 clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical. Control measures where there is not a clear justification for their inclusion or exclusion may be subject to a detailed ALARP assessment.

6.2.1 Source Control via Vessel SOPEP – Control Measure Options Analysis

6.2.1.1 Alternative control measures

Alternative Control Measures considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*				
Option considered	**Environmental consideration**	**Feasibility**	**Cost**	**Implemented**
No reasonably practical alternative control measures identified.				N/A

6.2.1.2 Additional Control Measures

Additional Control Measures considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*				
Option considered	**Environmental consideration**	**Feasibility**	**Cost**	**Implemented**
No reasonably practical alternative control measures identified.				N/A

6.2.1.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*				
Option considered	**Environmental consideration**	**Feasibility**	**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 Source Control – ALARP Assessment

Woodside has based its response planning on the worst-case credible scenarios (as described in **Section 2.2**). This includes the following selection of source control and well intervention techniques which would be initiated concurrently:

- ROV intervention
- debris clearance and/or removal
- capping stack deployment
- relief well drilling

6.3.1 ROV Intervention

Following confirmation of an LOWC event, Woodside would mobilise inspection class ROVs to assess the status of the wellhead and BOP equipment (BOPE). If available, the ROV on the MODU can be deployed for this purpose within 48 hours. Work class ROVs for well intervention are also available through the existing frame agreements and are available for deployment within seven days (**Table 6-1**). It is not expected that any additional regulatory approvals would be required as inspection, maintenance and repair is within the scope of activities for the Scarborough Operations Safety Case as well as the scope of activities for contracted Frame Agreement vessels.

As Woodside holds Frame Agreements for vessels along with contracts for ROV providers and pilots, inspection activities using ROVs are expected to commence within seven days.

A hydraulic accumulator contained as part of the SFRT can be mobilised and deployed with well intervention attempted within 11 days.

Table 6-1: ROV timings

ROV inspection duration for Scarborough Wells	Time Estimate (days)
Source and mobilise vessel with work class ROV	2 days
Liaise with Regulator regarding risks and impacts*	4 days
Undertake ROV Inspection	1 day
TOTAL	**7 days***

** Based on timings from the Report into the Montara Commission of Enquiry, submission and discussion of revised documentation for limited activities inside the Petroleum Safety Zone (water deluge operations) to manage personnel risks and impacts was up to 20 days.*

6.3.1.1 Safety Case considerations

Woodside has assessed against the NOPSEMA safety case guidance (NOPSEMA N-09000-GN1661), confirming that vessels conducting subsea intervention operations are not classified as an “associated offshore place” but as a facility and therefore require the appropriate Safety Case arrangements to be in place. In the event of an emergency, Woodside has access to suitable vessels (ISVs) for well intervention through existing frame agreements. The frame agreements for ISV vessels require the vessels to maintain in-force safety case approval covering a range of subsea activities. This would cover the requirement for intervention operations such as subsea manifold installation, maintenance and repair, commissioning,

cargo transfer (including bulk liquids) and ROV operations. With frame agreements in place, the credible Safety Case Scenario from those presented in **Figure 6-3** for implementing this response would be “no safety case revision required”. Timeframes for well intervention are detailed in **Figure 6-2** and would be implemented concurrently to the actions required by the “no Safety Case” revision scenario detailed in **Figure 6-3,** therefore, the Safety Case scenario will have no impact on the delivery of the strategy.

6.3.2 Debris clearance and/or removal

The Woodside Source Control Response Guideline details the mobilisation and resource requirements for implementing this strategy. Debris clearance may be required as a prerequisite to deployment of the capping stack. The AMOSC SFRT would be mobilised from Fremantle. The mobilisation of the SFRT would take place in parallel with mobilisation of the capping stack to ensure initial ROV surveys and debris clearance have commenced before the arrival of the capping stack. The SFRT comprises ROV-deployed cutters and tools that are used to remove damaged or redundant items from the wellhead and allow improved access to the well. The SFRT can be mobilised and deployed with well intervention attempted within 11 days.

6.3.2.1 Safety Case considerations

Woodside has assessed against the NOPSEMA safety case guidance (NOPSEMA N-09000-GN1661) and can confirm that vessels conducting debris clearance and removal operations are not classified as an “associated offshore place” but as a facility and therefore require the appropriate Safety Case arrangements in place. In the event of an emergency, Woodside has access to suitable ISVs for these operations through existing frame agreements. The frame agreements for ISVs require the vessels to maintain in-force safety case approval covering a range of subsea activities. This would cover the requirement for debris clearance and removal operations such as subsea manifold installation, commissioning, cargo transfer (including bulk liquids) and ROV operations. With frame agreements in place, the credible Safety Case Scenario, from those presented in **Figure 6-3** for implementing this response would be “no safety case revision required”. Timeframes for debris clearance and removal equipment deployment are detailed in **Figure 6-2** and would be implemented concurrently to the actions required by the “No Safety Case” revision scenario detailed in **Figure 6-3**, therefore, the Safety Case scenario will have no impact on the delivery of the strategy.

6.3.3 Capping stack

The Woodside Source Control Response Guideline details the mobilisation and resource requirements for implementing this strategy. A capping stack is designed to be installed on a subsea well and provides a temporary means of sealing the well, until a permanent well kill can be performed through either a relief well or well re-entry.

Woodside has developed a project specific capping stack deployment plan and also commissioned an independent, capping stack landing study for the Scarborough wells (WWCI, 2021). The study indicates that the safe deployment of a capping stack is feasible.

Woodside assumes that sourcing conventional capping stack deployment vessels would be per the Source Control Response Guideline. This plan has pre-identified vessel specifications for the capping stack deployment and Woodside monitors the availability and location of these vessels on a monthly basis. Woodside maintain several frame agreements with various vessel service providers and maintains the ability to call off services with a capping stack and debris clearance agreement. The location of suitable vessels for capping stack deployment are monitored monthly. The supply arrangements and reliability to achieve the required

mobilisation time will be revalidated prior to spud. Consideration to mobilise the capping stack from the supplier on a suitable vessel but then hand over to another vessel to conduct the capping activity will also be made to meet response time frames.

A capping stack will be mobilised to site within 16 days. Woodside will monitor the conditions around the wellsite and deployment for well intervention attempt will be undertaken once safety and metocean conditions are suitable.

6.3.3.1 Safety Case considerations

Woodside has assessed against the NOPSEMA safety case guidance (NOPSEMA N-09000-GN1661) and can confirm that vessels conducting capping stack are not classified as an "associated offshore place" but as a facility and therefore require the appropriate Safety Case arrangements in place.
The timeframe to mobilise the vessel is based on the following assumptions:

- existing frame agreement vessel, located outside the region with approved Australian Safety Case
- a safety case revision and scope of validation is required
- vessel has an active heave compensated crane, rated to at least 150 T in shallower water and 250 T in deeper water, and at least 90 m in length and a deck capacity to hold at least 110 T of capping stack.

Timeframes for capping stack deployment detailed in **Figure 6-2** would be implemented concurrently with the actions required for the Safety Case revision development scenarios detailed in **Figure 6-3** and **Table 6-3**. To reduce uncertainty in regulatory approval timeframe, Woodside is collaborating with The Drilling Industry Steering Committee (DISC) and a contracted ISV Vessel Operator to develop a generic Safety Case Revision that contemplates a capping stack deployment. This Safety Case Revision will be used to reduce uncertainty in permissioning timeframes in the event a capping stack deployment is required. Woodside will execute the capping stack response in the fastest possible timeframe, provided the required safety and metocean conditions allow. Woodside has considered a broad range of alternate, additional, and improved options as outlined later in **Section 6.3.5**.

6.3.4 Relief Well drilling

The options analysis detailed in this section considers options to source, contract and mobilise a MODU or MODUs and ensure necessary regulatory approvals are in place to meet timelines for relief well drilling. The screening for relief well drilling MODUs is based on the following and the process used for Scarborough is illustrated in **Figure 6-1**:

- Primary – review internal Woodside drilling programs and MODU availability to source appropriate rig(s) operating within Australia with an approved Safety Case.
- Alternate – source and contract a MODU through APPEA MoU that is operating within Australia with an approved Safety Case.
- Contingency – Source and contract a MODU outside Australia with an approved Australian Safety Case.

For the worst-case discharge scenario modelled, an additional MODU, subsea well kill spools and hoses is required to provide pumping assistance to the primary relief well drilling rig. The MODU will be obtained per the above hierarchy.

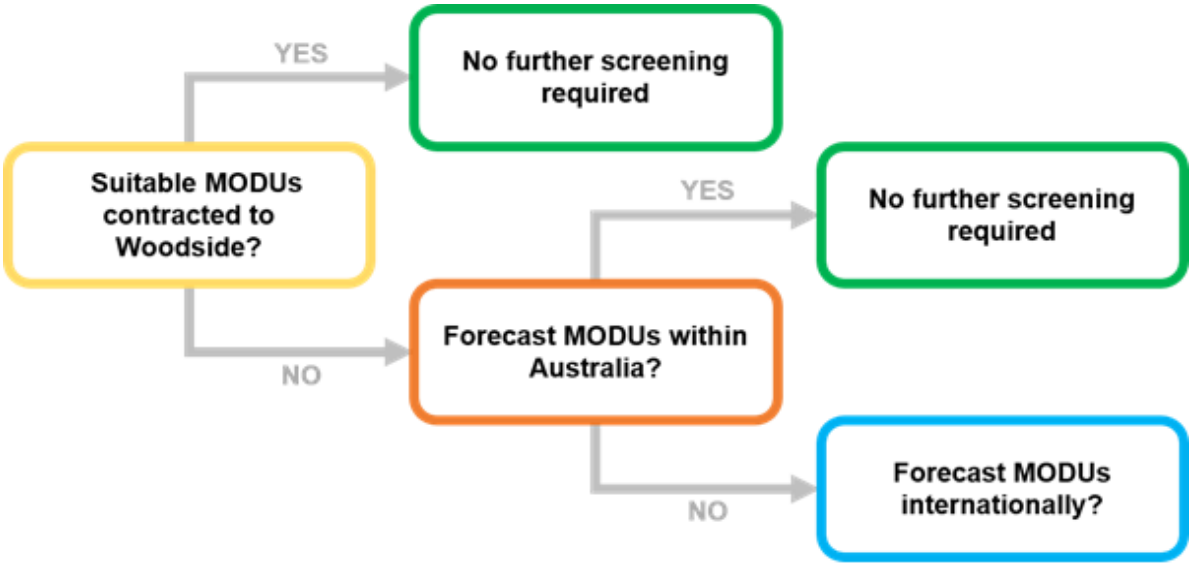

Figure 6-1: Process for sourcing relief well MODU

Screening of a relief well MODU from international waters is undertaken only if required, i.e. there is low confidence in local (Australian) availability. The screening of relief well MODUs is undertaken and presented at a well design stage peer assessment. The capability, location and Australian Safety Case status is assessed for each Woodside contracted MODU. In the event the Woodside contracted MODUs are unsuitable, screening is extended to all MODUs operating in Australian Waters. The suitability and location of pre-identified relief well MODUs is tested again prior to the operation. Though the APPEA MoU will serve as the instrument to facilitate the transfer of drilling units and well site services between operators in the event of an emergency, Woodside will engage each of the identified titleholders in advance to maintain confidence in MODU suitability and availability.

Based on the detail provided, the Primary and Alternate approaches are expected to be achieved within the 21-day period.

The internal and external availability of moored and DP MODUs, plus rig activities of registered operators and rigs with approved safety cases, are tracked by Woodside on a monthly basis, with a two-year look ahead, to ensure that the best available option can be sourced and utilised in the event of the worst-case credible scenario.

If the above forecast indicates a gap in availability of a suitable MODU for relief well drilling within Australia, screening would be extended to MODUs with a valid safety case outside Australia. If an international MODU with an Australian safety case is not identified, an internal review will be undertaken, NOPSEMA notified and the issue tabled at the APPEA Drilling Industry Safety Committee. A review of the significance of the change in risk will be undertaken in accordance with Woodside's environment management of change requirements and relevant regulatory triggers. The aforementioned lookahead timeframe would allow two years' warning of any potential gap. Woodside will execute relief well drilling in the fastest possible timeframe.

The detail of these arrangements demonstrates that the risks have been reduced to ALARP and Acceptable levels through the control measures and performance standards outlined in **Section 5.2**.

6.3.4.1 Relief Well drilling timings

The duration of a blowout (from initiation to a successful kill) is assessed as 65.3 days. The Scarborough development wells are very similar in their lengths, depths and casings. The wells with the worst-case discharge rates were modelled for relief well planning.

Details on the steps and time required to drill a relief well is shown in **Table 6-2** below. Moored and DP MODUs are suitable.

To validate the effectiveness of the relief MODU supply arrangements through the APPEA MoU, the 21-day mobilisation period was tested in April 2019 in an exercise facilitated by an external party. This exercise included suspension of the assisting operator's activities, contracting the MODU, vessel safety case revision and transit to location. The testing of mobilisation arrangements has been incorporated into Woodside's Hydrocarbon Spill Arrangements Testing Schedule.

Table 6-2: Relief well drilling timings

Estimated Time to Relief Well Intersection / Well Kill	
Source and contract MODU:	**21.0 days**
Activate MoU. Secure and suspend well.	*8.0 days*
Complete relief well design.	
Secure relief well materials.	
Transit to location based on mobilization from Northwest shelf region.	*2.0 days*
Backload and loadout bulks and equipment, complete internal assurance of relief well design.	*2.0 days*
Contingency for unforeseen event (e.g.: Longer transit from another area of Australia, problems in securing well, cyclone event)	*9.0 days*
Relief Well Construction: Note: This includes the time taken to install subsea kill spools and hoses	**24.8 days**
Intersection & Well Kill:	**19.5 days**
Drill out shoe, conduct formation integrity test and drill towards intersection point	*1.5 days*
Execute well-specific ranging plan to intersect blowout wellbore in minimum timeframe, with highest possible accuracy (3x open hole ranging sidetracks).	*15.0 days*
Pump kill weight drilling fluid per the relief well plan. Confirm the well is static with no further flow.	*0.5 days*
Contingency for unforeseen technical issues (e.g.: more ranging runs required to make intersect, additional mud circulations required to execute kill	*2.5 days*
Total	**65.3 days**

Woodside has considered a broad range of alternate, additional, and improved options as outlined in **Section 6.3.5**.

Intersect and kill duration is estimated at 19.5 days. This is a moderately conservative estimate. During the intersect process, the relief well will be incrementally drilled and logged to accurately approach and locate the existing well bore. This will result in the highest probability of intersecting the well on the first attempt and thus will reduce the overall time to kill the well. During the Montara incident, it took five attempts to achieve a successful intersect.

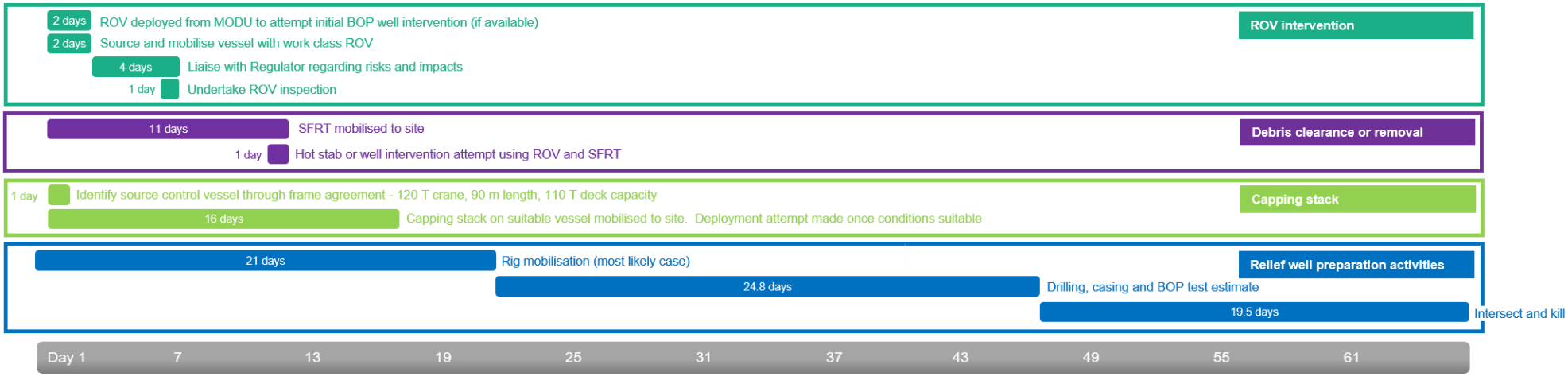

Figure 6-2: Source control and well intervention response strategy deployment timeframes for Scarborough Development Wells

6.3.4.2 Safety Case considerations

Woodside recognises that it will not be the Operator or holder of the Safety Case for the MODU and/or vessels involved in relief well activities. In the event that a revision to the Operator's Safety Case is required for relief well drilling, Woodside has identified measures to ensure timely response and optimise preparedness as far as practicable that can be undertaken to expedite a straightforward Safety Case revision for a MODU/ vessel to commence drilling a relief well. Performance standards associated with these measures have been included in Section 5.2.

These include;

- Access to Safety and Risk discipline personnel with specialist knowledge.
- Monitoring internal and external rigs and vessel availability in the region and extended area through contracted arrangements on a monthly basis, with a two-year lookahead.
- Prioritisation of rigs/vessels with current or historical contracting arrangements. Woodside maintains records of previous contracting arrangements and companies. All current contracts for vessels and rigs are required to support Woodside in the event of an emergency.
- Leverage mutual aid arrangements such as the APPEA MoU for vessel and rig support.
- Woodside Planning and Logistics, and Safety Officers (on-Roster/Call 24/7) which can articulate need for, and deliver Woodside support, in key delivery tasks including sitting with potential outside operators.
- Ongoing strategic industry engagement and collaboration with NOPSEMA to work toward time reductions in regulatory approvals for emergency events.

Woodside has identified three safety case revision development and submission scenarios for a MODU and plotted these alongside the relief well preparation activities in **Figure 6-3**. The assumptions for each of the cases are detailed in subsequent **Table 6-3**.

The MODUs screened for contingency relief well drilling all operate under an Accepted base Safety Case. A relief well Safety Case Revision would leverage the previously accepted Safety Case Revision for the PAP, including the associated site-specific well hazards. As such, there is less new detail for the regulator to review and should present a short review timeframe with no impact expected to the commencement of relief well drilling activities.

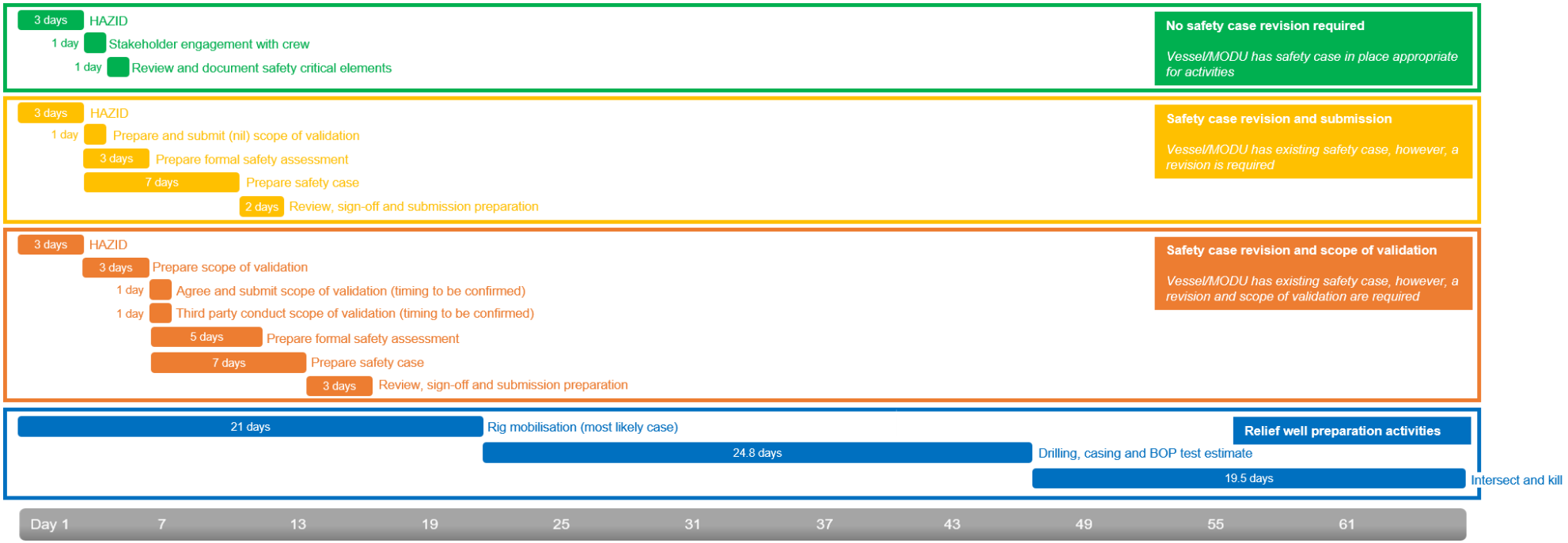

Figure 6-3: Timeline showing safety case revision timings alongside other relief well preparation activity timings for Scarborough Development Wells

Table 6-3: Safety case revision conditions and assumptions

Case	No safety case revision required	Safety case revision and submission	Safety case revision and scope of validation
Description	Vessel/MODU has a safety case in place appropriate for activities.	Vessel/MODU has an existing safety case, however, a revision is required.	Vessel/MODU has an existing safety case, however, a revision is required plus scope of validation.
Conditions/ assumptions	• Assumes that existing vessel/MODU safety case covers working under the same conditions or the loss of containment is not severe enough to result in any risk on the sea surface.	• Safety case timing assumes vessel/MODU selected and crew and available for workshops and safety case studies.	• Safety case timing assumes vessel/ MODU selected and crew and available for workshops and safety case studies.
		• Assumes nil scope of validation. This assumes that the vessel for subsea dispersant injection allows for working in a hydrocarbon environment and control measures are already in place in the existing safety case. For MODU, it assumes that the relief well equipment is already part of the MODU facility and MODU safety case.	• Validation will be required for new facilities only. The time needed for the validator to complete the review (from the last document received) and prepare validation statement is undetermined. This is not accounted for here as the safety case submission is not dependent on the validation statement, however the safety case acceptance is.
		• Assumes safety case preparation is undertaken 24/7.	• Assumes safety case preparation is undertaken 24/7.

6.3.5 Source Control – Control Measure Options Analysis

The assessments described in Sections 6.3.1, 6.3.2, 6.3.3 and 6.3.4 outline the primary and alternate approaches that Woodside would implement for source control. In Sections 6.3.6 and 6.3.7, Woodside has outlined the options considered against the activation/mobilisation (alternative, additional and improved options) and deployment (additional and improved options) processes as described in Section 2.1.1. This assessment provides an evaluation of:

- predicted cost associated with adopting the option
- predicted change/environmental benefit
- predicted effectiveness/feasibility of the option.

Alternative, Additional and Improved options have been identified and assessed against the base capability described in Section 5 with those that have been selected for implementation highlighted in green. Items highlighted in red have been considered and rejected on the basis that they are not feasible, the costs are clearly disproportionate to the environmental benefit, and/or the option is not reasonably practical.

- Alternative options, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control.
- Additional control measures are evaluated in terms of their ability to reduce an impact or risk when added to the existing suite of control measures.
- Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility.

Options where there is not a clear justification for their inclusion or exclusion may be subject to a detailed assessment.

6.3.5.1 Activation/Mobilisation Options considered

Alternative

- Standby MODU shared for all Woodside activities
- Standby MODU shared across APPEA MoU Titleholders

Additional

- Implement and maintain minimum standards for Safety Case development

Improved

- Monitor internal drilling programs for rig availability
- Monitor external activity for rig availability
- Monitor status of Registered Operators/ Approved Safety cases for rigs

6.3.5.2 Deployment Options considered

Additional

- Offset capping alternative to conventional capping stack deployment
- Dual vessel capping stack deployment
- Subsea Containment System alternative to capping stack deployment
- Pre-drilling top-holes
- Purchase and maintain mooring system
- Contract in place with WWCI and Oceaneering

Improved

- Maintaining relief well drilling supplies (mud, casing, etc).

6.3.6 Activation/Mobilisation – Control Measure Options Analysis

This section details the assessment of alternative, additional or improved control measures that were considered to ensure the selected level of performance in Section 5.3 reduces the risk to ALARP. The Alternative, Additional and Improved control measures that have been assessed and selected are highlighted in green and the relevant performance of the selected control is cross referenced. Items highlighted in red have been considered and rejected on the basis that they are not feasible or the costs are clearly grossly disproportionate compared to the environmental benefit.

6.3.6.1 Alternative control measures

Alternative Control Measures Considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*					
Option considered	**Feasibility**	**Environmental benefits/impacts**	**Approximate cost**	**Assessment conclusions**	**Implemented**
Standby MODU shared for all Woodside activities	A standby MODU shared across all Woodside activities is likely to provide a moderate environmental benefit as it may reduce the 21-day sourcing, contracting and mobilisation time by up to 10 days (to 11 days). This would reduce the volume and duration of release and may reduce impacts on receptors and sensitivities.	This option is not considered feasible for all Woodside activities as there are a large range of well depths, complexities, geologies and geophysical properties across all Woodside's operations. The large geographic area of Woodside activities also means that the MODU is unlikely to be in the correct location at the right time when required.	Even with costs shared across Woodside operations, the costs (approximately A$219 m per annum, A$1.95 b over the five years) of maintaining a shared MODU are considered disproportionate to the environmental benefit potentially achieved by reducing mobilisation times by up to 10 days.	The costs and complexity of having a MODU and maintaining this arrangement for the duration of the Petroleum Activities Program are disproportionate to the environmental benefit gained above finding a MODU through the MoU agreement for all spill scenarios.	No
Standby MODU shared across APPEA MoU Titleholders	A standby MODU shared across all titleholders who are signatories to the APPEA MoU is likely to provide a minor environmental benefit as it may reduce the 21-day sourcing, contracting and mobilisation time by up to seven days (to 14 days). This would reduce the volume and duration of release and may reduce impacts on receptors and sensitivities.	This option is not considered feasible for a number of Titleholders due to the remote distances in Australia as well as a substantial range of well depths, types, complexities, geologies and geophysical properties across a range of Titleholders	As the environmental benefit is only considered minor and the reduction in timing would only be for the mobilisation period (reduction from 21 days to 14 days) the costs are considered disproportionate to the minor benefit gained.	The costs and complexity of having a MODU and maintaining a shared arrangement for the duration of the Petroleum Activities Program are disproportionate to the environmental benefit gained above finding a MODU through the MoU agreement for all spill scenarios.	No

6.3.6.2 Additional control measures

Additional Control Measures Considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*					
Option considered	**Feasibility**	**Environmental benefits/impacts**	**Approximate cost**	**Assessment conclusions**	**Implemented**
Implement and maintain minimum standards for Safety Case development	Woodside's contingency planning consideration would be to source rigs from outside Australia with an existing Safety Case. This would require development and approval of a safety case revision for the rigs and activities prior to commencing well kill operations.	This option is considered feasible and would require Woodside to develop minimum standards for safe operations for relevant Safety Case input along with maintaining key resources to support review of Safety Cases. Woodside would not be the operator for relief well drilling and would therefore not develop or submit the Safety Case revision. Woodside's role as Titleholder would be to provide minimum standard for safe operations that MODU operators would be required to meet and/or exceed.	Woodside has outlined control measures and performance standards regarding template Safety Case documentation and maintenance of resources and capability for expedited Safety Case review.	This option has been selected based on its feasibility, low cost and the potential environmental benefits it would provide.	Yes

6.3.6.3 Improved control measures

Improved control measures Considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*					
Option considered	**Feasibility**	**Environmental benefits/impacts**	**Approximate cost**	**Assessment conclusions**	**Implemented**
Monitor internal drilling programs for rig availability	Woodside may be conducting other campaigns that overlap with the Petroleum Activities Program, potentially providing availability of relief well drilling rigs within Woodside. The environmental benefit of monitoring other drilling programs internally is that Woodside would be in a position to understand which other rigs might be rapidly available for relief well operations if required, potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment.	Woodside monitors vessel and MODU availability through market intelligence services for location. Woodside will continually monitor other drilling and exploration activities within Australia and as available throughout the region to track rigs and explore rig availability during well intervention operations.	Associated cost of implementation is minimal to the environmental benefit gained. Woodside has outlined control measures and performance standards.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	Yes
Monitor external activity for rig availability	The environmental benefit achieved by monitoring drilling programs and rig movements across industry provides the potential for increased availability of suitable rigs for relief well drilling. Additional discussions with other Petroleum Titleholders may be undertaken to potentially gain faster access to a rig and reduce the time taken to kill the well and therefore volume of hydrocarbons released.	Woodside will source relief well drilling rigs in accordance with the APPEA MoU on rig sharing in the unlikely event this is required. Commercial and operational provisions do not allow Woodside to discuss current and potential drilling programs in detail with other Petroleum Titleholders.	Associated cost of implementation is moderate to the environmental benefit gained. Woodside will continually engage with other Titleholders and Operators regarding activities within Australia and as available throughout the region to track rigs and explore rig availability during well intervention operations.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	Yes
Monitor status of Registered Operators / Approved Safety cases for rigs	Woodside can monitor the status of Registered Operators for rigs operating within Australia (and therefore safety case status) on a monthly basis. This allows for a prioritised selection of rigs in the event of a response with priority given to those with an existing safety case.	The environmental benefit of monitoring other drilling programs internally is that Woodside would be in a position to understand which other rigs might be rapidly available for relief well operations if required, potentially reducing the time to drill the relief well, resulting in less hydrocarbon to the environment.	The cost is minimal.	This option is a low-cost control measure with potential to reduce the volume of hydrocarbon released to the environment.	Yes

6.3.7 Deployment – Control Measure Options Analysis

6.3.7.1 Additional Control Measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Option considered	Environmental consideration	Feasibility	Approximate cost	Assessment conclusions	Implemented
Offset capping alternative to conventional capping stack deployment	While the use of an offset capping system could reduce the quantity of hydrocarbon entering the marine environment, the mobilisation lead times for both a cap and required vessels/ support equipment, would minimise any environmental benefit gained over conventional capping.	• The base case considerations for offset installation equipment (OIE) requires a coordinated response by 4 to 7 vessels working simultaneously outside of the 500m exclusion zone introducing complex SIMOPS issues. Due to the OIE's size and scale, fabrication of equipment, e.g. mooring anchors, outside of the contractor's scope of supply is likely to require engagement of international suppliers, further increasing complexity and uncertainty in associated time frames. • Screening indicates that mobilising some components of the OIE, based in Italy, can only be done so by sea and is likely to erode any time savings realised through killing the well via a relief well. • The March 2019 OSRL exercise in Europe tested deployment of the OIE and highlighted that it will require a >600 T crane vessel for deployment to ensure there is useable hook height for the crane to conduct the lift of the carrier. Vessels with such capability and a current Australian vessel safety case are not locally or readily available.	Due to risks, uncertainty and complexity of this option, and the inability to realise any environmental gains, any cost would be disproportionate to the benefits gained over conventional capping.	Woodside has confidence in availability of suitable relief well MODUs across the required drilling time frame thus the OIE would provide no advantage. Implementation of OIE has been assessed as a highly complex SIMOPs operation. Implementation of a novel technology such as OIE culminates in low certainty of success while at the same time increasing associated health and safety risks. As such the primary source control response and ALARP position remain conventional capping and drilling a relief well.	No
Dual vessel capping stack deployment	While the use of dual vessel to deploy the capping system could reduce the quantity of hydrocarbon entering the marine environment, this is an unproven technology. Additionally, the feasibility issues surrounding a dual vessel capping deployment together with mobilisation lead times for both a cap and required vessels and support equipment, would minimise any environmental benefit gained over conventional capping.	A dual vessel deployment is somewhat feasible provided a large enough deck barge can be located. Deck barges of 120 m are not, however, very common and will present a logistical challenge to identify and relocate to the region. Further, the longer-length barges may need mooring assist to remain centred over the well. The capping stack would be handed off from a crane vessel to the anchor handler vessel (AHV) work wire outside of the exclusion zone. The AHV would then manoeuvre the barge into the plume to get the capping stack over the well. In this method, the barge would be in the plume, but the AHV and all personnel would be able to maintain a safe position outside of the gas zone. The capping stack would actually be lowered on the AHV work wire so a crane would not be required on the barge.	Due to there being minimal environmental benefits gained by the prolonged lead times needed to execute this technique, plus a potential increase in safety issues, any cost would be disproportionate to the benefits gained over conventional capping.	Given there is minimal environmental benefit and an increase in safety issues surrounding SIMOPS and deployment in shallow waters, this option would not provide an environmental or safety benefit.	No
Subsea containment system alternative to capping stack deployment	While the use of a subsea containment system could reduce the quantity of hydrocarbon entering the marine environment, this is an unproven technology. Additionally, the system is unlikely to be feasibly deployed and activated for at least 90 days following a blowout due to equipment requirements and logistics. No environmental benefit is therefore predicted given the release duration is 65.3 days before drilling of a relief well under the adopted control measure.	The timing for mobilisation, deployment and activation of the subsea containment system is likely to be >90 days which is longer than the expected 65.3 days relief well drilling operations based on the location, size and scale of the equipment required, including seabed piles that can only be transported by vessel.	Woodside has investigated the logistics of reducing this timeframe by pre-positioning equipment but the costs of purchasing dedicated equipment by Woodside for this Petroleum Activities Program is not considered reasonably practical and are considered disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit.	No
Pre-drilling (relief well) top-holes	This option represents additional environmental impacts associated with discharge of additional drill cuttings and fluids along with benthic habitat disturbance. It is also not expected to result in a significant decrease in relief well timings	This option is not considered feasible due to the uncertainties related to the location and trajectory of the intervention well, which may vary according to the actual conditions at the time the loss of containment event occurs. Additionally, there is only expected to be a minor reduction in timing for this option of 1-2 days based on the drilling schedule. Duration to drill and kill may be reduced by 1-2 days, but top-hole may have to be relocated, due to location being unsafe or unsuitable and further works will be required each year to maintain the top holes.	Utilising an existing MODU and pre-drilling top-hole for relief well commencement would significantly increase costs associated the Petroleum Activities Program. Estimated cost over the program's life is approx. A$555,000 per day over the PAP based on 2-4 days of top-hole	This option would not provide an environmental benefit due to the additional environmental impacts coupled with a lack of improved relief well timings.	No

			drilling (plus standby time) for the well as the worst-case scenario.		
Purchase and maintain mooring system	Purchasing and maintaining a mooring system could provide a moderate environmental benefit as it may reduce equipment sourcing time. However, due to the continued need for specialists to install the equipment plus sourcing a suitable vessel, the timeframe reduction would be minimal.	Woodside is not a specialist in installing and maintaining moorings so would require specialists to come in to install the moorings and would also require specialist vessels to be sourced to undertake the work.	The cost of purchasing, storing and maintaining pre-lay mooring systems with anchors, chains, buoys and ancillary equipment is considered disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit as timeframe reductions would be minimal.	No
Contract in place with WWCI and Oceaneering	Woodside has an agreement in place with WWCI and Oceaneering to provide trained personnel in the event of an incident. This will ensure that competent personnel are available in the shortest possible timeframe.	Having contracts in place to access trained, competent personnel in the event of an incident would reduce mobilisation times. This option is considered reasonably practicable.	Minimal cost implications – Woodside has standing contract in place to provide assistance across all activities.	This control measure is adopted as the costs and complexity are not considered disproportionate to any environmental benefit that might be realised.	Yes

6.3.7.2 Improved Control Measures

Improved Control Measures considered
Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility

Option considered	Environmental consideration	Feasibility	Approximate cost	Assessment conclusions	Implemented
Maintaining relief well drilling supplies	There is not predicted to be any reduction in relief well timing or spill duration from Woodside maintaining stocks of drilling supplies (mud, casing, cement, etc.)	It would be feasible to source some relief well drilling supplies such as casing but the actual composition of the cement and mud required will need to be specific to the well. This option is also not deemed necessary as the lead time for sourcing and mobilising these supplies is included in the 21 days for sourcing and mobilising a rig.	The capital cost of Woodside purchasing relevant drilling supplies is expected to be approximately A$600,000 with additional costs for storage and ongoing costs for replenishment. These costs are considered disproportionate to the environmental benefit gained.	This option would not provide an environmental benefit.	No

6.3.8 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - Implement and maintain minimum standards for Safety Case development
  - Contract in place with WWCI and Oceaneering to supply trained, competent personnel
- Improved
  - Monitor internal drilling programs for MODU availability
  - Monitor external activity for MODU availability
  - Monitor status of Registered Operators / Approved Safety cases for MODUs

6.4 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.

6.4.1 Existing capability – wildlife response

Woodside's exiting level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, re-fuelling/re-stocking provisions, and other similar logistic and operational limitation that are beyond Woodside's direct control.

6.4.2 Wildlife response – control measure options analysis

6.4.2.1 Alternative Control Measures

Alternative Control Measures Considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*				
Option considered	**Environmental consideration**	**Feasibility**	**Approximate cost**	**Implemented**
Direct contracts with service providers instead of those sources through Scarborough	Adoption of this control would provide minimal net environmental benefit as the resources supplied through AMOSC and OSRL would likely be shared by the direct contracts.	It is feasible to have direct contracts with service providers; however, this option duplicates the capability accessed through AMOSC and OSRL, potentially competing for the same resources.	Given there is no environmental benefit, any costs are disproportionate to the benefit gained.	No

6.4.2.2 Additional Control Measures

Additional Control Measures Considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*				
Option considered	**Environmental consideration**	**Feasibility**	**Approximate cost**	**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

6.4.2.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*				
Option considered	**Environmental consideration**	**Feasibility**	**Approximate cost**	**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. This control measure provides increased effectiveness through faster mobilisation of specialists. However, no significant net environmental benefit is expected due to shoreline stranding times.	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 participating operators, backed up by the international resources provided by OSRL.	The cost of having dedicated equipment and personnel available to respond faster is considered disproportionate to the environmental benefit.	No

6.4.3 Selected control measures

Following review of alternative, additional and improved control measures, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.5 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.

6.5.1 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.

6.5.2 Waste Management – Control Measure Options Analysis

6.5.2.1 Alternative Control Measures

Alternative Control Measures Considered *Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control*				
Option considered	**Environmental consideration**	**Feasibility**	**Approximate cost**	**Implemented**
No reasonably practical alternative control measures identified.				

6.5.2.2 Additional Control Measures

Additional Control Measures Considered *Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures*				
Option considered	**Environmental consideration**	**Feasibility**	**Approximate cost**	**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. There is also no shoreline impact predicted, therefore, increased waste storage capability is not considered a benefit.	No

6.5.2.3 Improved Control Measures

Improved Control Measures considered *Improved control measures are evaluated for improvements they could bring to the effectiveness of adopted control measures in terms of functionality, availability, reliability, survivability, independence and compatibility*				
Option considered	**Environmental consideration**	**Feasibility**	**Approximate cost**	**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	Woodside already maintains an equipment stockpile in Exmouth to enable shorter response times to incidents. This stockpile includes temporary waste storage equipment. Woodside has access to stockpiles of waste storage and equipment in Dampier and Exmouth through existing contracts and arrangements.	The incremental benefit of having a dedicated local Woodside owned stockpile of waste equipment and transport is considered minor and cost is considered disproportionate to the benefit gained given there is no predicted shoreline contact.	No

	time of the event is considered low and existing arrangements provide adequate storage to support the response.			

6.5.3 Selected Control Measures

Following review of alternative, additional and improved control measures as outlined above, the following controls were selected for implementation for the PAP.

- Alternative
  - None selected
- Additional
  - None selected
- Improved
  - None selected

6.6 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.

6.6.1 Existing Capability – Scientific Monitoring

Woodside's existing level of capability is based on internal and third-party resources that are available 24 hours, 7 days per week. The capability presented below is displayed as ranges to incorporate operational factors such as weather, crew/vessel/aircraft/vehicle location and duties, survey or classification society inspection requirements, overflight/port/quarantine permits and inspections, crew/pilot duty and fatigue hours, re-fuelling/re-stocking provisions, and other similar logistic and operational limitations that are beyond Woodside's direct control.

6.6.2 Scientific Monitoring – Control Measure Options Analysis

6.6.2.1 Alternative Control Measures

Evaluate Alternative, Additional and Improved Control Measures

Alternative Control Measures considered
Alternative, including potentially more effective and/or novel control measures are evaluated as replacements for an adopted control

Ref	Control Measure Category	Option considered	Implemented	Environmental Consideration	Feasibility / Cost
SM01	System	Analytical laboratory facilities closer to the likely spill affected area	No	SM01 water quality monitoring requires water samples to be transported to National Association of Testing Authorities (NATA) rated laboratories in Perth or interstate. Consider the benefit of laboratory access and transportation times to deliver water samples and complete lab analysis. There is a time lag from collection of water samples to being in receipt of results and confirming hydrocarbon contact to sensitive receptors). The environmental consideration of having access to suitable laboratory facilities in Exmouth or Karratha to carry out the hydrocarbon analysis would provide faster turnaround in reporting of results only by a matter of days (as per the time to transport samples to laboratories).	Laboratory facilities and staff available at locations closer to the spill affected area can reduce reporting times only to a moderate degree (days) with associated high costs of maintaining capability do not improve the environmental benefit.
SM01	System	Dedicated contracted SMP vessel (exclusive to Woodside)	No	Would provide faster mobilisation time of scientific monitoring resources, environmental benefit associated with faster mobilisation time would be minor compared to selected options.	Chartering and equipping additional vessels on standby for scientific monitoring has been considered. The option is reasonably practicable but the sacrifice (charter costs and organisational complexity) is significant, particularly when compared with the anticipated availability of vessels and resources within in the required timeframes. The selected delivery provides capability to meet the scientific monitoring objectives, including collection of pre-emptive data where baseline knowledge gaps are identified for receptor locations where spill predictions of time to contact are >10 days. The effectiveness of this alternative control (weather dependency, availability and survivability) is rated as very low The cost and organisational complexity of employing a dedicated response vessel is considered disproportionate to the potential environmental benefit by adopting these delivery options.

6.6.2.2 Additional Control Measures

Additional Control Measures considered
Additional control measures are evaluated in terms of them reducing an environmental impact or an environmental risk when added to the existing suite of control measures

Ref	Control Measure Category	Option considered	Implemented	Environmental Consideration	Feasibility / Cost
SM01	System	Determine baseline data needs and provide implementation plan in the event of an unplanned hydrocarbon release	Yes	Address resourcing needs to collect post spill (pre-contact) baseline data as spill expands in the event of a loss of well containment from the PAP activities.	Woodside relies on existing environmental baseline for receptors which have predicted hydrocarbon contact (above environment threshold) <10 days and acquiring pre-emptive data in the event of an instantaneous marine diesel spill 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 spill from the activities.

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
  - Determine baseline data needs and activate SMPs for any identified PBAs in the event of an unplanned hydrocarbon release.
- Improved
  - None Selected.

6.6.4 Operational Plan

Key actions from the Scientific Monitoring Program Operational Plan for implementing the response are outlined in Table 6-4.

Table 6-4: Scientific monitoring program operational plan actions

Responsibility	Action
Activation	
CIMT Planning (CIMT Planning – Environment Unit)	Mobilise SMP Lead/Manager and SMP Coordinator to the CIMT Planning function.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager and SMP Coordinator)	Constantly assess all outputs from OM01, OM02 and OM03 (**Section 5** and **ANNEX B**: Operational Monitoring Activation and Termination Criteria) to determine receptor locations and receptors at risk. Confirm sensitive receptors likely to be exposed to hydrocarbons, timeframes to specific receptor locations and which SMPs are triggered. Review baseline data for receptors at risk.
CIMT Planning CIMT Planning – Environment Unit) (SMP Lead/Manager and SMP Coordinator)	SMP co-ordinator stands up the SMP contractor. Stands up subject matter experts, if required.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager SMP Coordinator, SMP standby contractor SMP manager)	Establish if, and where, pre-contact baseline data acquisition is required. Determine practicable baseline acquisition program based on predicted timescales to contact and anticipated SMP mobilisation times. Determine scope for preliminary post-contact surveys during the Response Phase. Determine which SMP activities are required at each location based on the identified receptor sensitivities.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP 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	SMP contractor, SMP standby contractor to prepare the Field Implementation Plan.

Responsibility	Action
(CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP standby contactor SMP manager)	Prepare and obtain sign-off of the Response Phase SMP work plan and Field Implementation Plan. Update the IAP.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator SMP standby contactor SMP manager)	Liaise with CIMT Logistics, and determine the status and availability of aircraft, vessels and road transportation available to transport survey personnel and equipment to point of departure. Engage with SMP standby contactor SMP Manager and CIMT Logistics to establish mobilisation plan, secure logistics resources and establish ongoing logistical support operations, including: • Vessels, vehicles and other logistics resources • Vessel fit-out specifications (as • Detailed in the Scientific Monitoring Program Operational Plan • Equipment storage and pick-up locations • Personnel pick-up/airport departure locations • Ports of departure • Land based operational centres and forward operations bases Accommodation and food requirements.
CIMT Planning (CIMT Planning – Environment Unit) (SMP Lead/Manager, SMP Coordinator, SMP standby contactor (SMP manager)	Confirm communications procedures between Woodside SMP team, SMP contractor SMP Duty Manager, SMP Team Leads and Operations Coordinator (CIMT).
Mobilisation	
CIMT Logistics	Engage vessels and vehicles and arrange fitting out as specified by the mobilisation Plan Confirm vessel departure windows and communicate with the SMP contractor SMP Duty Manager. Agree SMP mobilisation timeline and induction procedures with the Operations Coordinator (CIMT).
CIMT Logistics	Coordinate with SMP contactor SMP Duty Manager to mobilise teams and equipment according to the logistics plan and Sector induction procedures.
SMP Survey Team Leads	SMP Survey Team Leader(s) coordinate on-ground/on-vessel mobilisations and support services with the Operations Coordinator (CIMT).

6.6.5 ALARP and Acceptability Summary

ALARP and Acceptability Summary		
Scientific Monitoring		
ALARP Summary	X	All known reasonably practicable control measures have been adopted
	X	Additional Measures: Determine baseline data needs and activate SMPs for any identified PBAs in the event of an unplanned hydrocarbon release
		No reasonably practical additional, alternative, and/or improved control measure exists
	The resulting scientific monitoring capability has been assessed against the worst-case credible spill scenario. The range of strategies provide an ongoing approach to monitoring operations to assess and evaluate the scale and extent of impacts. All known reasonably practicable control measures have been adopted with the cost and organisational complexity of these options determined to be Moderate and the overall delivery effectiveness considered Medium. The SMP's main objectives can be met, with the addition of one alternative control measures to provide further benefit.	
Acceptability Summary	• The control measures selected for implementation manage the potential impacts and risks to ALARP. • In the event of a hydrocarbon spill for the PAP, the control measures selected, meet or exceed the requirements of Woodside Management System and industry best-practice. • Throughout the PAP, relevant Australian standards and codes of practice will be followed to evaluate the impacts from an instantaneous marine diesel spill. • The level of impact and risk to the environment has been considered with regard to the principles of Environmentally Sustainable Development (ESD); and risks and impacts from a range of identified scenarios were assessed in detail. The control measures described consider the conservation of biological and ecological diversity, through both the selection of control measures and the management of their performance. The control measures have been developed to account for the worst-case credible case scenario, and uncertainty has not been used as a reason for postponing control measures.	
On the basis from the ALARP impact assessment above and in Section 6 of the EP Woodside considers the adopted controls discussed, manage the impacts and risks associated with implementing scientific monitoring activities to a level that is ALARP and acceptable.		

7 ENVIRONMENTAL RISK ASSESSMENT OF SELECTED RESPONSE TECHNIQUES

The implementation of response techniques may modify the impacts and risks identified in the EP and response activities can introduce additional impacts and risks from response operations themselves. Therefore, it is necessary to complete an assessment to ensure these impacts and risks have been considered and specific measures are put in place to continually review and manage these further impacts and risks to ALARP and Acceptable levels. A simplified assessment process has been used to complete this task which covers the identification, analysis, evaluation and treatment of impacts and risks introduced by responding to the event.

7.1 Identification of impacts and risks from implementing response techniques

Each of the control measures can modify the impacts and risks identified in the EP. These impacts and risks have been previously assessed within the scope of the EP. Refer to the EP for details regarding how these risks are being managed. They are not discussed further in this document.

- Atmospheric emissions
- Routine and non-routine discharges
- Physical presence, proximity to other vessels (shipping and fisheries)
- Routine acoustic emissions vessels
- Lighting for night work/navigational safety
- Invasive marine species
- Collision with marine fauna
- Disturbance to seabed

Additional impacts and risks associated with the control measures not included within the scope of the EP include:

- Drill cuttings and drilling fluids environmental impact assessment for relief well drilling
- Vessel operations and anchoring
- Additional stress or injury caused to wildlife
- Waste generation.

7.2 Analysis of impacts and risks from implementing response techniques

The table below compares the adopted control measures for this activity against the environmental values that can be affected when they are implemented.

Table 7-1: Analysis of risks and impacts

	Environmental Value						
	Soil & Groundwater	Marine Sediment Quality	Water Quality	Air Quality	Ecosystems/ Habitat	Species	Socio-Economic
Monitor and evaluate		✓	✓		✓	✓	
Source control		✓	✓		✓	✓	✓
Oiled Wildlife					✓	✓	
Scientific Monitoring		✓	✓		✓	✓	✓
Waste Management	✓			✓	✓	✓	✓

7.3 Evaluation of impacts and risks from implementing response techniques

Drill cuttings and drilling fluids environmental impact assessment for relief well drilling

The identified potential impacts associated with the discharge of drill cuttings and fluids during a relief well drilling activity include a localised reduction in water and seabed sediment quality, and potential localised changes to benthic biota (habitats and communities).

A number of direct and indirect ecological impact pathways are identified for drill cuttings and drilling fluids as follows:

- temporary increase in total suspended solids (TSS) in the water column
- attenuation of light penetration as an indirect consequence of the elevation of TSS and the rate of sedimentation
- sediment deposition to the seabed leading to the alteration of the physio-chemical composition of sediments, and burial and potential smothering effects to sessile benthic biota
- potential contamination and toxicity effects to benthic and in-water biota from drilling fluids.

Potential impacts from the discharge of cuttings range from the complete burial of benthic biota in the immediate vicinity of the well site due to sediment deposition, smothering effects from raised sedimentation concentrations as a result of elevated TSS, changes to the physico-chemical properties of the seabed sediments (particle size distribution and potential for reduction in oxygen levels within the surface sediments due to organic matter degradation by aerobic bacteria) and subsequent changes to the composition of infauna communities to minor sediment loading above background and no associated ecological effects. Predicted impacts are generally confined to within a few hundred metres of the discharge point (International Association of Oil and Gas Producers 2016) (i.e. within the EMBA for a hydrocarbon spill event).

The discharge of drill cuttings and unrecoverable fluids from relief well drilling is expected to increase turbidity and TSS levels in the water column, leading to an increased sedimentation rate above ambient levels associated with the settlement of suspended sediment particles in close proximity to the seabed or below sea surface, depending on location of discharge. Cuttings with retained (unrecoverable) drilling fluids are discharged below the water line at the MODU location, resulting in drill cuttings and drilling fluids rapidly diluting, as they disperse and settle through the water column. The dispersion and fate of the cuttings is determined by

particle size and density of the retained (unrecoverable) drilling fluids, therefore, the sediment particles will primarily settle in proximity to the well locations with potential for localised spread downstream (depending on the speed of currents throughout the water column and seabed) (IOGP 2016). The finer particles will remain in suspension and will be transported further before settling on the seabed.

These conclusions were supported by discharge modelling which was undertaken by Woodside in support of the Greater Enfield Development EP. Modelling results indicating that the TSS plume of suspended cuttings will typically disperse to the south-west while oscillating with the tide and diminish rapidly with increasing distance from the well locations. Maximum TSS concentrations predicted for 100 m; 250 m and 1 km distances from the wellsite were 7, 5 and 1 mg/L, respectively. Furthermore, water column concentrations below 10 mg/L remain within 235 m of the discharge location for each modelled well. For all well discharge locations (outside of direct discharge sites), TSS concentration did not exceed 10 mg/l. Nelson et al. (2016) identified <10 mg/L as a no effect or sub-lethal minimal effect concentration.

The low sensitivity of the deep-water benthic communities/habitats within and in the vicinity of relief well locations, combined with the relatively low toxicity of water based muds (WBM) and non-water based muds (NWBMs), there being no bulk discharges of NWBM and the highly localised nature and scale of predicted physical impacts to seabed biota, indicate that any localised impact would likely be of a slight magnitude (especially when considering the broader consequence of the loss of well containment event that a relief well drilling activity would be responding too).

Vessel operations and anchoring

During the implementation of response techniques, where water depths allow, it is possible that response vessels will be required to anchor (e.g. during shoreline surveys and oiled wildlife response). 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.

Additional stress or injury caused to wildlife

Additional stress or injury to wildlife could be caused through the following phases of a response:

- capturing wildlife
- transporting wildlife
- stabilisation of wildlife
- cleaning and rinsing of oiled wildlife
- rehabilitation (e.g. diet, cage size, housing density)
- release of treated wildlife.

Inefficient capture techniques have the potential to cause undue stress, exhaustion or injury to wildlife, additionally pre-emptive capture could cause undue stress and impacts to wildlife when there are uncertainties in the forecast trajectory of the spill. During the transportation and stabilisation phases there is the potential for additional thermoregulation stress on captured wildlife. Additionally, during the cleaning process, it is important personnel undertaking the tasks are familiar with the relevant techniques to ensure that further injury and the removal of water proofing feathers are managed and mitigated. Finally, during the release phase it's important that wildlife is not released back into a contaminated environment.

Waste generation

Implementing oiled wildlife response may result in the generation of the following waste streams that will require management and disposal:

- Liquids (recovered oil/water mixture), recovered from oiled wildlife response operations
- Semi-solids/solids (oily solids), collected during oiled wildlife response operations
- Debris collected during oiled wildlife response.

If not managed and disposed of correctly, wastes generated during the response have the potential for secondary contamination, impacts to wildlife through contact with or ingestion of waste materials and contamination risks if not disposed of correctly onshore.

7.4 Treatment of impacts and risks from implementing response techniques

In respect of the impacts and risks assessed the following treatment measures have been adopted. It must be recognised that this environmental assessment is seeking to identify how to maintain the level of impact and risks at levels that are ALARP and of an acceptable level rather than exploring further impact and risk reduction. It is for this reason that the treatment measures identified in this assessment will be captured in Operational Plans, Tactical Response Plans (ANNEX E: Tactical Response Plans), and/or First Strike Plans.

Vessel operations and anchoring

- If vessels are required for access, anchoring locations will be selected to minimise disturbance to benthic primary producer habitats. Where existing fixed anchoring points are not available, locations will be selected to minimise impact to nearshore benthic environments with a preference for areas of sandy seabed where they can be identified (PS 7.1, PS 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 7.2, PS14.2).

Additional stress or injury caused to wildlife

- Oiled wildlife operations (including hazing) would be implemented with advice and assistance from the Oiled Wildlife Advisor from the DBCA and in accordance with the processes and methodologies described in the WA OWRP and the relevant regional plan (PS 13.3).

Waste generation

- Response teams will segregate liquid and solid wastes at the earliest opportunity (PS 15.4).

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 that:
    - All known, reasonably practicable control measures have been adopted.
    - No additional, reasonably practicable alternative and/or improved control measures would provide further environmental benefit.
    - No reasonably practical additional, alternative, and/or improved control measure exists.
- A structured process for considering alternative, additional, and improved control measures was completed for each control measure.
- The evaluation was undertaken based on the outputs of the WCCS so that the capability in place is sufficient for all other scenario from this activity.
- The likelihood of the WCCS spill has been ignored in evaluating what was reasonably practicable.

9 ACCEPTABILITY CONCLUSION

Following the ALARP evaluation process, Woodside deems the hydrocarbon spill risks and impacts 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/ 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.
Incident	An event where a release of energy resulted in or had (with) the potential to cause injury, ill health, damage to the environment, damage to equipment or assets or company reputation.
Major Environment Event	The events with potential environment, reputation, social or cultural consequences of category C or higher (as per Woodside's operational risk matrix) which are evaluated against credible worst-case scenarios which may occur when all controls are absent or have failed.
Performance outcome	A statement of the overall goal or outcome to be achieved by a control measure
Performance standard	The parameters against which [risk] controls are assessed to ensure they reduce risk to ALARP. A statement of the key requirements (indicators) that the control measure has to achieve in order to perform as intended in relation to its functionality, availability, reliability, survivability and dependencies.
Preparedness	Measures taken before an incident in order to improve the effectiveness of a response
Reasonably practicable	... a computation ... made by the owner, in which the quantum of risk is placed on one scale and the sacrifice involved in the measures necessary for averting the risk (whether in money, time or trouble) [showing whether or not] that there is a gross disproportion between them ... made by the owner at a point of time anterior to the accident. (Judgement: Edwards v National Coal Board [1949])
Receptors at risk	Physical, biological and social resources identified as at risk from hydrocarbon contact using oil spill modelling predictions.
Receptor areas	Geographically referenced areas such as bays, islands, coastlines and/or protected area (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.
Regulator	NOPSEMA are the Environment Regulator under the Environment Regulations.

Term	Description / Definition
Reliability	The probability that at any point in time a control measure will operate correctly for a further specified length of time.
Response technique	The key priorities and objectives to be achieved by the response plan Measures taken in response to an event to reduce or prevent adverse consequences.
Survivability	Whether or not a control measure is able to survive a potentially damaging event is relevant for all control measures that are required to function after an incident has occurred.
Threshold	Hydrocarbon threshold concentrations applied to the risk assessment to evaluate hydrocarbon spills. These are defined as: surface hydrocarbon concentration – ≥10 g/m^2, dissolved – ≥100 ppb and entrained hydrocarbon concentrations – ≥500 ppb.
EMBA	The summary of quantitative modelling where the marine environment could be exposed to hydrocarbons levels exceeding hydrocarbon threshold concentrations.
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.

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
BOP	Blowout Preventer
BOPE	Blowout Preventer Equipment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CF	Condition Factor
CFD	Computational Fluid Dynamic
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)
DISC	Drilling Industry Steering Committee
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

Abbreviation	Meaning
HSEQ	Health Safety Environment and Quality
HSP	Hydrocarbon Spill Preparedness
IAP	Incident Action Plan
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
LOWC	Loss Of Well Control
LSI	Liver Somatic Index
MARPOL	International Convention for the Prevention of Pollution from Ships
MODU	Mobile Offshore Drilling Unit
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

Abbreviation	Meaning
OSRL	Oil Spill Response Limited
OSRO	Oil Spill Response Organisation
OSTM	Oil Spill Trajectory Modelling
OWR	Oiled Wildlife Response
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
ROV	Remotely Operated Vehicle(s)
RPA	Response Protection Area
S&EM	Security and Emergency Management
SCAT	Shoreline Contamination Assessment Techniques
SCERP	Source Control Emergency Response Plan
SDH	Sorbitol Dehydrogenase
SFRT	Subsea First Response Toolkit
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	Simultaneous Operations
SM	Scientific Monitoring
SME	Subject Matter Expert
SMP	Scientific Monitoring Program
SOPEP	Shipboard Oil Pollution Emergency Plan
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
Woodside	Woodside Energy Limited
WWCI	Wild Well Control Inc

Abbreviation	Meaning
ZoA	Zone of Application

ANNEX A: NET ENVIRONMENTAL BENEFIT ANALYSIS DETAILED OUTCOMES

A NEBA has been conducted to assess the net environmental benefit of different response techniques to selected receptors in the event of an oil spill from the PAP for marine diesel (representing platform surface release during operations). The complete list of potential receptor locations within the EMBA within the PAP is included in the EP. As there were no RPAs identified, the locations utilised for the NEBA were based on receptors closest to the Scarborough well site. The detailed NEBA assessment outcomes are shown below.

Table A-1: NEBA assessment technique recommendations for a hydrocarbon release of marine diesel caused by vessel collision (CS-01)

Receptor	Monitor and Evaluate	Containment and Recovery	Dispersant application: sub-sea	Dispersant application: > 20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled Wildlife Response	In situ burning	Mechanical dispersion	Source control
Open Commonwealth waters (Operational Area)	Yes	No	No	No	No	No	No	No	Potentially	No	No	Yes
Gascoyne AMP	Yes	No	No	No	No	No	No	No	Potentially	No	No	Yes

Overall assessment

Sensitive receptor (Sites identified in EP)	Monitor and Evaluate	Containment and Recovery	Dispersant application: sub-sea	Dispersant application: > 20 m water depth and > 10 km from shore/reefs	Shoreline protection	Shoreline clean-up (manual)	Shoreline clean-up (mechanical)	Shoreline clean-up (chemical)	Oiled Wildlife Response	In situ burning	Mechanical dispersion	Source control
Is this response Practicable?	Yes	No	No	No	No	No	No	No	Potentially	No	No	Yes
NEBA identifies Response potentially of Net Environmental Benefit?	Yes	No	No	No	No	No	No	No	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 [6]	Potential duration of impact	Equivalent Woodside Corporate Risk Matrix Consequence Level
Positive	**3P**	**Major**	Likely to prevent: • behavioural impact to biological receptors • behavioural impact to socio-economic receptors e.g. changes to day-today business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches) or regulatory designations.	Decrease in duration of impact by > 5 years	N/A
	2P	**Moderate**	Likely to prevent: • significant impact to a single phase of reproductive cycle of biological receptors • detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors.	Decrease in duration of impact by 1–5 years	N/A

	1P	**Minor**	Likely to prevent impacts on:
			• significant proportion of population or breeding stages of biological receptors
			• socio-economic receptors such as:
			  ○ significant impact to the sensitivity of protective designation; or
			  ○ significant and long-term impact to business/industry.
				Decrease in duration of impact by several seasons (< 1 year)	N/A

	0	**Non-mitigated spill impact**	**No detectable difference to unmitigated spill scenario.**		
	1N	**Minor**	Likely to result in: • behavioural impact to biological receptors • behavioural impact to socio-economic receptors e.g. changes to day-to-day business operations, public opinion/behaviours (e.g. avoidance of amenities such as beaches), or regulatory designations.	Increase in duration of impact by several seasons (< 1 year)	Increase in risk by one sub-category, without changing category (e.g. Minor (E) to Minor (D))
Negative	**2N**	**Moderate**	Likely to result in: • significant impact to a single phase of reproductive cycle for biological receptors; or • detectable financial impact, either directly (e.g. loss of income) or indirectly (e.g. via public perception), for socio-economic receptors. This level of negative impact is recoverable and unlikely to result in closure of business/industry in the region.	Increase in duration of impact by 1–5 years	Increase in risk by one category (e.g. Minor (D) to Moderate (C or B))

	3N	**Major**	Likely to result in impacts on:
			• significant proportion of population or breeding stages of biological receptors
			• socio-economic receptors resulting in either:
			  ○ significant impact to the sensitivity of protective designation; or
			  ○ significant and long-term impact to business/industry.
				Increase in duration of impact by > 5 years or unrecoverable	Increase in risk by two categories (e.g. Minor (E) to Major (A))

[6] the maximum likely impact should be considered; for example, if a spill were to directly impact the behaviour that results in an impact to reproduction and/or the breeding population (such as fish failing to aggregate to spawn), then the score should be a 2 or 3 rather than a 1. Similarly, if a change in behaviour resulted in an increased risk of mortality of a population, then it should be scored as a 2 or 3.

ANNEX B: OPERATIONAL MONITORING ACTIVATION AND TERMINATION CRITERIA

Table B-1: Operational monitoring objectives, triggers and termination criteria

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational Monitoring Operational Plan 1 (OM01) Predictive modelling of hydrocarbons to assess resources at risk	OM01 focuses on the conditions that have prevailed since a spill commenced, as well as those that are forecasted in the short term (1–3 days ahead) and longer term. OM01 utilises computer-based forecasting methods to predict hydrocarbon spill movement and guide the management and execution of spill response operations to maximise the protection of environmental resources at risk. The objectives of OM01 are to: • Provide forecasting of the movement and weathering of spilled hydrocarbons • Identify resources that are potentially at risk of contamination • Provide simulations showing the outcome of alternative response options (booming patterns etc.) to inform on- NEBA and continually assess the efficacy of available response options in order to reduce risks to ALARP	OM01 will be triggered immediately following a level 2/3 hydrocarbon spill.	The criteria for the termination of OM01 are: • The hydrocarbon discharge has ceased • Response activities have ceased • Hydrocarbon spill modelling (as verified by OM02 surveillance observations) predicts no additional natural resources will be impacted

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational Monitoring Operational Plan 2 (OM02) Surveillance and reconnaissance to detect hydrocarbons and resources at risk	OM02 aims to provide regular, on-going hydrocarbon spill surveillance throughout a broad region, in the event of a spill. The objectives of OM02 are: • Verify spill modelling results and recalibrate spill trajectory models (OM01) • Understand the behaviour, weathering and fate of surface hydrocarbons • Identify environmental receptors and locations at risk or contaminated by hydrocarbons • Inform ongoing NEBA and continually assess the efficacy of available response options in order to reduce risks to ALARP • To aid in the subsequent assessment of the short- to long-term impacts and/or recovery of natural resources (assessed in SMPs) by ensuring that the visible cause and effect relationships between the hydrocarbon spill and its impacts to natural resources have been observed and recorded during the operational phase.	OM02 will be triggered immediately following a level 2/3 hydrocarbon spill.	The termination triggers for the OM02 are: • 72 hours has elapsed since the last confirmed observation of surface hydrocarbons • Latest hydrocarbon spill modelling results (OM01) do not predict surface exposures at visible levels
Operational Monitoring Operational Plan 3 (OM03) Monitoring of hydrocarbon presence, properties, behaviour and weathering in water	OM03 will measure surface, entrained and dissolved hydrocarbons in the water column to inform decision-making for spill response activities. The specific objectives of OM03 are as follows: • Detect and monitor for the presence, quantity, properties, behaviour and weathering of surface, entrained and dissolved hydrocarbons • Verify predictions made by OM01 and observations made by OM02 about the presence and extent of hydrocarbon contamination Data collected in OM03 will also be used for the purpose of longer-term water quality monitoring during SM01.	OM03 will be triggered immediately following a level 2/3 hydrocarbon spill.	The criteria for the termination of OM03 are as follows: • The hydrocarbon release has ceased • Response activities have ceased • Concentrations of hydrocarbons in the water are below available ANZECC/ ARMCANZ (2000) trigger values for 99% species protection.

Operational Monitoring Operational Plan	Objectives	Activation triggers	Termination criteria
Operational Monitoring Operational Plan 4 (OM04) Pre-emptive assessment of sensitive receptors at risk	OM04 aims to undertake a rapid assessment of the presence, extent and current status of shoreline sensitive receptors prior to contact from the hydrocarbon spill, by providing categorical or semi-quantitative information on the characteristics of resources at risk. The primary objective of OM04 is to confirm understanding of the status and characteristics of environmental resources predicted by OM01 and OM02 to be at risk, to further assist in making decisions on the selection of appropriate response actions and prioritisation of resources. Indirectly, qualitative/semi-quantitative pre-contact information collected by OM04 on the status of environmental resources may also aid in the verification of environmental baseline data and provide context for the assessment of environmental impacts, as determined through subsequent SMPs.	Triggers for commencing OM04 include: • Contact of a sensitive habitat or shoreline is predicted by OM01, OM02 and/or OM03 • The pre-emptive assessment methods can be implemented before contact from hydrocarbons (once a receptor has been contacted by hydrocarbons it will be assessed under OM05)	The criteria for the termination of OM04 at any given location are: • Locations predicted to be contacted by hydrocarbons have been contacted • The location has not been contacted by hydrocarbons and is no longer predicted to be contacted by hydrocarbons (resources should be reallocated as appropriate)
Operational monitoring operational plan 5 (OM05) Monitoring of contaminated resources	OM05 aims to implement surveys to assess the condition of fauna and habitats contacted by hydrocarbons at sensitive habitat and shoreline locations. The primary objectives of OM05 are: • Record evidence of oiled fauna (mortalities, sub-lethal impacts, number, extent, location) and habitats (mortalities, sub-lethal impacts, type, extent of cover, area, hydrocarbon character, thickness, mass and content) throughout the response and clean-up at locations contacted by hydrocarbons to inform and prioritise clean-up efforts and resources, while minimising the potential impacts of these activities. Indirectly, the information collected by OM05 may also support the assessment of environmental impacts, as determined through subsequent SMPs.	OM05 will be triggered when a sensitive habitat or shoreline is predicted to be contacted by hydrocarbons by OM01, OM02 and/or OM03.	The criteria for the termination of OM05 at any given location are: • No additional response or clean-up of fauna or habitats is predicted • Spill response and clean-up activities have ceased OM05 survey sites established at sensitive habitat and shoreline locations will continue to be monitored during SM02. The formal transition from OM05 to SM02 will begin on cessation of spill response and clean-up activities.

ANNEX C: OIL SPILL SCIENTIFIC MONITORING PROGRAM

Oil Spill Environmental Monitoring

The following provides some further detail on Woodside's oil spill Scientific Monitoring Program and includes the following:

- the organisation, roles and responsibilities of the woodside oil spill scientific monitoring team and external resourcing
- a summary table of the ten scientific monitoring programs as per the specific focus receptor, objectives, activation triggers and termination criteria
- details on the oil spill environmental monitoring activation and termination decision-making processes
- baseline knowledge and environmental studies knowledge access via geo-spatial metadata databases
- an outline of the reporting requirements for oil spill scientific monitoring programs.

Oil Spill Scientific Monitoring – Delivery Team Roles and Responsibilities

Woodside Oil Spill Scientific Monitoring Delivery Team

The Woodside science team are responsible for the delivery of the oil spill scientific monitoring. The roles and responsibilities of the Woodside scientific monitoring delivery team are presented in Table C-1 and the organisational structure and Corporate Incident Management Team (CIMT) linkage provided in Figure C-1.

Woodside Oil Spill Scientific monitoring program - External Resourcing

In the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors, scientific monitoring personnel and scientific equipment to implement the appropriate SMPs will be provided by standby SMP 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 standby SMP contractor and/or specialist contractors, the selection, field sampling and approach of the SMPs will be determined by the nature and scale of the spill.

Table C-1: Woodside and Environmental Service Provider – Oil Spill Scientific Monitoring Program Delivery Team Key Roles and Responsibilities

Role	Location	Responsibility
Woodside Roles		
SMP Lead/ Manager	Onshore	• Approves activated the SMPs based on operational monitoring data provided by the Planning Function • Provides advice to the CIMT in relation to scientific monitoring • Provides technical advice regarding the implementation of scientific monitoring • Approves detailed sampling plans prepared for SMPs • Directs liaison between statutory authorities, advisors and government agencies in relation to SMPs.
SMP Co-ordinator	Onshore	• Activates the SMPs based on operational monitoring data provided by the Planning Function • Sits in the Planning function of the CIMT. • Liaises with other CIMT functions to deliver required logistics, resources and operational support from Woodside to support the Environmental Service Provider in delivering on the SMPs. Acts as the conduit for advice from the Chief Environmental Scientist to the Environmental Service Provider • Manages the Environmental Service Provider's implementation of the SMPs • Liaises with the Environmental Service Provider on delivery of the SMPs • Arranges all contractual matters, on behalf of Woodside, associated with the Environmental Service Provider's delivery of the SMPs.
Environmental Service Provider Roles		
SMP Standby Contractor – SMP Duty Manager/Project Manager (SMP Liaison Officer)	Onshore	• Coordinates the delivery of the SMPs • Provides costings, schedule and progress updates for delivery of SMPs • Determines the structure of the Environmental Service Provider's team to necessitate delivery of the SMPs • Verifies that HSE Plans, detailed sampling plans and other relevant deliverables are developed and implemented for delivery of the SMPs • Directs field teams to deliver SMPs • Arranges all contractual matters, on behalf of Environmental Service Provider, associated with the delivery of the SMPs to Woodside • Manages sub-consultant delivery to Woodside • Provides required personnel and equipment to deliver the SMPs.
SMP Field Teams	Offshore – Monitoring Locations	• Delivers the SMPs in the field consistent with the detailed sampling plans and HSE requirements, within time and budget. • Early communication of time, budget, HSE risks associated with delivery of the SMPs to the Environmental Service Provider – Project Manager • Provides start up, progress and termination updates to the Environmental Service Provider – Project Manager (will be led in-field by a party chief).

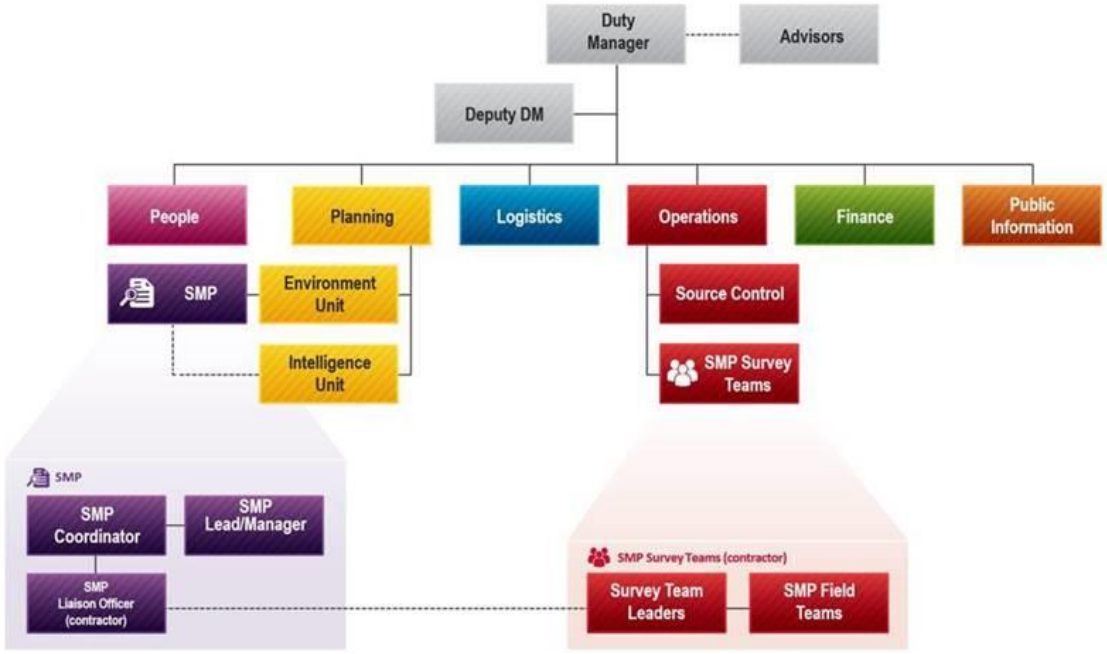

Figure C-1: Woodside Oil Spill Scientific Monitoring Program Delivery Team and linkage to Corporate Incident Management Team (CIMT) organisational structure.

Table C-2: Oil Spill Environmental Monitoring: Scientific Monitoring Program - Objectives, Activation Triggers and Termination Criteria

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
Scientific monitoring program 1 (SM01) **Assessment of Hydrocarbons in Marine Waters**	SM01 will detect and monitor the presence, extent, persistence and properties of hydrocarbons in marine waters during and post-spill and response. The specific objectives of SM01 are as follows: • Assess and document the extent, severity and persistence of hydrocarbon contamination with reference to observations made during surveillance activities and / or in-water measurements made during operational monitoring; and • Provide information that may be used to interpret potential cause and effect drivers for environmental impacts recorded for sensitive receptors monitored under other SMPs.	SM01 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors	SM01 will be terminated when: • Operational monitoring data relating to observations and / or measurements of hydrocarbons on and in water have been compiled, analysed and reported; and • The report provides details of the extent, severity and persistence of hydrocarbons which can be used for analysis of impacts recorded for sensitive receptors monitored under other SMPs. SMP monitoring of sensitive receptor sites: • Concentrations of hydrocarbons in water samples are below NOPSEMA guidance note (2019[7]) concentrations of 1 g/m2 for floating, 10 ppb for entrained and dissolved; and • Details of the extent, severity and persistence of hydrocarbons from concentrations recorded in water have been documented at sensitive receptor sites monitored under other SMPs.
Scientific monitoring program 2 (SM02) **Assessment of the Presence, Quantity and Character of Hydrocarbons in Marine Sediments**	SM02 will detect and monitor the presence, extent, persistence and properties of hydrocarbons in marine sediments following the spill and the response. The specific objectives of SM02 are as follows: • Determine the extent, severity and persistence of hydrocarbons in marine sediments across selected sites where hydrocarbons were observed or recorded during operational monitoring; and • Provide information that may be used to interpret potential cause and effect drivers for environmental impacts recorded for sensitive receptors monitored under other SMPs.	SM02 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • Response activities have ceased; and • Operational monitoring results made during the response phase indicate that shoreline, intertidal or sub-tidal sediments have been exposed to surface, entrained or dissolved hydrocarbons (at or above 0.5 g/m^2 surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m^2 for shoreline accumulation).	SM02 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: • Concentrations of hydrocarbons in sediment samples are below ANZECC/ ARMCANZ (2013[8]) sediment quality guideline values (SQGVs) for biological disturbance; and • Details of the extent, severity and persistence of hydrocarbons from concentrations recorded in sediments have been documented.
Scientific monitoring program 3 (SM03) **Assessment of Impacts and Recovery of Subtidal and Intertidal Benthos**	The objectives of SM03 are: • Characterize the status of intertidal and subtidal benthic habitats and quantify any impacts to functional groups, abundance and density that may be a result of the spill; and • Determine the impact of the hydrocarbon spill and subsequent recovery (including impacts associated with the implementation of response options). Categories of intertidal and subtidal habitats that may be monitored include: • Coral reefs • Seagrass • Macro-algae • Filter-feeders SM03 will be supported by sediment contamination records (SM02) and characteristics of the spill derived from OMPs.	SM03 will be activated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • As part of a pre-emptive assessment of PBAs of receptor locations identified by time to hydrocarbon contact >10 days, to target receptors and sites where it is possible to acquire pre-hydrocarbon contact baseline; and • Operational monitoring identified shoreline potential contact of hydrocarbons (at or above 0.5 g/m^2 surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m^2 for shoreline accumulation) for subtidal and intertidal benthic habitat.	SM03 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: • Overall impacts to benthic habitats from hydrocarbon exposure have been quantified. • Recovery of impacted benthic habitats has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 4 (SM04) **Assessment of Impacts and Recovery of Mangroves / Saltmarsh**	The objectives of SM04 are: • Characterize the status of mangroves (and associated salt marsh habitat) at shorelines exposed/contacted by spilled hydrocarbons; • Quantify any impacts to species (abundance and density) and mangrove/saltmarsh community structure; and • Determine and monitor the impact of the hydrocarbon spill and potential subsequent recovery (including impacts associated with the implementation of response options). SM03 will be supported by sediment sampling undertaken in SM02 and characteristics of the spill derived from OMPs.	SM04 will be activated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; and	SM04 will be terminated once pre-spill condition is reached and agreed upon as per the SMP termination criteria process and include consideration of: • Impacts to mangrove and saltmarsh habitat from hydrocarbon exposure have been quantified. • Recovery of impacted mangrove/saltmarsh habitat has been evaluated.

[7] NOPSEMA (2019) Bulletin #1 – Oil spill modelling – April 2019, https://www.nopsema.gov.au/assets/Bulletins/A652993.pdf
[8] 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
		• Operational monitoring identified shoreline potential contact of hydrocarbons (at or above 0.5 g/m^2 surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m^2 for shoreline accumulation) for mangrove/saltmarsh habitat.	• Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 5 (SM05) **Assessment of Impacts and Recovery of Seabird and Shorebird Populations**	The Objectives of SM05 are to: • Collate and quantify impacts to avian wildlife from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population level; and • Undertake monitoring to quantify and assess impacts of hydrocarbon exposure to seabirds and shorebird populations at targeted breeding colonies / staging sites / important coastal wetlands where hydrocarbon contact was recorded.	SM05 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented as follows: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; • Operational monitoring predicts shoreline contact of hydrocarbons (at or above 0.5 g/m^2 surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m^2 for shoreline accumulation) at important bird colonies / staging sites / important coastal wetland locations; or • Records of dead, oiled or injured bird species made during the hydrocarbon spill or response.	SM05 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Impacts to seabird and shorebird populations from hydrocarbon exposure have been quantified. • Recovery of impacted seabird and shorebird populations has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 6 (SM06) **Assessment of Impacts and Recovery of Nesting Marine Turtle Populations**	The objectives of SM06 are to: • To quantify impacts of hydrocarbon exposure or contact on marine turtle nesting populations (including impacts associated with the implementation of response options); • Collate and quantify impacts to adult and hatchling marine turtles from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population levels (including impacts associated with the implementation of response options); .and • Undertake monitoring to quantify and assess impacts of hydrocarbon exposure to nesting marine turtle populations at known rookeries (including impacts associated with the implementation of response options).	SM06 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring has: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; • Predicted shoreline contact of hydrocarbons (at or above 0.5 g/m^2 surface, 5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m^2 for shoreline accumulation) at known marine turtle rookery locations; or • Records of dead, oiled or injured marine turtle species made during the hydrocarbon spill or response.	SM06 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Impacts to nesting marine turtle populations from hydrocarbon exposure have been quantified. • Recovery of impacted nesting marine turtle populations has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 7 (SM07) **Assessment of Impacts to Pinniped Colonies including Haul-out Site Populations**	The objectives of SM07 are to: • Quantify impacts on pinniped colonies and haul-out sites as a result of hydrocarbon exposure/contact. • Collate and quantify impacts to pinniped populations from results recorded during OM02 and OM05 (such as mortalities, oiling, rescue and release counts) and undertake a desk-based assessment to infer potential impacts at species population levels.	SM07 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring has: • As part of a pre-emptive assessment of receptor locations identified by time to hydrocarbon contact >10 days; • Identified shoreline contact of hydrocarbons ((at or above 0.5 g/m^2 surface, ≥5 ppb for entrained/dissolved hydrocarbons and ≥1 g/m^2 for shoreline accumulation) at known pinniped colony or haul-out site(s) (i.e. most northern site is the Houtman Abrolhos Islands); or • Records of dead, oiled or injured pinniped species made during the hydrocarbon spill or response.	SM07 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Impacts to pinniped populations from hydrocarbon exposure have been quantified. • Recovery of pinniped populations has been evaluated. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 8 (SM08) **Desk-Based Assessment of Impacts to Other Non-Avian Marine Megafauna**	The objective of SM08 is to provide a desk-based assessment which collates the results of OM02 and OM05 where observations relate to the mortality, stranding or oiling of mobile marine megafauna species not addressed in SM06 or SM07, including: • Cetaceans; • Dugongs; • Whale sharks and other shark and ray populations; • Sea snakes; and • Crocodiles.	SM08 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring reports records of dead, oiled or injured non-avian marine megafauna during the spill/ response phase.	SM08 will be terminated when the results of the post-spill monitoring have quantified impacts to non-avian megafauna. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.

Scientific monitoring Program (SMP)	Objectives	Activation Triggers	Termination Criteria
	The desk-based assessment will include population analysis to infer potential impacts to marine megafauna species populations.		
Scientific monitoring program 9 (SM09) **Assessment of Impacts and Recovery of Marine Fish associated with SM03 habitats**	The objectives of SM09 are: • Characterise the status of resident fish populations associated with habitats monitored in SM03 exposed/contacted by spilled hydrocarbons; • Quantify any impacts to species (abundance, richness and density) and resident fish population structure (representative functional trophic groups); and • Determine and monitor the impact of the hydrocarbon spill and potential subsequent recovery (including impacts associated with the implementation of response options).	SM09 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented with SMO3.	SM09 will be undertaken and terminated concurrent with monitoring undertaken for SM03, as per the SMP termination criteria process • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.
Scientific monitoring program 10 (SM10) **SM10 - Assessment of physiological impacts important fish and shellfish species (fish health and seafood quality/safety) and recovery**	SM10 aims to assess any physiological impacts to important commercial fish and shellfish species (assessment of fish health) and if applicable, seafood quality/safety. Monitoring will be designed to sample key commercial fish and shellfish species and analyse tissues to identify fish health indicators and biomarkers, for example: • Liver Detoxification Enzymes (ethoxyresorufin-O-deethylase (EROD) activity) • Polyaromatic Hydrocarbon (PAH) Biliary Metabolites • Oxidative DNA Damage • Serum Sorbitol Dehydrogenase (SDH) activity • Other physiological parameters, such as condition factor (CF), liver somatic index (LSI), gonado-somatic index (GSI) and gonad histology, total weight, length, condition, parasites, egg development, testes development, abnormalities. Seafood tainting may be included (where appropriate) using applicable sensory tests to objectively assess targeted finfish and shellfish species for hydrocarbon contamination. Results will be used to make inferences on the health of commercial fisheries and the potential magnitude of impacts to fishing industries.	SM10 will be initiated in the event of a Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors and implemented if operational monitoring (OM01, OM02 and OM05) indicates the following: • The hydrocarbon spill will or has intersected with active commercial fisheries or aquaculture activities. • Commercially targeted finfish and/or shellfish mortality has been observed/recorded. • Commercial fishing or aquaculture areas have been exposed to hydrocarbons (≥0.5 g/m^2 surface and ≥5 ppb for entrained/dissolved hydrocarbons); and • Taste, odour or appearance of seafood presenting a potential human health risk is observed.	SM10 will be terminated once it is agreed that the receptor has returned to pre-spill condition. The SMP termination criteria process will be followed and include consideration of: • Physiological impacts to important commercial fish and shellfish species from hydrocarbon exposure have been quantified. • Recovery of important commercial fish and shellfish species from hydrocarbon exposure has been evaluated. • Impacts to seafood quality/safety (if applicable) have been assessed and information provided to the relevant persons/ organisations and regulators for the management of any impacted fisheries. • Agreement with relevant persons/ organisations and regulators based on the nature and scale of the hydrocarbon spill impacts and/or that observed impacts can no longer be attributed to the spill.

Activation Triggers and Termination Criteria

Scientific monitoring program activation

The Woodside oil spill scientific monitoring team will be stood up immediately with the occurrence of a hydrocarbon spill (actual or suspected) Level 2 or 3 hydrocarbon release, or any release event with the potential to contact sensitive environmental receptors via the First Strike plan for the petroleum activity programme. The presence of any level of hydrocarbons in the marine environment triggers the activation of the oil spill scientific monitoring program (SMP). This is to ensure the full range of eventualities relating to the environmental, socio-economic and health consequences of the spill are considered in the planning and execution of the SMP. The activation process also takes into consideration the management objectives, species recovery plans, conservation advices and conservations plans for any World Heritage Area (WHA), AMPs, 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 which SMPs are activated, and the 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, AMPs and State Marine Parks encompassing key ecological and socio-economic values) are a key focus of the SMP activation decision-making process, particularly, in the early spill event/response phase. As the operational monitoring progresses and further situational awareness information becomes available, it will be possible to understand the nature and scale of the spill. The SMP activation and implementation decision-making will be revisited on a daily basis to account for the updates on spill information. One of the priority focus areas in the early phase of the incident will be to identify and execute pre-emptive SMP assessments at key receptor locations, as required. The SMP activation and implementation decision tree is presented in Figure C-2.

Scientific monitoring program termination

The basis of the termination process for the active SMPs (SMPs 1-10) will include quantification of impacts, evaluation of recovery for the receptor at risk and consultation with relevant authorities, persons and organisations. Termination of each SMP will not be considered until the results (as presented in annual SMP reports for the duration of each program) indicate that the target receptor has returned to pre-spill condition.

Once the SMP results indicate impacted receptor(s) have returned to pre-spill condition (as identified by Woodside) a termination decision-making process will be triggered and a number of steps will be undertaken as follows:

- Woodside will engage expert opinion on whether the receptor has returned to pre-spill condition (based on monitoring data). Subject Matter Expert (SMEs) will be engaged (via the Woodside SME scientific monitoring terms of reference) to review program outcomes, provide expert advice and recommendations for the duration of each SMP.
- Where expert opinion agrees that the receptor has returned to pre-spill condition, findings will then be presented to the relevant authorities, persons and organisations (as defined by the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulation 11A). Identification of relevant persons/ organisations, planning and engagement will be managed by Woodside's Reputation Functional Support Team (FST) and follow the

stakeholder management FST guidelines. These guidelines outline the FST roles and responsibilities, competencies, communications and planning processes. An assessment of the merits of any objection to termination will be documented in the SMP final report.

- Woodside will decide on termination of SMP based on expert opinion and merits of any relevant persons/ organisations objections. The final report following termination will include monitoring results, expert opinion and consultation including merits of any objections.
- Termination of SMPs will also consider applicable management objectives, species recovery plans, conservation advices and conservations plans for any World Heritage Area (WHA), AMPs, State Marine Parks, other protected area designations (e.g., State nature reserves) and Matters of National Environmental Significance (including listed species under part 3 of the EPBC Act).

The SMP termination decision-making process will be applied to each active SMP and an iterative process of decision steps continued until each SMP has been terminated (refer to decision-tree diagram for SMP termination criteria, Figure C-3).

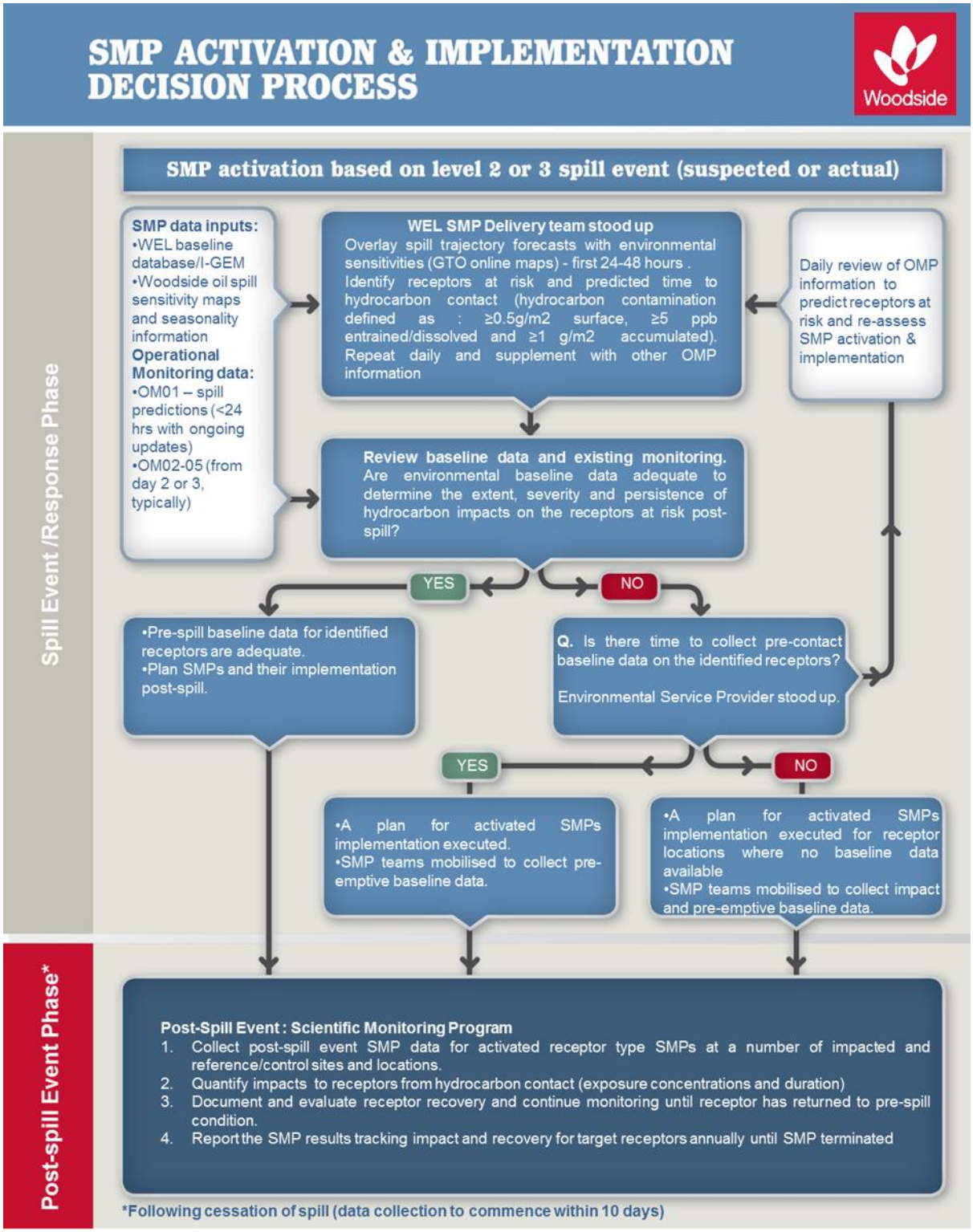

Figure C-2: Activation and Implementation Decision-tree for Oil Spill Environmental Monitoring

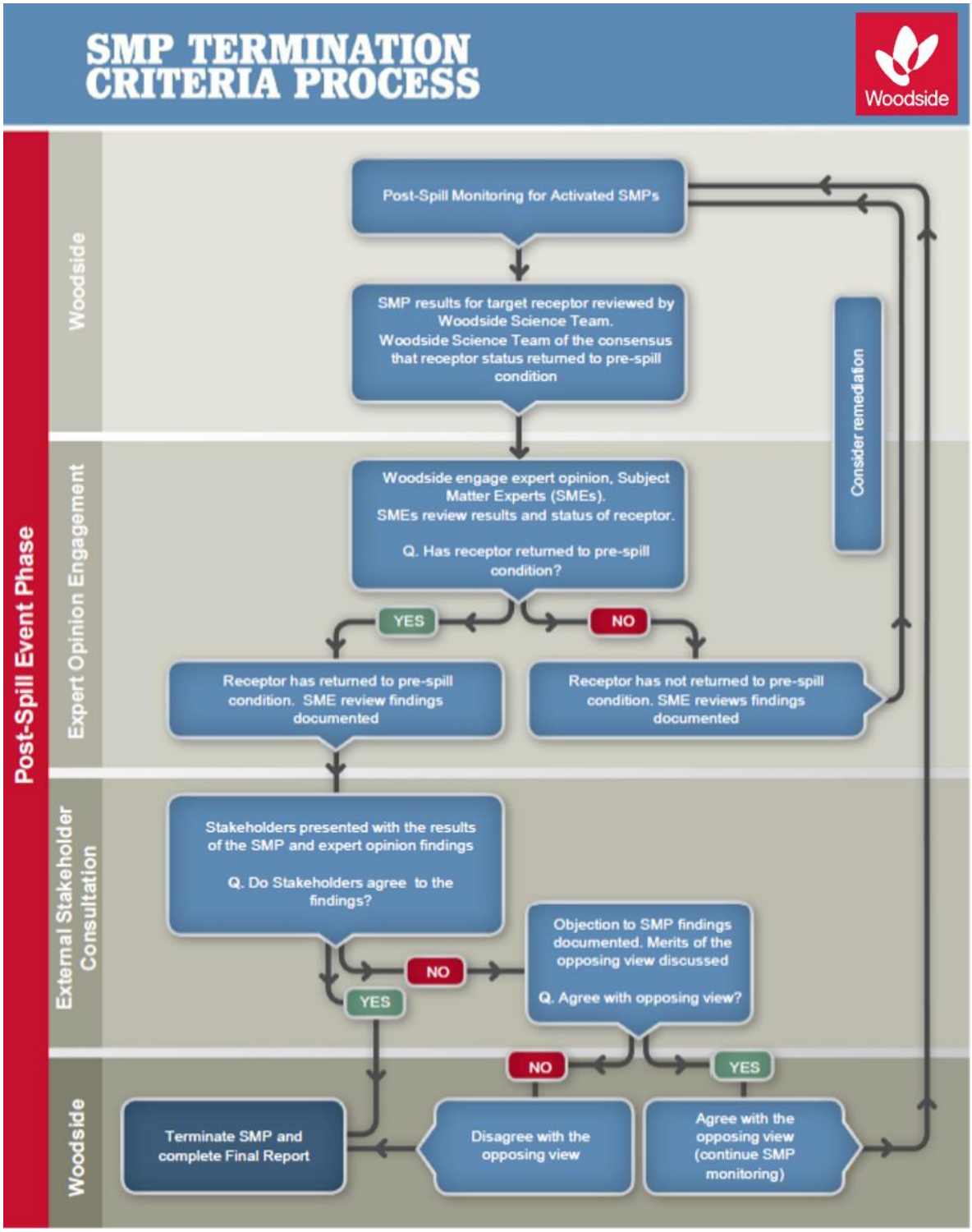

Figure C-3: Termination Criteria Decision-tree for Oil Spill Environmental Monitoring

Receptors at Risk and Baseline Knowledge

In order to assess the baseline studies available and suitability for oil spill scientific monitoring, Woodside maintains knowledge of environmental baseline studies through the upkeep and use of its Environmental Knowledge Management System.

Woodside's Environmental Knowledge Management System is a centralised platform for scientific information on the existing environment, marine biodiversity, Woodside environmental studies, key environmental impact topics, key literature and web-based resources. The system comprises a number of data directories and an environmental baseline database, as well as folders within the 'Corporate Environment' server space. The environmental baseline database was set up to support Woodside's SMP preparedness and as a SMP resource in the event of an unplanned hydrocarbon spill. The environmental baseline database is subject to updates including annual reviews completed as part of the contracted SMP standby, 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)[9] in 2020. The Index of Marine Surveys for Assessments (IMSA) is an online portal to information about marine-based environmental surveys in Western Australia. IMSA is a project of the Department of Water and Environmental Regulation 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.

[9] https://biocollect.ala.org.au/imsa#max%3D20%26sort%3DdateCreatedSort

ANNEX D: SCIENTIFIC MONITORING PROGRAM AND BASELINE STUDIES FOR THE PETROLEUM ACTIVITIES PROGRAM

Table D-1: Oil Spill Environmental Monitoring – scientific monitoring program scope for the Petroleum Activities Program based on Spill EMBA for worse case credible spill CS-01

Note: the Commonwealth Marine Environment and Gascoyne AMP are the predicted sensitive receptors to be exposed to hydrocarbons.

Receptors to be Monitored	Applicable SMP	Receptor Areas - Potential Impact and Reference Scientific Monitoring Sites (marked X)																																						
		Kimberley AMP	Agro-Rowley Terrace AMP	Montebello AMP	Dampier AMP	Carnarvon Canyon AMP	Ningaloo AMP	Gascoyne AMP	Shark Bay Open Ocean (including AMP)	Abrolhos AMP	Jurien AMP	Two Rocks AMP	Perth Canyon AMP	Geographe AMP	South-west Corner AMP	Ashmore Reef and AMP	Seringapatam Reef	Scott Reef (North and South)	Mermaid Reef and AMP	Clerke Reef and State Marine Park	Imperieuse Reef and State Marine Park	Rankin Bank	Glomar Shoals	Rowley Shoals (including Sate Maine Park)	Fantome Shoal	Adele Island	Lacepede Islands	Montebello Islands (including State Marine Park)	Lowendal Islands (including State Nature Reserves)	Barrow Island (including State Nature Reserves, State Marine Park and Marine Management Area)	Muiron Islands (WHA, Marine Management Area)	Pilbara Islands - Southern Island Group (Serrurier, Thevenard and Bessieres Islands - State Nature Reserves)	Pilbara Islands - Northern Island Group (Sandy Island Passage Islands - State nature reserves)	Abrolhos Islands	Kimberley Coast	Dampier Peninsula	Northern Pilbara Shoreline	Ningaloo Coast (North/North West Cape, Middle and South) (WHA, and State Marine Park)	Shark Bay - Open Ocean Coast	Shark Bay (WHA, State Marine Park)	Ngari Capes State Marine Park
Habitat																																								
Water Quality	SM01	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Marine Sediment Quality	SM02	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Coral Reef	SM03	X		X												X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	
Seagrass / Macro-Algae	SM03	X									X					X	X	X									X	X	X	X	X	X	X	X	X	X	X	X	X	X
Deeper Water Filter Feeders	SM03	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X							X			
Mangroves and Saltmarsh	SM04																											X					X	X	X	X	X		X	
Species																																								
Sea Birds and Migratory Shorebirds (significant colonies / staging sites / coastal wetlands)	SM05	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Marine Turtles (significant nesting beaches)	SM06	X	X	X	X		X	X	X							X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	
Pinnipeds (significant colonies / haul-out sites)	SM07									X	X	X			X																									X
Cetaceans - Migratory Whales	SM08	X	X	X	X		X	X	X	X	X	X	X	X	X			X									X	X	X	X	X			X	X	X		X	X
Oceanic and Coastal Cetaceans	SM08	X	X	X	X		X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Dugongs	SM08	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	
Whale Sharks	SM08			X			X	X										X										X	X	X	X						X			
Other Shark and Ray Populations	SM08, SM09	X	X	X	X		X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Fish Assemblages	SM09	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Socio-economic																																								
Fisheries - Commercial	SM10		X	X	X	X	X	X	X	X	X	X										X	X	X	X			X	X	X		X	X	X	X	X	X	X	X	X
Fisheries - Traditional	SM10															X	X	X									X												X	
Tourism (incl. recreational fishing)	SM10	X		X			X	X	X		X			X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	X

	Receptor areas identified as Pre-emptive Baseline Areas (based on criteria of surface contact and/or entrained hydrocarbon contact ≤10 days (Offshore Australian Marine Parks contacted by hydrocarbons in this timeframe also noted)
	Receptor areas identified as Pre-Emptive Basline Areas in the response phase >10 days (based on criteria of surface contact and/or entrained hydrocarbon contact >10 days)
	Receptor areas that may be identified as impact or reference sites in the event of major hydrocarbon release and would be identified as part of the SMP planning process

Table D-2 is not presented given the Commonwealth Marine Environment and Gascoyne AMP are the predicted sensitive receptors to be exposed to hydrocarbons no baseline studies for applicable SMPs are documented. SM01 water quality and hydrocarbon detection would be activated in the response phase of an unplanned spill event.

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 Is - Stephenson Channel Nth
Montebello Is Champagne Bay & Chippendale channel
Montebello Is - Claret Bay
Montebello Is - Hermite/Delta Is Channel
Montebello Is - Hock Bay
Montebello Is - North & Kelvin Channel
Montebello Is - Sherry Lagoon Entrance
Withnell Bay
Holden Bay
King Bay
No Name Bay / No Name Beach
Enderby Is -Dampier
Rosemary Island - Dampier
Legendre Is - Dampier

Karratha Gas Plant (KGP)
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

APPENDIX F. CONSULTATION

Scarborough Drilling and Completions Environment Plan

Table 1 and 2 and Appendix F

Date: October 2023

Revision: 6

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APPENDIX F

Table 1: Consultation report with relevant persons or organisations.

Commonwealth and WA State Government Departments or Agencies – Marine

Australian Border Force (ABF)

Woodside considers it has discharged its obligations 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 July 2021.
- Consultation information provided to ABF on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the ABF with the opportunity to provide feedback over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed ABF advising of the proposed activity (Appendix F, Reference 1.2) and provided a Consultation Information Sheet.
- On 27 January 2023, Woodside emailed ABF with an update on the proposed activity (Appendix F, Reference 1.38) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.62).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	Woodside has addressed maritime security-related issues in Section 6 of this EP based on previous offshore activities. No additional measures or controls are required.

Australian Fisheries Management Authority (AFMA)

Woodside considers it has discharged its obligations 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 July 2021.
- Consultation information provided to AFMA on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting

comments or feedback.

- Woodside has addressed and responded to AFMA over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed AFMA advising of the proposed activity (Appendix F, Reference 1.13) and provided a Consultation Information Sheet and Fisheries Map (Appendix F, Reference 1.15).
- On 5 July 2021, AFMA responded, noting that it cannot comment on individual proposals.
- On 3 February 2023, Woodside emailed AFMA with an update on the proposed activity (Appendix F, Reference 1.55) and provided an updated Consultation Information Sheet and Fisheries Map.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.63).
- 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
AFMA provided feedback stating: • They were unable to comment on individual proposals but Woodside should consult with all fishers with entitlements within the proposed area. • This could be done via relevant fishing industry associations and contacts were provided. • AFMA advised they were changing the way they provided information and requested Woodside sign a Deed of Confidentiality. • Whilst feedback has been received, there were no objections or claims.	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. Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders. 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. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. No additional measures or controls are required.

	may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	

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 July 2021.
- Consultation information provided to AHO on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to AHO over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed AHO advising of the proposed activity (Appendix F, Reference 1.3) and provided a Consultation Information Sheet and shipping lanes map (Appendix F, Reference 1.4).
- On 27 January 2023, Woodside emailed AHO with an update on the proposed activity (Appendix F, Reference 1.39) and provided an updated Consultation Information Sheet and fisheries maps. 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 1.85).
- On 1 March 2023, the AHO responded and acknowledged receipt of Woodside's consultation email.
- On 9 March 2023, Woodside emailed AHO with a corrected version of the shipping lane map (Appendix F, Reference 1.85).
- On 10 March 2023, the AHO responded and acknowledged receipt of Woodside's consultation email.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	AHO has acknowledged receipt of Woodside's consultation emails. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where	Woodside will notify the AHO no less than four working weeks before operations commence, as referenced as a C 4.3 in this EP. No additional measures or controls are required.

	appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	

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 July 2021.
- Consultation information provided to AMSA on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to AMSA over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed AMSA advising of the proposed activity (Appendix F, Reference 1.5) and provided a Consultation Information Sheet and Shipping lanes map (Appendix F, Reference 1.4).
- On 5 July 2021, AMSA emailed Woodside and provided advice on obtaining vessel traffic plots, including digital datasets and maps. AMSA also requested that:
  - The AHO 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 commenced.
  - Updates were to be provided to the AHO and JRCC should there be changes to the activity.
  - Vessels were to exhibit appropriate lights and shapes to reflect the nature of operations and to comply with the International Rules of Preventing Collisions at Sea.
- On 22 July 2021, Woodside emailed AMSA confirming that Woodside would:
  - Notify the AHO no less than 4 weeks before operations commence
  - Notify AMSA's JRCC at least 24-48 hours before operations commence
  - Notify AMSA's JRCC when operations end
  - Provide updates to both the AHO and AMSA on any material changes to planned activities
  - Woodside also confirmed vessels will exhibit appropriate lights and shapes to reflect the nature of operations and the obligation to comply with the International Rules for Preventing Collisions at Sea.
- On 27 January 2023, Woodside emailed AMSA with an update on the proposed activity (Appendix F, Reference 1.39) and provided an updated Consultation Information Sheet and fisheries maps. On the same day, Woodside confirmed it would make available a shipping lane map as soon as possible.
- On 31 January 2023, AMSA emailed Woodside requesting:
  - Additional information relating to moorings and their potential impact on shipping traffic.
  - Woodside to confirm its current GIS data so that AMSA can map it and assess navigation safety.

- 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:
  - Provided a vessel traffic plot showing AIS data and an updated vessel traffic plot for the Scarborough area of interest.
  - AMSA reiterated its 31 January 2023 request.
- On 28 February 2023, Woodside emailed AMSA:
  - Provided additional information relating to the mooring.
  - Provided an updated shipping lane map (Appendix F, Reference 1.85).
- On 3 March 2023 AMSA emailed Woodside:
  - Requested explanation on whether the floating production unit (FPU) would obstruct a charted shipping fairway and where the FPU would be located?
  - Requested clarification on the vessel traffic plots provided and how the Environment that May Be Affected (EMBA) areas will actually be affected by working vessels, support craft and associated activities.
  - AMSA commented that the EMBAs are quite large unique areas, so AMSA is curious about the extent of vessel traffic and activity within these areas and lines of traffic and charted shipping fairways.
- On 8 March 2023 Woodside emailed AMSA advising (Appendix F, Reference 1.87):
  - The location and depth of the Scarborough FPU and its composition
  - The environment that may be affected (EMBA) is the largest spatial extent where the PAP 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 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.
  - Woodside also provided an updated version of the shipping lane map noting there was an error on the previous version (Appendix F, Reference 1.85).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
AMSA provided feedback relating to: • Advice on obtaining vessel traffic plots, including digital datasets and maps • Notification requirements - the AHO to be contacted no less than four working weeks before operations commenced • AMSA's Joint Rescue Coordination Centre (JRCC) to be notified at least 24–48 hours before operations commenced • The AHO and JRCC to be updated should there be changes to the activity • Vessel light and shapes (navigational aid) requirements - vessels were to exhibit appropriate lights and shapes to reflect the nature of operations and to comply with the International Rules of Preventing Collisions at Sea. AMSA requested further information relating to: • Additional information relating to moorings and their potential impact on shipping traffic. • Woodside to confirm its current GIS data so that AMSA can map it and assess navigation safety. • Woodside to send its updated Shipping Lane figures. • The Floating Production Unit (FPU) and vessel collisions.	Woodside addressed AMSA's requests and confirmed it would: • Notify the AHO no less than 4 weeks before operations commence • Notify AMSA's JRCC at least 24-48 hours before operations commence • Notify AMSA's JRCC when operations end • Provide updates to both the AHO and AMSA on any material changes to planned activities. • Woodside also confirmed vessels would exhibit appropriate lights and shapes to reflect the nature of operations and the obligation to comply with the International Rules for Preventing Collisions at Sea. Woodside provided the additional information requested. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	Woodside will notify AMSA's JRCC at least 24–48 hours before operations commence, as referenced as C 4.5 in this EP. Woodside will notify AHO no less than four working weeks before operations commence, as referenced as a C 4.3 in this EP. Woodside considers the measures and controls in the EP are appropriate.
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 July 2021.
- Consultation information provided to AMSA on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has provided the AMSA with the opportunity to provide feedback over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed AMSA advising of the proposed activity (Appendix F, Reference 1.5) and provided a Consultation Information Sheet and shipping lanes map (Appendix F, Reference 1.4).
- On 13 July 2021, Woodside emailed AMSA and noted it had sent the previous consultation to the wrong email address. Woodside asked if AMSA needed additional time to review.
- On 6 October 2021, Woodside emailed AMSA and provided a copy of the Oil Pollution First Strike Plan.
- On 27 January 2023, Woodside emailed AMSA with an update on the proposed activity (Appendix F, Reference 1.38) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.62).

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	Woodside has addressed oil spill preparedness and response strategy planning in Appendix D. No additional measures or controls are required.

***Department of Climate Change, Energy, the Environment and Water Agriculture (DCCEEW) / Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries / Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (marine pests, vessels, aircraft and personnel)* (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 July 2021. • Consultation information provided to DCCEEW on 2 July 2021 based on their function, interest and activities. • Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback. • Woodside has addressed and responded to DCCEEW over a 23 month period. **Summary of information provided and record of consultation:** • On 2 July 2021, Woodside emailed DCCEEW advising of the proposed activity (Appendix F, Reference 1.17) and provided a Consultation Information Sheet and a map of relevant fisheries (Appendix F, Reference 1.15). • On 17 December 2021, Woodside emailed DCCEEW: - Woodside sought clarification around the Pygmy Blue Whale CMP, the Department's Guideline and NOPSEMA's FAQ in relation to the definition of, and Woodside's interpretation of BIAs. - Woodside requested clarification of its understanding of the documents on the DCCEEW website, (Blue Whale CMP) which state that "BIAs are not defined under the EPBC Act, but they are areas that are particularly important for the conservation of protected species and where aggregations of individuals display biologically important behaviour such as calving, foraging, resting or migration. BIAs have been identified using expert scientific knowledge about species' distribution abundance and behaviour". - Woodside clarified that consequently, distribution in itself is not a BIA (for blue whales); whereas areas where biologically important behaviour such as calving, foraging, resting or migration clearly are BIAs. • On 20 December 2021, DCCEEW emailed Woodside: - DCCEEW advised that the definition provided is the agreed working definition of BIAs and this interpretation is correct, BIAs are not defined or described under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). They are however a geospatial tool used to inform regulatory decision-making given the biologically critical behaviours that they represent. - DCCEEW advised that the assumption is correct, that the entire distribution of the blue whale is not considered a BIA. The 'distribution BIA' for the blue whale, as designated in the National Conservation Values Atlas (NCVA) does not constitute a BIA (that represents an area where biologically important behaviour is displayed, such as foraging and migration for the blue whale). DAWE believe the distribution BIA was included in the NCVA following development of the Conservation Management Plan for the Blue Whale (CMP) to flag the importance of their range. - DCCEEW 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 DCCEEW's limited knowledge about the distribution and abundance of these subspecies, little is currently known about the location and characteristics of these habitats. To

date, the best information relates to biologically important areas where foraging occurs. These foraging areas can be considered important to the survival of blue whales as they seasonally support highly productive ecosystem processes on which significant aggregations of whales rely."

- DCCEEW advised that the Blue Whale CMP provides an indicative map of 'Pygmy blue whale distribution around Australia' which shows annual high use, known and possible foraging areas. The Blue Whale CMP also provides an indicative map of known and likely migration routes. DCCEEW advised that 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 - Fisheries with an update on the proposed activity (Appendix F, Reference 1.40) and provided an updated Consultation Information Sheet and fisheries maps.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.77).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
In the course of preparing this and other Woodside EPs, DCCEEW has provided clarification around the Blue Whale CMP, the Department's Guideline and NOPSEMA's FAQ in relation to the definition of, and Woodside's interpretation of BIAs. Whilst feedback has been received, there were no objections or claims.	Woodside notes DCCEEW clarification around the Blue Whale CMP, the Department's Guideline and NOPSEMA's FAQ in relation to the definition of BIAs. Woodside's interpretation of the Blue Whale CMP advice has been applied in the EP, see Section 4. Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	The Environment Plan demonstrates that the proposed activities are outside the boundaries of a proclaimed Commonwealth Marine Park and identifies that there are no credible impacts to the values of any Commonwealth Marine Parks as a result of planned activities (Section 4). 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 an incident, as demonstrated in Section 6.8.2 and Section 6.8.3. The Environment Plan demonstrates that there are no known underwater heritage sites or shipwrecks within the Petroleum Activities Area and identifies that there are no credible impacts as a result of planned activities (Section 4). 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 an incident, as demonstrated in Section 6.8.2 and Section 6.8.3. Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.9.2 of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. Woodside has addressed maritime biosecurity issues

		in Section 6 of this EP based on previous offshore activities. No additional measures or controls are required.

Department of Defence (DoD)

Woodside considers it has discharged its obligations 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 July 2021.
- Consultation information provided to DoD on 2 July 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 DoD over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 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 1.7).
- On 2 August 2021, DoD emailed Woodside and provided feedback regarding unexploded ordnance risks and DoD's notification requirements prior to activity commencement.
- On 4 August 2021, Woodside emailed DoD requesting shape files and further detail about UXO.
- On 4 August 2021, DOD emailed Woodside a map with details.
- On 27 January 2023, Woodside emailed DoD advising of the proposed activity (Appendix F, Reference 1.41) and provided a 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 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.		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
DoD has provided feedback relating to: • The location of the activity in proximity to the NWXA and the potential presence of UXO. • Notification requirements DoD has provided advice relating to: • Details of its restricted airspace and Defence Training Areas off the WA Coast Whilst feedback has been received, there were no objections or claims.	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. Woodside acknowledges the potential presence of UXOs and has considered this in its risk assessment planning. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	Woodside has addressed DoDs expectations on notifications – Defence, restricted air space and AHO as in Control 4.8 and 4.3 in Section 6.7.4. 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. Woodside considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Department of Primary Industries and Regional Development (DPIRD)

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 July 2021.
- Consultation information provided to DPIRD on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to DPIRD over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed DPIRD advising of the proposed activity (Appendix F, Reference 1.16) and provided a Consultation Information Sheet and Fisheries Map (Appendix F, Reference 1.15).
- On 3 February 2023, Woodside emailed DPIRD with an update on the proposed activity (Appendix F, Reference 1.51) and provided an updated Consultation Information Sheet and fisheries maps.
- On 24 February 2023, Woodside emailed DPIRD on other Scarborough EPs and asked DPIRD whether it also had feedback on this EP.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
DPIRD has provided feedback that the activity is proposed for waters unlikely to influence fishing activities and it has no further comments at this time. Whilst feedback has been received, there were no objections or claims.	Woodside confirmed with DPIRD it has consulted state commercial fishery licence holders and recreational fishery licence holders that are active within the EMBA for the proposed activity. (See this Consultation Report with Commonwealth and State Fisheries.) Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.9.2 of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. No additional measures or controls are required.

Department of Transport (DoT)

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 July 2021.
- Consultation information provided to DoT on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to DoT over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed DoT advising of the proposed activity (Appendix F, Reference 1.2) and provided a Consultation Information Sheet.
- On 16 July 2021, DoT responded, advising that if there is a risk of a spill impacting State water from the proposed activities, DoT should be consulted.
- On 6 October 2021, Woodside emailed DoT and provided a copy of the Oil Pollution First Strike Plan.
- On 12 October 2021, DoT responded, noting that as there is a low risk to State waters, a full review has not been deemed necessary at this time. DoT requested a copy of the accepted version of the OPEP once finalised.
- On 12 October 2021, Woodside responded, thanking DoT for the feedback and confirmed Woodside will submit a copy of the OPEP to DoT once accepted.
- On 27 January 2023, Woodside emailed DoT with an update on the proposed activity (Appendix F, Reference 1.38) and provided an updated Consultation Information Sheet.
- On 7 February 2023, DoT responded restating its advice from 18 May 2021.
- On 22 February 2023, Woodside responded confirming that if there is a risk of a spill impacting State waters, the Department of Transport will be consulted.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
DoT has provided feedback relating to: • Consultation requirements in the event of a spill impacting State waters from any of the proposed activities. • The draft Oil Pollution First Strike Plan and a request for a final accepted version of the plan when available.	Woodside has addressed DoT's feedback regarding the Oil Pollution First Strike Plan and incorporated referenced changes based on feedback. Woodside will send DoT a copy of the First Strike Plan once accepted. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been	Woodside will consult DoT if there is a spill impacting State waters from the proposed activity, as referenced in the OSPRMA (Appendix D). Woodside will provide DoT with a copy of the accepted Oil Pollution First Strike Plan (Appendix H), as referenced in the OSPRMA (Appendix D). No additional measures or controls are required.

Whilst feedback has been received, there were no objections or claims.	accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	

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 July 2021.
- Consultation information provided to DNP on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to DNP over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed DNP advising of the proposed activity (Appendix F, Reference 1.8) and provided a Consultation Information Sheet.
- On 11 August 2021, DNP responded and noted that there are no authorisation requirements from the DNP. The DNP confirmed it does not require further notification of progress made in relation to the activity unless details regarding the activity change and result in an overlap with new impact to a marine park, or for emergency response.
- On 27 January 2023, Woodside emailed DNP with an update on the proposed activity (Appendix F, Reference 1.38) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, Reference 1.62).
- On 24 February 2023, DNP emailed Woodside:
  - DNP noted 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 5 July 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 (Appendix F, Reference 1.86):
  - Woodside acknowledged the comments already provided by DNP previously on each of the relevant EPs and that DNP has no further comment or objections and claims.

- Copies of DNP's previous responses have been received and have been addressed where relevant within each of the proposed EPs.
- Woodside provided clarification that the Operational Area includes both the Active Source Area and a surrounding buffer for the purpose of vessel line turns and other vessel manoeuvres.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
DNP provided feedback about the Operational Area and that it has no comment on the proposed activity. Whilst feedback has been received, there were no objections or claims.	Woodside has addressed DNP's feedback and provided additional information on the operational area. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	The Environment Plan demonstrates that the proposed activities are outside the boundaries of a proclaimed Commonwealth Marine Park and identifies that there are no credible impacts to the values of any Commonwealth Marine Parks as a result of planned activities (Section 4). 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 an incident, as demonstrated in Section 6.8.2 and Section 6.8.3. Woodside will ensure DNP is made aware of any incidences within a marine park for the activity, as per the commitment in the Oil Pollution First Strike Plan (Appendix H; Table 1-1). No additional measures or controls are required.

Department of Biodiversity, Conservation and Attractions (DBCA)

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 July 2021.
- Consultation information provided to DBCA on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to DBCA over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed DBCA advising of the proposed activity (Appendix F, Reference 1.2) and provided a Consultation Information Sheet.
- On 20 July 2021, DBCA responded, noting that DBCA has no comments on the proposed activities. DBCA noted that Woodside should continue to provide future notifications to the department.

- On 27 January 2023, Woodside emailed DBCA with an update on the proposed activity (Appendix F, Reference 1.38) and provided an updated Consultation Information Sheet.
- On 8 February 2023, DBCA emailed Woodside:
  - 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.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
DBCA provided feedback that it has no comment on the proposed activity. Whilst feedback has been received, there were no objections or claims.	Woodside acknowledges that DBCA had no comment on the proposed activities. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	The Environment Plan demonstrates that the proposed activities are outside the boundaries of a proclaimed State Marine Park and identifies that there are no credible impacts to the values of any State Marine Parks as a result of planned activities (**Section 4.9)**. While impacts to State Marine Parks are not expected in the event of an unplanned hydrocarbon spill, Woodside considers it adopts appropriate controls to prevent a hydrocarbon spill and controls to respond in the highly unlikely event of a hydrocarbon spill, as demonstrated in Section 6.7.2 and Section 6.7.3. No additional measures or controls are required.

Commonwealth and State Government Departments or Agencies – Industry

Department of Industry, Science and Resources (DISR) (formerly DISER)

Woodside considers it has discharged its obligations 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 July 2021.
- Consultation information provided to DISR on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the DISR with the opportunity to provide feedback over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed DISR advising of the proposed activity (Appendix F, Reference 1.2) and provided a Consultation Information Sheet.
- On 27 January 2023, Woodside emailed DISR with an update on the proposed activity (Appendix F, Reference 1.38) and provided an updated Consultation Information Sheet.
- On 22 February 2023 Woodside sent a follow up email (Appendix, Reference 1.62).

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

Department of Mines, Industry Regulation and Safety (DMIRS)

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 July 2021.
- Consultation information provided to DMIRS on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to DMIRS over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed DMIRS advising of the proposed activity (Appendix F, Reference 1.2) and provided a Consultation Information Sheet.
- On 7 July 2021, DMIRS responded to Woodside and noted that the email had been reviewed and no further information was required. DMIRS requested commencement and cessation notification for the activities.
- On 27 January 2023, Woodside emailed DMIRS with an update on the proposed activity (Appendix F, Reference 1.38) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.62).

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Environment Plan Controls***

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 sent DMIRS updates on the proposed activity and follow up emails. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	Woodside will provide notifications to DMIRS prior to the commencement and at the end of the activity, as referenced in Table 7-5 in this EP. Woodside considers the measures and controls in the EP are appropriate. No additional measures or controls are required.

Commonwealth Commercial fisheries and representative bodies

Western Deepwater Trawl Fishery

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 July 2021.
- Consultation information provided to Western Deepwater Trawl Licence Holders on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the Western Deepwater Trawl Licence Holders with the opportunity to provide feedback over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed Western Deepwater Trawl Licence Holders advising of the proposed activity (Appendix F, Reference 1.11) and provided a Consultation Information Sheet and Fisheries Map (Appendix F, Reference 1.15).
- On 3 February 2023, Woodside emailed licence holders with an update on the proposed activity (Appendix F, Reference 1.49) and provided an updated Consultation Information Sheet and fisheries map.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.71).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.9.2 of this EP.

	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. No additional measures or controls are required.

North West Slope and Trawl Fishery

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to North West Slope and Trawl Fishery Licence Holders on 3 February 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided North West Slope and Trawl Fishery Licence Holders with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside emailed North West Slope and Trawl Fishery Licence Holders on the proposed activity (Appendix F, Reference 1.49) and provided a Consultation Information Sheet and fisheries map.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.71).

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.9.2 of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of

	appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. No additional measures or controls are required.

Commonwealth Fisheries Association (CFA)

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 July 2021.
- Consultation information provided to CFA on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to CFA over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed CFA advising of the proposed activity (Appendix F, Reference 1.12) and provided a Consultation Information Sheet and fisheries map (Appendix F, Reference 1.15).
- On 3 February 2023, Woodside emailed CFA on the proposed activity (Appendix F, Reference 1.49) and provided an updated Consultation Information Sheet and fisheries map.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, Reference 1.71).
- On 22 February 2023, CFA emailed Woodside:
  - CFA advised it is not resourced to give feedback on Woodside's EP.
  - CFA requested to direct enquiries to the associations that represent the directly affected fisheries/fishers.
  - CFA noted that the increasing volume of requests for consultation on EP from oil and gas and more recently windfarm proposals are beyond the capacity of most associations. For this reason, please be prepared to engage those associations on a fee for service basis.
- On 15 March 2023, Woodside emailed CFA:
  - Woodside confirmed it has provided consultation information directly to fishery licence holders that it has assessed as 'relevant persons' for the proposed EP, as well as to their fishery representative bodies.
  - As per Woodside's ongoing consultation approach, feedback continues to be assessed and responded to, as required, through the life of an EP.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**

CFA 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. Whilst feedback has been received, there were no objections or claims.	Woodside has addressed the CFA's feedback, including confirming it has provided consultation information directly to licence holders it has assessed as 'relevant persons' for the proposed EP as well as their fishery representative bodies. Woodside has provided consultation information to AFMA, DAFF - Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.9.2 of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. No additional measures or controls are required.

State Commercial fisheries and representative bodies

Marine Aquarium Managed Fishery

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Marine Aquarium Managed Fishery on 3 February 2023 based on their function, interest and activities.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided the Marine Aquarium Managed Fishery with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside sent a letter to the Marine Aquarium Managed Fishery on the proposed activity (Appendix F, Reference 1.50) and provided a Consultation Information Sheet and fisheries map.
- On 22 February 2023, Woodside sent a follow up letter (Appendix F, Reference 1.68).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its	Environment Plan Controls

	Response	
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. No additional measures or controls are required.

Mackerel Managed Fishery (Area 2 and 3)

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Mackerel Managed Fishery (Area 2 and 3) on 3 February 2023 based on their function, interest and activities.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided the Mackerel Managed Fishery with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside sent a letter to the Mackerel Managed Fishery (Area 2 and 3) on the proposed activity (Appendix F, Reference 1.50) and provided a Consultation Information Sheet and fisheries map.
- On 22 February 2023 Woodside sent a follow up letter (Appendix F, Reference 1.68).

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders.	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.9.2 of this EP.

	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. No additional measures or controls are required.

West Coast Deep Sea Crustacean Managed Fishery

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to West Coast Deep Sea Crustacean Managed Fishery on 3 February 2023 based on their function, interest and activities.
- Woodside has sent a follow up letter seeking feedback on the proposed activities.
- Woodside has provided the West Coast Deep Sea Crustacean Managed Fishery with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside sent a letter to the West Coast Deep Sea Crustacean Managed Fishery on the proposed activity (Appendix F, Reference 1.50) and provided a Consultation Information Sheet and fisheries map.
- On 22 February 2023, Woodside sent a follow up letter (Appendix F, Reference 1.68).

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.9.2 of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of

		activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. No additional measures or controls are required.

Pilbara Line Fishery

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Pilbara Line Fishery on 3 February 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the Pilbara Line Fishery with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside emailed to the Pilbara Line Fishery on the proposed activity (Appendix F, Reference 1.56) and provided a Consultation Information Sheet and fisheries map.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.67).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to DPIRD, WAFIC, and individual relevant licence holders. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in **Section 4.9.2** of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. No additional measures or controls are required.

Western Australian Fishing Industry Council (WAFIC)

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 July 2021.
- Consultation information provided to WAFIC on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to WAFIC over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed WAFIC advising of the proposed activity (Appendix F, Reference 1.14) and provided a Consultation Information Sheet and fisheries map (Appendix F, Reference 1.15).
- On 2 August 2021, WAFIC responded. WAFIC asked for clarification of how cautionary / operational zones are determined. WAFIC also asked for confirmation that Woodside has considered data, communications, support, process and commitments regarding unplanned activities. WAFIC also confirmed that a no fishing from support / commercial vessels policy should in included in the EP.
- On 10 September 2021, Woodside responded to WAFIC's queries, providing information on how operational zones are determined, and Woodside's consideration of data, communications, support, process and commitments regarding unplanned activities. Woodside also confirmed that no recreational fishing from vessels will be included as a commitment in the EP.
- On 19 October 2021, WAFIC responded, thanking Woodside for the responses provided and noted that WAFIC has no additional comments at this stage.
- On 3 February 2023, Woodside emailed WAFIC on the proposed activity (Appendix F, Reference 1.52) and provided an updated Consultation Information Sheet and fisheries map.
- On 22 February 2023 Woodside sent a follow up email (Appendix F, Reference 1.64).
- 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.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
WAFIC asked for further clarifications cautionary / operational zones and confirmation that Woodside has considered data, communications, support, process and commitments regarding unplanned activities. WAFIC provided the expectation that there will be no fishing from support / commercial vessels. Expectations around a different consulting model suggesting priority would be given to Titleholders who embrace fee-for-service. WAFIC and Woodside are working towards a more strategic approach and tailored model to consult the commercial fishery sector..	Woodside has addressed WAFIC's feedback and confirmed that of data, communications, support, process and commitments regarding unplanned activities has been considered. Woodside has addressed WAFICs feedback on fishing from support / commercial vessels in Section 7.6.2 of the EP. 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. Woodside agreed to identify a more strategic and tailored model to consult the commercial fishery sector on environment plans. 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 has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.9.2 of this EP. Woodside will provide notifications to AFMA, CFA, DAFF (fisheries), WAFIC, DPIRD, Recfishwest, individual fishery licence holders and other oil and gas operators (if agreed during consultation) ten days before activity commences, and following completion of activities, as per Table 7-5 and Control 4.4 in Section 6.7.4 of this EP. Woodside has consulted WAFIC in the course of preparing this EP. Woodside has assessed the claims or objections raised by WAFIC. No additional measures or controls have been put in place. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on WAFIC's functions, interests or activities.

	Woodside will apply its Management of Change and Revision process (see **Section 7**).	

Recreational marine users and representative bodies

Exmouth Recreational Marine Users

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Exmouth Recreational Marine Users on 3 February 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the Exmouth Recreational Marine Users with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 3 February 2023, Woodside emailed Exmouth Recreational Marine Users on the proposed activity (Appendix F, Reference 1.53) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.65).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Review process (see Section 7).	No additional measures or controls are required.

Gascoyne Recreational Marine Users

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Gascoyne Recreational Marine Users on 6 February 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the Gascoyne Recreational Marine Users with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 6 February 2023, Woodside sent a letter to Gascoyne Recreational Marine Users on the proposed activity (Appendix F, Reference 1.58) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.69).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

Recfishwest

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Recfishwest on 27 January 2023 based on their function, interest and activities.

- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Recfishwest with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Recfishwest advising of the proposed activity (Appendix F, Reference 1.42) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.72).

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 responded to and incorporated feedback from Recfishwest on other Scarborough EPs. Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

Marine Tourism Association 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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Marine Tourism Association WA on 27 January 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the Marine Tourism Association WA with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Marine Tourism Association WA advising of the proposed activity (Appendix F, Reference 1.42) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.72).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

WA Game Fishing Association (WAGFA)

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to WAGFA on 27 January 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the WAGFA with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed WAGFA advising of the proposed activity (Appendix F, Reference 1.42) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.72).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls

No feedback, objections or claims received despite follow up.	Woodside has provided consultation information to Recfishwest, Marine Tourism Association of WA, WA Game Fishing Association and individual recreational marine users. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

Titleholders and Operators

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

Woodside considers it has discharged its obligations 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 July 2021.
- Consultation information provided to Chevron on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to Chevron over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed Chevron advising of the proposed activity (Appendix F, Reference 1.9) and provided a Consultation Information Sheet and titleholders map (Appendix F, Reference 1.10).
- On 27 January 2023, Woodside emailed Chevron Australia advising of the proposed activity (Appendix F, Reference 1.44) and provided an updated Consultation Information Sheet. Woodside requested that Chevron forward the consultation information to Chevron's Joint Venture partners Osaka Gas Gorgon, Tokyo Gas Gorgon and JERA Gorgon for feedback.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.73).
- On 22 March 2023, Chevron emailed Woodside:
  - Chevron advised it was actively reviewing a list of 10 of Woodside's EP submissions.
  - Chevron advised the current forecast is for the list to be completed by mid-April at the latest, although it has prioritised a list of five EPs to be completed sooner.
  - Chevron requested for Woodside to advise if there is a particular EP that is of higher urgency so that it can prioritise its review accordingly. Once this initial backlog is clear Chevron anticipates being in a position to respond within 30 days.

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

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

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
Chevron has provided feedback on the proposed activity noting: • No impact identified Chevron has requested: • GIS shapefiles for the proposed activity. • If the work plan is executed during the cyclone season, Woodside is to provide cyclone anchor configuration, as well as mooring design, site specific geophysical and geotechnical data, anchor analysis, risk mitigations to inform Chevron Australia of the potential risks to its assets within the affected leases.	Woodside provided GIS shapefiles for this proposed activity. With respect to mooring during cyclone season, Woodside advised Chevron that 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 any of Chevron's assets (Janzs) and therefore there are no credible risks to Chevron assets. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Chevron's functions, interests or activities. No additional measures or controls are required.

Whilst feedback has been received, there were no objections or claims.	EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	

Exxon Mobil Australia

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 July 2021.
- Consultation information provided to Exxon Mobile on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the Exxon Mobile with the opportunity to provide feedback over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed ExxonMobil advising of the proposed activity (Appendix F, Reference 1.9) and provided a Consultation Information Sheet and titleholders map (Appendix F, Reference 1.10).
- On 27 January 2023, Woodside emailed Exxon Mobil Australia advising of the proposed activity (Appendix F, Reference 1.43) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.74).

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	No additional measures or controls are required.

Finder Energy

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Finder Energy on 27 January 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the Finder Energy with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Finder Energy advising of the proposed activity (Appendix F, Reference 1.43) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.74).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

KUFPEC

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to KUFPEC on 27 January 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided KUFPEC with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed KUFPEC advising of the proposed activity (Appendix F, Reference 1.43) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.74).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

Western Gas

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 July 2021.
- Consultation information provided to Western Gas on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the Western Gas with the opportunity to provide feedback over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed Western Gas advising of the proposed activity (Appendix F, Reference 1.9) and provided a Consultation Information Sheet and titleholder maps (Appendix F, Reference 1.10).
- On 27 January 2023, Woodside emailed Western Gas advising of the proposed activity (Appendix F, Reference 1.43) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.74).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls

No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

Shell Australia

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 July 2021.
- Consultation information provided to Shell on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to Shell over a 23 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed Shell advising of the proposed activity (Appendix F, Reference 1.9) and provided a Consultation Information Sheet and titleholder maps (Appendix F, Reference 1.10).
- On 27 January 2023, Woodside emailed Shell advising of the proposed activity (Appendix F, Reference 1.43) and provided an updated Consultation Information Sheet.
- On 7 February 2023, Shell emailed advising it has no comments on the proposed activity.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
Shell advised it has no feedback on the proposed activity. Whilst feedback has been received, there were no objections or claims.	Woodside notes Shell's advice that it has no feedback on the proposed activity. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

Santos

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Santos on 27 January 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Santos with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed Santos advising of the proposed activity (Appendix F, Reference 1.43) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.74).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

OMV Australia / Sapura OMV Upstream (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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to OMV Australia on 27 January 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the OMV Australian with the opportunity to provide feedback over a 4 month period.

Summary of Consultation Provided and Record of Consultation:

- On 27 January 2023, Woodside emailed OMV Australia / Sapura OMV Upstream (WA) on the proposed activity (Appendix F, Reference 1.43) and provided a Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.74).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

INPEX Alpha

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to INPEX Alpha on 27 January 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the INPEX Alpha with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed INPEX Alpha advising of the proposed activity (Appendix F, Reference 1.95) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.79).

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

	EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	

Peak Industry Representative Bodies

Australian Petroleum Production & Exploration Association (APPEA)

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 2July 2021.
- Consultation information provided to APPEA on 2 July 2021 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the APPEA with the opportunity to provide feedback over a 21 month period.

Summary of information provided and record of consultation:

- On 2 July 2021, Woodside emailed APPEA advising of the proposed activity (Appendix F, Reference 1.2) and provided a Consultation Information Sheet.
- On 27 January 2023, Woodside emailed APPEA advising of the proposed activity (Appendix F, Reference 1.38) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.62).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

Traditional Custodians

Ngarluma Aboriginal Corporation (NAC)

NAC is established under the Native Title Act 1993 by the Ngarluma people to represent the Ngarulma 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 information that was readily accessible and appropriate.
  - Provided Consultation Information Sheets and Consultation Summary Sheets to NAC
  - 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.
  - Provided NOPSEMA's guidelines and brochure on consultation.
  - Provided response to questions asked about the activity through consultation.
  - 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 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 7.8.1 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:

- On 20 January 2023, Woodside emailed NAC advising of the proposed activity (Appendix F, Reference 1.28) 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 it clear it was prepared to consult in the manner and location preferred by NAC and resource the meeting appropriately. Woodside requested that the information be forwarded to NAC members as required.
- On 26 January 2023, Woodside and NAC representatives met to discuss the proposed activity in more detail.
- On 3 February 2023, Woodside and NAC representatives met in Roebourne to discuss how best to consult on the proposed activity.
- On 17 February 2023, Woodside spoke with NAC representatives to discuss the proposed activity and to plan further engagement on a range of Woodside EPs. NAC representatives stated there would be opportunity at the NAC March Board meeting for further engagement.
- On 24 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity and following on from the 17 February 2023 meeting (Appendix F, Reference 1.81). Woodside noted it was 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 acknowledging 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 asked if there had 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 noted 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 the NAC Board.
- On 10 March 2023, NAC emailed Woodside to advise that its March Board Meeting was full of overspills from January and February and at this stage will need to leave the Environmental Plan consultation until the April meeting.
- On 14 March 2023, Woodside emailed NAC to request the dates for the April board meeting and to confirm what time Woodside might be allocated to present at NAC's earliest convenience.
- On 14 March 2023, NAC emailed Woodside to advise that the Board meeting is tentatively set for 29th April 2023. NAC advised this needed to be confirmed with its Board before it could commit to a time or date.
- Between 12-17 April, NAC and Woodside exchanged emails with Woodside seeking confirmation of the April board date and whether Woodside would have time on the agenda.
- On 17 April, Woodside emailed NAC noting there had been no confirmation of an April meeting and seeking advice on whether NAC have feedback in relation to the proposed activities. The email explained that 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 21 April 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 the submission of the EP and look forward to ongoing consultation.
- On 12 May 2023, NAC emailed Woodside to notify that Woodside had been allocated a one-hour window in the NAC Board Meeting of 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 agenda and reasons for consultation.
- Woodside introduced the regulations it needed 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 they are consulting with many people up and down the coastline including multiple Aboriginal Corporations.
- Woodside proposed what consultation outcomes it would like to meet with NAC, including understanding:
  - How the activities could impact cultural values, functions, interests, or activities.
  - Whether protecting the environment is enough to protect these things.
  - What NAC's concerns are about the proposed activities and what NAC thinks Woodside should do about it?
  - If there was 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 showing the general process of drilling and completions which was designed for public audience.

- **(1)** NAC asked when these activities were proposed to happen, Woodside responded later this year pending government approvals.
- **(1)** NAC asked how many people crew the drill rig, Woodside responded that it's usually over 100 people.
- 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 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 with the same EMBA, 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 with the same EMBA, 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

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 1.81.1).

- **(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, with in principle support of 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.

<u>Quarterly Heritage Meetings:</u>

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

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
(1) During face-to-face engagements related to this activity and others, NAC asked: • When the activities were proposed to commence. • How many people crew the drill rig.	(1) Woodside responded to NAC 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. (2) & (3) Woodside is implementing a program to actively support Traditional Custodians' capacity

(2) NAC emailed Woodside on 10 May 2023, supporting submission of this EP and looking forward to ongoing consultation. (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.	(2) NAC is supportive of this EP submission. (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. 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. 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 7.8.1**).	for ongoing engagement and consultation on environmental plans referenced as **PS 4.9.1** in this EP. This includes continued engagement through the proposed Framework Agreement which will be applied to ongoing consultation.

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 information that was readily accessible and appropriate.
  - Provided Consultation Information Sheets and Consultation Summary Sheets to MAC
  - 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.
  - Provided NOPSEMA's guidelines and brochure on consultation.
  - Provided response to questions asked about the activity through consultation.
  - 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 7.8.1 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

- 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 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 7 July 2021, a meeting was held with a presentation and discussion about submerged heritage assessments completed to date and mitigations proposed.
- On 11 November 2021, MAC provided Woodside a presentation/position about intangible heritage values.
- On 15 December 2021, Woodside met with MAC Board and Circle of Elders to provide a project overview.
- **(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.
- On 25 February 2022, an all-day meeting was held between MAC and Woodside on heritage management and on 28 February 2022 an email of action items from meeting held on 25 February was sent to MAC.
- On 18 May 2022, Woodside sent a letter to MAC requesting clarity from MAC on whether the Phase II ethnographic survey for Scarborough is 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.
- **(2)** On 20 September 2022, Woodside sent an email to MAC seeking permission to share ethnographic survey results with NOPSEMA.
- **(3**) On 9 January 2023, Woodside sent a letter to MAC regarding the proposed Heritage Management Committee.

<u>Ensuring Sufficient Information and Reasonable Period of Time</u>

- On 20 January 2023, Woodside emailed MAC advising of the proposed activity (Appendix F, Reference 1.30) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. Woodside also outlined:
    - In preparation for this work, Woodside had 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 Drilling &Completions activity. The meeting included the following topics relating to the proposed activity and the broader Scarborough Project:
    - EMBA map explained and left with MAC for information.
    - Plain English fact sheets provided (Appendix F, Reference 1.26 and 1.27)
    - 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 Scarborough Drilling & Completions EP. 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. 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 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 intended 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 ae meeting soon and that Woodside can expect a forward plan on EP consultation.
- On 5 June 2023, MAC emailed Woodside to confirm the Board and Elders meeting date and noted they would send a quote for costs shortly.
- (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 showing the general process of drilling and completions which was designed for public audience.
    - 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 this 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 with the same EMBA, 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 9 August 2023, Woodside emailed MAC again seeking feedback and information relating to an accepted Scarborough EP with the same EMBA, stating the conditions of acceptance:
    - 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
    - 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 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 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 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 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 1.30.1). No response was received to this email.
- 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.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
(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: 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). (2) Uncertainty over the results of further ethnographic surveys, as new heritage values identified may require further mitigations. (3) MAC's input has helped shape the structure and operation of the HMC described in 7.5 including their advice: a. That recommendations of the HMC need not be unanimous,	(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. 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. (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	(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 (**Section 4.9.1**). As assessed in **Section 6**, Woodside considers that when the impacts and risks to marine species, including potential totemic species, have been reduced to ALARP and an acceptable level in offshore areas, the potential impacts and risks to cultural values associated with coastal Indigenous connection with, or traditional uses of marine species and associated ecosystems in nearshore coastal waters are also reduced to ALARP and an acceptable level. (2) & (3) Woodside and MAC have established the Heritage Management Committee. Recommendations of the HMC will be implemented where they (independently or in conjunction with other actions) lower the risk of impacts to heritage to ALARP. New heritage information, where applicable to this proposed activity, will be addressed as part of ongoing consultation (**Table 7.5**). No additional measures or controls have

b. That the HMC include MAC staff in addition to MAC Board, executive and Circle of Elders, and c. That developments in regard to the World Heritage listing of the Murujuga Cultural Landscape does not trigger any meeting of the HMC. (4) MAC directed that consultation be undertaken with both the board and the Circle of Elders, which was implemented. (5) On 21 July 2023, MAC sent a letter to Woodside acknowledging the consultation on 22nd June and stating they had no concerns with this EP at this time.	earliest availability. The results of these surveys will be addressed through the Heritage Management Committee. (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. (4) Woodside continues to engage with MAC on the Scarborough project generally and has committed to ongoing consultation with MAC Board and Elders. (5) MAC is supportive of this EP submission. 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 7.8.1**).	been put in place in this EP (Refer to Scarborough Seabed Intervention and Trunkline Installation EP for controls relating to HMC). (4) And (5) Not required.

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 information that was readily accessible and appropriate. - Provided Consultation Information Sheets and Consultation Summary Sheets to WAC.

- 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.
- Provided NOPSEMA's guidelines and brochure on consultation.
- Provided response to questions asked about the activity through consultation.
- 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 7.8.1 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:

- On 20 January 2023 Woodside emailed WAC advising of the proposed activity (Appendix F, Reference 1.32) 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.
- On 27 January 2023, Woodside placed a phone call and emailed WAC to follow up on the information provided (Appendix F, Reference 1.32) and information sought:
  - Woodside noted the upcoming opportunity to meet with WAC on 21 February while it was in Karratha and proposed sending a time to meet to discuss the information Woodside has provided on several Woodside activities and EMBAs, including this proposed activity.
  - Woodside wanted to gain an understanding on the best way to progress and whether the WAC Board wish to have further discussions in relation to this information and how they prefer Woodside to engage for any future consultations.
- 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 and following on from the 21 February 2023 meeting (Appendix F, Reference 1.82). Woodside noted it was seeking WAC's feedback on the proposed activity as soon as WAC was available.

Woodside also requested confirmation of the opportunity to meet with the WAC Board when they are next due to meet in Perth in March. Further details and associated costs will be discussed once the meeting has been confirmed, in discussion with Woodside.

- On 24 February 2023 WAC emailed Woodside, WAC acknowledged receiving the EP information and the meeting with proposed for the Elders and Directors in March, but that the meeting is still yet to be finalised. Further details and associated costs will be discussed once the meeting has been confirmed, in discussion with Woodside.
- On 7 March 2023, WAC emailed Woodside to advise a draft agenda has been set and Woodside has been allotted Thursday 23 March 2023 for presentation.
- On 7 March 2023, Woodside emailed WAC welcoming this 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 8 March 2023, Woodside phoned WAC and agreed to proceed with the meeting.
- On 9 March 2023, Robe River Kuruma Aboriginal Corporation (RRKAC) emailed Woodside (and copied in the CEO of WAC) and advising it has discussed the proposed activity with the Robe River Kuruma Heritage Advisory Committee and they have recommended that the interests of Robe River Kuruma people are best served through the joint Heritage Advisory Committee that is required under Yaburara Mardudhunera and Kuruma Marthudunera Indigenous Land Use Agreement.
    - RRKAC also suggested that WAC is required to facilitate this Committee and noted there is an emerging need to deal with other proponent matters, so there is an opportunity to link the engagement from a meeting efficiency perspective. Since the separate meeting with WAC had already been arranged, Woodside decided to proceed with both meetings.
- On 15 March 2023, Woodside emailed WAC to follow up on details relating to the meeting of the Board and Elders on 23 March 2023 in Perth.
- On 15 March 2023, WAC emailed Woodside:
    - WAC advised the 23 March 2023 meeting has been scheduled and arranged.
    - WAC advised that as discussed previously the intention is to present to WAC Directors and Elders on information requires WAC feedback.
    - Woodside has continued to engage WAC on the proposed activity and in relation to presenting at the upcoming Board and Elders meeting.
- On 16 March 2023, WAC emailed Woodside to confirm conference room booking and querying numbers for meeting of 31 March 2023.
- On 17 March 2023, Woodside emailed WAC:
    - Woodside advised it was looking forward to connecting and will ensure relevant representation to provide the suite of EP information overviews and will cover the broader community activity for awareness as requested.
- On 17 March 2023, Woodside emailed WAC re Joint Heritage Advisory Group, confirming numbers at meeting from Woodside (copied to RRKAC).
- **(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.
    - Woodside encouraged WAC to raise anything which they felt was 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.
- 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 showing the general process of drilling and completions which was designed for public audience.
- **(1) (2)** WAC asked a number of questions relevant to the broader Scarborough Project which were responded to in the meeting:
    - Emergency preparedness
    - The relevance of the EMBA to consultation
    - Whether activities stop during whale migration.
    - Potential impact of noise on whale communication.
    - Whether a diesel spill would only be on the surface.
    - How long diesel stays in the environment.
    - What happens if something is dropped into the ocean.
    - How soon is a spill responded to.
    - Whether the turtle monitoring program is still in place.
    - How many wells will be drilled for Scarborough.
    - How the EMBA influences consultation
- 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.
- **(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.
- 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.
- WAC indicated that since they are engaging with several energy industry operators, they will consider the information provided and discuss internally before any further response.
- Woodside provided personal contact details for further feedback.
- Woodside provided NOPSEMA contact details, should WAC desire to provide feedback directly to the regulator.

- On 24 March 2023, Woodside emailed WAC, acknowledging the amount of information WAC had to absorb and confirming a meeting place for the upcoming week.
- On 24 March 2023, WAC emailed Woodside acknowledging a great presentation and confirming they would meet in in Woodside office, Woodside responded by email on the same day.
- On 31 March a consultation meeting was held in Karratha with WAC/RRKAC Heritage Advisory Committee. This meeting is recorded under Robe River Kuruma Aboriginal Corporation (RRKAC).
- On 3 May 2023, Woodside emailed a letter to WAC as a follow up to the 23 March meeting held in Perth with WAC Directors and Elders:

  - Woodside thanked WAC for the careful consideration of matters.
  - Acknowledge the WAC have interests in the EMBA.
  - Woodside provided a response on matters raised at the meeting by WAC.
- On 3 May 2023, Woodside emailed a letter to WAC regarding the meeting with the joint Robe River Kuruma and Wirrawandi Joint Heritage Advisory Committee (HAC) on 31 March:
  - Woodside thanked the HAC for the meeting, their careful consideration of the matters and feedback provided.
  - Woodside acknowledged that the HAC have interests in the EMBA and noted that we want to ensure impacts are as minimal as reasonably practicable.
  - A high-level overview of presented topics was provided.
  - Woodside provided responses to questions noted from the meeting that were not related to the proposed activity. Woodside notified that the feedback and the letter will be included in Environment Plans that will be submitted to NOPSEMA.
- On 21 June 2023, WAC emailed Woodside stating that the appropriate form of consultation was to fund and schedule a presentation to members.
- Between 21 June 2023 and 28 June 2023, emails were exchanged settling a date and time for Woodside to meet with the WAC Board. Woodside agreed to funding with the budget settled between WAC and Woodside.
- On 6 July 2023, Woodside reconfirmed the date with WAC by telephone.
- 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 with the same EMBA, 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 EMBAS.
  - On 9 August 2023, Woodside emailed WAC again seeking feedback and information relating to the accepted Scarborough EP with the same EMBA, 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 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 10 August 2023, WAC emailed Woodside stating that it did not have any objections to activities under the Scarborough EP which had been accepted, based on understanding that it does not involve seabed disturbance, the EMBA is outside the general area that Yaburara and Mardudhunera people have interests and typically undertake activities WAC also noted they would provide a formal written response to the 19 July 2023 meeting in relation to proposed ongoing consultation and to activities and Eps for which WAC may be considered relevant persons.
- 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. The agreement would articulate risk re activities to environment, sea-country, heritage and/or cultural activities.
- (**3)** 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).
- On 12 September 2023, Woodside emailed WAC confirming receipt of the email of 11 September.
- On 18 September 2023, Woodside emailed WAC 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 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 1.82.1). No response was received to this email.

<u>Quarterly Heritage Meetings:</u>

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

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
(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: – Emergency preparedness – The relevance of the EMBA to consultation	(1) Woodside responded to WAC's requests for further information during face-to-face engagements, and no further information was requested on these topics. (2) Woodside noted WAC's interest in whales.	(1) Existing controls considered sufficient, as described in Section 6. (2) Woodside updated Section 4.9.1.6 to record WAC's interests, including whales and assessed potential impact on these, including controls, in section 6.1.

– Whether activities stop during whale migration. – Potential impact of noise on whale communication. – Whether a diesel spill would only be on the surface. – How long diesel stays in the environment. – What happens if something is dropped into the ocean. – How soon is a spill responded to. – Whether the turtle monitoring program is still in place. – How many wells will be drilled for Scarborough. – How the EMBA influences consultation. (2) WAC expressed a general interest in whales. 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. (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.	(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. 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 7.8.1).	(3) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans referenced as **PS 4.9.1** 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 J.
Yinggarda Aboriginal Corporation (YAC)		
YAC is established under the Native Title Act 1993 by the Yinggarda people to represent the Yinggarda people (defined broadly by reference to descent from the set of ancestors who were known to have a continuous and unbroken connection as the Traditional Custodians at the time of European colonisation) and represent their communal interests including, among other things, management and protection of cultural values.		
Woodside has 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: • Sufficient Information:		

- 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 information that was readily accessible and appropriate.
- Provided Consultation Information Sheets and Consultation Summary Sheets to YAC.
- 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.
- Provided NOPSEMA's guidelines and brochure on consultation.
- Provided response to questions asked about the activity through consultation.
- Advised that YAC 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 YAC on 20 January 2023 based on their function, interest, and activities.
  - Woodside has addressed and responded to YAC over 7 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 7.8.1 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 included 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 1.33) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. The email requested information on the interests that YAC and its members may have within the EMBA, information on how YAC would like to engage, and requested that YAC provide information to members as required.
- On 22 January 2023 YAC/YMAC emailed Woodside to advise it would contact Woodside once the consultation material had been reviewed.
- On 22 February 2023, Woodside sent a follow up email on a range of Woodside Eps, including the proposed activity (Appendix F, Reference 1.66) 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 would 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 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 31 April 2023.
- On 24 March 2023, Woodside emailed to confirm the pre-meet conversation.
- On 27 March 2023, the YMAC lawyer emailed Woodside to confirm meeting details.

- On 30 March, 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 17 March 2023; management of emissions, organisations that may provide independent expertise and re-iterating they would like to meet with YAC.
- On 27 April, Woodside emailed the YMAC lawyer to confirm timing and location for the face-to-face meeting on 3 May, but the email bounced back requesting correspondence be forwarded to an alternate contact in YMAC.
- On 27 April, Woodside forwarded the email seeking to confirm time and location for the planned meeting to the alternate contact in YMAC.
- On 27 April, YMAC confirmed by email and phone call that they no longer represented Yinggara Aboriginal Corporation and that the meeting on 3 May 2023 had been cancelled. They informed Woodside that Gumala Aboriginal Corporation was now representing YAC and YMAC was in the process of hand over, including correspondence with Woodside.
- On 27 April, Woodside acknowledged YMAC email re Gumala Aboriginal Corporation transition to new service provider.
- On 28 April, 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 was 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 is 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, Gumula 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 showing the general process of drilling and completions which was designed for public audience.
  - 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 would 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 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)** 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.
  - **(1) (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.

- 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 with the same EMBA, 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 are willing to formally engage with Woodside on future NOPSEMA consultation.
  - **(3)** Woodside was invited to submit a consultation agreement for YAC's consideration and to layout out desired content within the agreement.
  - Resourcing would need to be provided by Woodside to facilitate the consultation.
- On 9 August 2023, Woodside emailed YAC again seeking feedback and information relating to the accepted Scarborough EP with the same EMBA, 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 was any information YAC wished 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 has 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 and providing a copy of the Board Resolution.
- On 11 August 2023, Woodside emailed YAC via BSA 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 BSA emailed Woodside stating that it looked forward to receiving the consultation agreement for consideration and agreeing arrangements for provision of resourcing.
- 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 is 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 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 1.66.1). 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.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
(1) During face-to-face engagements related to this activity and others YAC requested further information on topics related to this proposed activity which was responded to during the meeting: – Whether Woodside has undertaken environmental studies and whether these studies are ongoing. YAC also expressed the following: – Sadness at the potential for environmental impact – Ranger programs could assist with environmental management and monitoring. – Expressed concern about potential impacts to potential impact patterns of whales, and potential collisions (2) YAC expressed a general interest in whales. 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	(1) Woodside responded to YAC's requests for further information during face-to-face engagements, and no further information was requested on these topics. (2) Woodside noted YAC's interest in whales. (3) Separate from consultation under Reg 11A, Woodside will establish a framework agreement with YAC. 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. 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	(1) Existing controls considered sufficient, as described in Section 6. (2) Woodside updated Section 4.9.1.6 to record WAC's interests, including whales and assessed potential impact on these, including controls, in section 6.1. (3) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans, referenced as **PS 4.9.1** 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 J.

(3) Woodside has provided a draft Consultation Framework Agreement which includes suggested timeframes to settle the agreement and timeframes for ongoing consultation with the Board.	of Change and Revision process (see Section 7.8.1).	

Yindjibarndi Aboriginal Corporation

YAC is established under the Native Title Act 1993 by the Yindjibanrdi people to represent the Yindjibanrdi 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 Yindjibarndi
  - Articulated planned and unplanned environmental risks and impacts, with proposed controls.
  - Set out in detail what was being sought through consultation.
- 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 7 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 7.8.1 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 1.34) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside’s website) as well as a summary overview fact sheet. The email requested information on the interests that Yindjibarndi and its members may have within the EMBA, information on how Yindjibarndi would like to engage, and requested that Yindjibarndi provide information to members as required.

- On 24 February 2023, Woodside sent a follow up email on a range of Woodside EPs, including the proposed activity (Appendix F, Reference 1.83) and information sought.
- **(1) & (2)** On 26 February 2023, Yindjibarndi emailed Woodside. Yindjibarndi advised that it will not be providing any comment on the proposed activity, or 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.
- On 28 February 2023, Woodside emailed Yindjibarndi to thank them and noted the response.
- On 7 July 2023, Woodside called Yindjibarndi who reiterated that it would prefer that comments come from coastal Aboriginal Corporations and not themselves.
- 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.
- On 26 July 2023, Woodside emailed Yindjibarndi Woodside's planned Program of Ongoing Engagement with Traditional Custodians.
- **(3)** 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.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
(1) Yindjibarndi has provided a response and advised that it will not be providing any comment on the proposed activity. (2) Yinjibarndi expressed that they would prefer that traditional owner groups with land and sea adjacent to and within the precinct of the projects provide comment. (3) Yindjibarndi has instructed Woodside that it will be represented by NYFL in ongoing discussion about EP's.	**(1)** Woodside accepts Yindjibarndi's response. **(2)** Woodside agrees and respects Yinjibarndi'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. **(3)** Woodside will engage with NYFL on behalf of Yindjibarndi for ongoing consultation related to this activity, separate from consultation under Reg 11A. 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**).	(1) Not required. (2) Not required. (3) Future correspondence will be sent through NYFL. 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 **PS 4.9.1** in this EP.

Buurabalayji Thalanyji Aboriginal Corporation (BTAC)

BTAC is established under the Native Title Act 1993 by the Thalanjyi people to represent the Thalanjyi 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 7.8.1 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:

Historical Engagement

- Prior to sending out the Consultation Information Sheets, Woodside spoke to BTAC on 4 January 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 1.36) and provided a simplified Consultation Information Sheet (including a link to the detailed information sheet on Woodside's website) as well as a summary overview fact sheet. The email requested information on the interests that BTAC and its members may have within the EMBA, information on how BTAC would like to engage, and requested that BTAC provide information to members as required.
- On 23 January 2023, Woodside emailed BTAC with the consultation information noting it had previously sent an email to an incorrect email address (Appendix F, Reference 1.37).

- 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 1.46 and 1.47).
- 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 9 February 2023, Woodside emailed BTAC following up on correspondence and asking whether BTAC required any support or had feedback to provide.
- 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 meeting initially with the BTAC Board. Following a suggestion by BTAC that the group may benefit from an anthropologist to articulate sea country values, Woodside said they would look at those sorts of requests on a case-by-case basis. Woodside also confirmed they are able to financially support consultation meetings. A 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 Monte Bello 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 protects 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 13 March 2023, BTAC emailed Woodside querying whether there was a revised submission date in relation to recently notified projects, noting that BTAC were awaiting feedback on their initial submission (20 February 2023 correspondence).
- On 13 March 2023, Woodside contacted BTAC via phone to discuss the correspondence of 20 February 2023.
- On 17 March 2023, Woodside emailed a letter to BTAC:

  Woodside thanked BTAC for its feedback and said it looked 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 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 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.

  (5) 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:

  - 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.

  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 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 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 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 desired a consultation agreement and intended 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.
- **(6)** BTAC agreed that subject to formalising arrangements, BTAC agrees in principle for Woodside to include the statements described in their 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, 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.
- On 19 May 2023, BTAC emailed Woodside requesting that all activities including this activity be included in proposed presentations.
- **(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 19 June 2023, BTAC emailed Woodside acknowledging information and confirming interests as set out in correspondence about Scarborough activities.
- 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, Woodside emailed BTAC a Teams meeting invite for 28 July 2023.
- On 21 July, 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 the 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 an unrelated activity. 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 related to a separate Scarborough activity which re-iterated Woodside's commitment to supporting BTAC to define and articulate Sea Country values requesting any advice to assist to clarify areas of interests Thalanyji have.

  To date, BTAC has not indicated that it desires to initiate the ethnographic assessment
- On 3 August 2023, Woodside emailed BTAC regarding the acceptance of a different Scarborough EP with the same EMBA, and asking for information in accordance with conditions of acceptance of the EP, specifically whether BTAC 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 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 3 August 2023, Woodside emailed BTAC with a message similar to that of the previous 3 August email, but for a different EP.
- On 9 August 2023, Woodside emailed BTAC again seeking feedback and information relating to the different Scarborough EP with the same EMBA, 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 is 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 emailed BTAC following up on correspondence provided on 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, Woodside emailed BTAC advising of the planned start date for the activity, and once again requesting if BTAC is aware of any other people with whom Woodside should consult, and if there is any information BTAC wish to provide on cultural values. The email 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 1.47.1). The email included links to NOPSEMA brochures on consultation, and described the purpose of consultation
- 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, BTAC emailed further to their previous email requesting a list of all known activities and EP's.
- On 14 September 2023, Woodside emailed BTAC acknowledging BTAC's email of 14 September and planning further review and discussion.
- 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 were 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.		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
(1) BTAC stated that their interests include archaeological sites identified on nearshore islands including the Montebello Islands, Barrow Island and the Montebello Islands. (2) BTAC has a cultural obligation to care for the environmental values of sea country. (3) Requested Woodside supports BTAC in obtaining technical advice relating to the proposed activity which was sent to BTAC. (4) Expressed desire to be involved in local emergency response capability, potentially via an Indigenous Ranger Program. (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 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. (6) BTAC proposed a Collaboration Agreement as an appropriate mechanism to provide ongoing feedback to Woodside regarding its activities (7) BTAC does not endorse any consultation without appropriate cost recovery	(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. (2) Woodside assessed BTAC's cultural obligation to care for environmental values of sea country to represent potential cultural values. (3) Woodside has offered financial support for technical advice and other support that has not been taken up (eg 17 March 23 letter). (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). (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 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. (6) Separate from consultation under Reg 11A, Woodside will establish a Collaboration	(1) Not required (2) Woodside updated Section 4.9.1 to record BTAC's interests and potential cultural values and assessed potential impact on these, including controls, in section 6.1 (3) Not required (4) The Program for Ongoing Engagement with Traditional Custodians (Appendix J) includes commitments to social investment to support Indigenous Ranger programs, and support for Indigenous oil spill response capabilities. (5) Woodside has developed the Thalanyji Sea Country Management process described in the EP section 7.5 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 sections 4.9. The proposed Collaboration Agreement and PS 4.91 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 cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.8.1**). PS 28.1.1 ensures that potential

	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. 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. 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 7.8.1). (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 is 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.	impacts to newly identified cultural values is managed to ALARP and Acceptable levels. (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 4.9.1** 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 J.

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 face-to-face meetings being coordinated at the location of RRKAC's choosing, with RRKAC nominated representatives. These meetings included information that was readily accessible and appropriate.
  - Provided Consultation Information Sheets and Consultation Summary Sheets to RRKAC.
  - 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.
  - Provided NOPSEMA's guidelines and brochure on consultation.
  - Provided response to questions asked about the activity through consultation.
  - 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 7.8.1 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 1.35) 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 held a discussion with RRKAC representative to discuss the proposed activity and ways forward for consultation:
  - RRKAC advised during the virtual meeting that the activity would need to be considered by their Heritage Advisory Committee scheduled for late February 2023**.**
- On 24 February 2023, Woodside emailed RRKAC to follow up on the information provided (Appendix F, Reference 1.84) 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. The meeting was confirmed for 31 March 2023.
- On 15 March 2023, Woodside emailed RRKAC to ask when date of joint HAC would occur and how Woodside can support it.
- On 15 March 2023, RRKAC emailed Woodside emailed regarding contacts for the proposed meeting.
- On 15 March 2023, Woodside emailed RRKAC to advise who from Woodside would lead the process.
- On 15 March 2023, RRKAC emailed Woodside to advise the joint HAC meeting was scheduled tentatively for 31 March 2023 but that this would depend on WAC's availability but that the RRKAC representatives are able to attend.
- **(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.
  - 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 showing the general process of drilling and completions which was designed for public audience.
  - HAC asked several questions related to the broader Scarborough project.
  - Woodside described the proposed drilling activities.

- HAC asked some general questions about drilling which were responded to in the meeting.
- 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 contacted RRKAC by mail to summarise the information presented at the meeting on 31 March 2023 and the actions for Woodside to follow up:
  - 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 with the same EMBA, asking for information in accordance with conditions of acceptance of the EP. It specifically asked whether RRKAC 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 9 August 2023, Woodside emailed RRKAC again seeking feedback and information relating to the accepted Scarborough EP with the same EMBA, stating the conditions of acceptance of that EP:
  - 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 is any information RRKAC 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.

- 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 is aware of any other people with whom Woodside should consult, and whether there was any information RRKAC wish to provide on cultural values. The email 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 1.84.1).
- **(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 are not resourced to adequately respond, and would require Woodside to fund additional resources.
- **(3)** On 18 September 2023, Woodside emailed RRKAC confirming that Woodside will provide funding to enable groups to participate in consultations.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
(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: - Emergency preparedness. - The depth of the wells. - What happens with a small diesel spill. - 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. (2) The RRKAC/HAC expressed a desire for ongoing engagement and partnership. (3) RRKAC noted that they are insufficiently resourced to fully engage and respond regarding EPs.	(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. (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. (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	(1) Existing controls considered sufficient, as described in Section 6. (2) & (3) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans referenced as **PS 4.9.1** in this EP. This includes addressing RRKAC's resourcing issue for ongoing consultation via a Framework Agreement.

	Sheet developed by Indigenous staff members, and a face to face meeting on 15 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.	

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.
  - 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, 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 7.8.1 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 Section 5 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 Marlpa Aboriginal Corporation (YMAC) for the purpose of introduction and to explain that Woodside will be sending information concerning EPs.
- On 20 January 2023, Woodside emailed NTGAC via the representative body YMAC advising of the proposed activity (Appendix F, Reference 1.29) 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 (Appendix F, Reference 1.31) and information sought. Woodside requested if NTGAC required anything further ahead of an already 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 2023.
- 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 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 showing the general process of drilling and completions which was designed for public audience.
  - **(1)** YMAC asked for clarification on the risk of a blowout during drilling, Woodside responded that it could credibly occur but only gas would be released, not liquid hydrocarbon
  - NTGAC asked whether there is a risk of striking oil instead of gas, Woodside responded that exploration drilling has already ben done and samples confirmed that there is only gas in the reservoir, and all processing infrastructure has been designed to only deal with dry gas
  - 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
- The EMBA for each proposed Scarborough activity was displayed, and the individual worst-case loss of containment scenarios identified, noting that they are all diesel fuel releases which would only be caused by vessel collisions.
- Woodside noted this concluded the Scarborough section of the meeting and called for any further questions or feedback. None were received.
- Woodside stated that there is significant work and consultation coming up, and it hope to spend more time with NTGAC to understand expectations and desire of how Woodside can work with NTGAC.
- YMAC expressed that they are being inundated with requests for consultation from oil and gas operators and are working internally on processes and priorities for consultation.
- Woodside welcomed the transparency and discussion on capacity.
- NTGAC expressed that consulting on these 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 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 17 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.
- Between 22 May - 19 June 2023, Woodside and NTGAC exchanged emails about other activities unrelated to this activity.
- On 19 June 2023, NTGAC/YMAC emailed Woodside with instructions from NTGAC Directors that they would like to undertake a consultation workshop with Woodside on their activities.
- On 19 June 2023, Woodside emailed NTGAC/YMAC to request a one-day meeting with the NTGAC Directors to allow time for discussion and questions and offered to fund reasonable meeting costs.
- **(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. The email advised NTGAC that sensitive information will be managed carefully, and that relevant persons can request that information is not published. 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 3 August 2023, Woodside emailed NTGAC/YMAC about an unrelated activity and thanked YMAC for the pre meeting held on 2 August and confirmed the meeting with NTGAC on 15 August 2023. Woodside also provided links to NOPSEMA's consultation documents, including links to the Brochure, Guideline and Policy documents.
- 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 with the same EMBA to this activity 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 14 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 on 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 General Project Reports 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 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 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 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 this information prior to 28 September 2023. It also asked NTGAC to provide the attached Consultation Fact Sheets and Summary Information Sheets to members or individuals who may be interested. No response was received to this email. The email described the purpose of consultation and included links to NOPSEMA's guidelines related to consultation.

Woodside will continue to pursue an ongoing two-way relationship with NTGAC under the Proposed Program of Ongoing Engagement with Traditional Custodians.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
(1) During face-to-face engagements on 16 Feb and 15 Aug 2023 related to this activity and others, NTGAC requested further information on topics related to this proposed activity which was responded to during the meetings: • How EMBA's are developed. • The probability of a blowout • Ballast water discharges • Whale sightings and response (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. (3) NTGAC requested funding for YMAC's in-house environmental scientist. (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 too technical and that timeframes were not sufficient. (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	(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. (2) Woodside noted NTGAC's interest in whales and whale sharks. (3) Woodside funded YMAC's environmental scientist to attend two face-to-face meetings on 16 Feb 2023 and 15 Aug 2023 to support consultation. No feedback was received from this activity. Woodside has also offered to financially support provision of independent, third party advice to NTGAC (19 April 23) which has not been taken up. (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 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 5.9.1 for approach). This included specifically developed "plain English" material developed by First Nations personnel in collaboration with technical experts, maps, pictures and a short video visually communicating the drilling process. During the meeting, NTGAC and YMAC representatives were	(1) Existing controls considered sufficient, as described in Section 6. (2) Woodside updated Section 4.9.1.6 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. (3) Not required (4) Not required (5) (6) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans, referenced as **PS 4.9.1** 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 J

each of the relevant activities. Woodside are awaiting receipt of the initial draft of the General Report. (6) NTGAC are interested in exploring social investment opportunities with Woodside which may support NTGAC's Strategic Plan.	encourage 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 (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 ongoing engagement. Sufficient information to allow informed assessment has already been provided by other means, including summary sheets developed by Indigenous staff, multiple face to face meetings with appropriate material (pictures, maps, videos) and project attendance allowing opportunity to ask questions and seek further understanding, and agreement to fund NTGAC/YMAC environmental scientist who was also present at the meetings. Woodside 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 7.8.1**). (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	

Native Title Representative Bodies

Yamatji Marlpa Aboriginal Corporation (YMAC)

YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As such, they are not a Prescribed or Registered Native Title Body Corporate but exist to assist native title claimants and holders.

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. Specifically:

Sufficient Information:

- 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.

Reasonable Period:

- 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 considers that the "reasonable period" of consultation for this EP has closed.

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.

Ensuring Sufficient Information and Sufficient Time

- On 8 July 2022, Woodside emailed YMAC providing the requested information including a link to the factsheet relevant to this EP.

- Woodside advised it would like to establish a process to cross check its understanding of cultural and spiritual values associated with proposed offshore development and surrounding areas. We 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, YMAC responded to Woodside:
  - YMAC stated the area Woodside has identified requires correspondence directed to Murujuga Aboriginal Corporation and Ngarluma Aboriginal Corporation.
  - The extent to which each corporation has interests specifically over the area of this EP was not advised, but both have been involved in assessments of cultural values as detailed below. YMAC does not act for either corporation.
- On 19 July 2022, Woodside sent a follow up email regarding finding a delegate for the above.
- On 13 March 2023, Woodside emailed YMAC as to whether YMAC considers itself a 'relevant person' under sub regulation 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 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. 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.
  - YMAC is the representative for NTGAC 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.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
YMAC has advised that the most appropriate stakeholders for the Scarborough project generally are	YMAC is the Native Title Representative Body for the Yamatji and Pilbara regions of Western Australia. As	Woodside considers the measures and controls described within this EP address the potential impact

Murujuga Aboriginal Corporation and Ngarluma Aboriginal Corporation who are not represented by YMAC. YMAC has provided feedback that in its view it is a 'relevant person' under 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. YMAC has provided feedback that it is seeking an industry funded position to support consultations for this and other activities. YMAC has provided a draft consultation framework to assist the consultation process.	such, they are not a Prescribed or Registered Native Title Body Corporate representing the cultural rights of a Traditional Custodian Community but exist to assist native title claimants and holders. YMAC is identified in the North-west Marine Parks Network Management Plan 2018 (DNP, 2018) as the Native Title Representative Body, noting no marine parks overlap the Operational Area. Woodside has approached YMAC to confirm the best approach to confirm additional cultural values (if any) within the Operational Area. Woodside has consulted with YMAC in relation to its facilitation and coordination function as a Native Title Representative Body under applicable federal legislation, and it has responded that it does not intend to provide substantive comment on the content of EPs. Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received (including any relevant new information on cultural values), it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (refer to **Section 7**). Woodside is engaging with YMAC in relation to its request for an industry funded position and a draft consultation framework.	from the proposed activities on YMAC's functions, interests or activities. 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 **PS 4.9.1** in this EP. Based on the engagement to date, no additional controls have been identified.

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 to NYFL
  - Articulated planned and unplanned environmental risks and impacts, with proposed controls.
  - 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
- 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 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 7.8.1 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 23 September 2022, Woodside emailed NYFL advising of a related Scarborough activity and provided a Consultation Information Sheet and Consultation FAQs.
- On 26 September 2022, NYFL emailed Woodside and stated NYFL would like to understand more about Scarborough 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 discussed the activities in the EP in detail. NYFL explained that the current information sheets were difficult to understand. Woodside undertook to provide plain English materials that were in development.
- 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 the activity.
- Between October 2022 and March 2023, while Woodside and NYFL have weekly communications on other matters, there was a hiatus on communication due to 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.
- On 27 January 2023, Woodside emailed NYFL as a member of the Karratha Community Liaison Group and provided a Consultation Information Sheet and Consultation FAQs (Appendix F, Reference 1.44).
- **(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. There was a separate discussion about holding a separate meeting for EPs generally.
- On 20 March 2023, Woodside emailed NYFL about all Scarborough activities activity providing further information (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.
- 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 videos, 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 and could 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.
- 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 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 did 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, wo 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 noting a date of 30 August 2023 to meet to discuss next steps.
- On 18 August 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.
  - Woodside took the requests on notice.
- On 15 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 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 1.88). 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.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**

(1) 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. (2) NYFL requested consultation material suitable to a Traditional Custodian audience. (3) NYFL wishes to pause consultation until after the First Nations national summit is held 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. (4) 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. (5) 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. (6) NYFL expressed that there may be additional cultural and environmental values that relate to the area that have not been communicated to Woodside. (7) NYFL requested that Woodside employ three Ngarluma/Yindjibarndi Traditional Owners who would consult with NYFL members. (8) NYFL stated that time frames must be longer than one month for consultation.	(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. (2) Woodside recognises that sufficient information must be provided in a form that is accessible and appropriate to the 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) (3) Woodside does not consider that the proposal that consultation be paused until the proposed First Nations National Summit is reasonable.	(1) NYFL has been consulted with in accordance with the methodology described in Section 5 of the EP (2) Not required (3) Not required (4) Woodside is implementing a program to actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans, referenced as **PS 4.9.1** 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 J (5) Methodology described in Section 5 adequately addresses this claim (6) Description of cultural values and heritage features is included in Section 4.9.1 of the EP (7) The proposed Framework Agreement (see point 4) will address appropriate NYFL resourcing. This is described further in the Program of Ongoing Engagement with Traditional Custodians, Appendix J (8) Not required

	Sufficient information and a reasonable period has already been provided prior to the Summit. (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 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. Woodside has an existing engagement framework in place with NYFL which enables regular (quarterly) communication about Woodside activities. 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 7.8.1**). (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. 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. (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 4.9.1 of the EP (7) Woodside does not consider NYFL's request that Woodside employ three Ngarluma/Yindjibarndi traditional owners to consult with NYFL members a reasonable proposal. 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 Framework Agreement would be an effective mechanism to address resourcing for ongoing consultation. (8) Woodside has already provided NYFL with reasonable time to participate in consultation and has been engaging since September 2022.	
Local government and community representative groups or organisations		
Shire of Exmouth		

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 July 2021.
- Consultation information provided to Shire of Exmouth on 7 April 2022 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Shire of Exmouth with the opportunity to provide feedback over a 14 month period.

Summary of Consultation Provided and Record of Consultation:

- On 7 April 2022, Woodside presented to the Shire of Exmouth, via the Exmouth Community Reference Group (ECRG), and provided consultation information on related petroleum activities for the Scarborough Project, which included reference to the proposed activities for this EP.
- On 17 November 2022, Woodside presented an updated on its planned Scarborough activities (Appendix F, Reference 1.24).
- On 1 February 2023, Woodside emailed the ECRG advising of the proposed activity (Appendix F, Reference 1.48) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.78).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside has provided relevant information to address the ECRG representative's questions. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	No additional measures or controls are required.

Shire of Karratha

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 July 2021.

- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to Shire of Karratha on 27 January 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided Shire of Karratha with the opportunity to provide feedback over a 4 month period.

Summary of Consultation Provided and Record of Consultation:

- On 27 January 2023, Woodside emailed The Shire of Karratha, via the KCLG, advising of the proposed activity and provided an updated Consultation Information Sheet (Appendix F, Reference 1.45).
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.76).

Summary of Feedback, Objection or Claim	***Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response***	***Environment Plan Controls***
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	No additional measures or controls are required.

Karratha Community Liaison Group (KCLG)

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to KCLG on 27 January 2023 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the KCLG with the opportunity to provide feedback over a 4 month period.

Summary of information provided and record of consultation:

- On 27 January 2023, Woodside emailed the KCLG advising of the proposed activity and provided an updated Consultation Information Sheet (Appendix F, Reference 1.45).

• On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.76.). • On 24 February 2023, Pilbara Ports Authority, as a KCLG member, responded to advise it had no comments on the proposed activity.		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback was received from the KCLG with the exception of the Pilbara Port Authority, which advised it had no comments on the proposed activity. Whilst feedback has been received, there were no objections or claims.	Woodside notes that no feedback was received from the KCLG with the exception of the Pilbara Port Authority, which advised it had no comments on the proposed activities. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has 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.

Exmouth Community Reference Group (ECRG)

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to ECRG on 7 April 2022 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has addressed and responded to ECRG over a 14 month period.

Summary of information provided and record of consultation:

- On 7 April 2022, Woodside presented to the ECRG and provided consultation information on related petroleum activities for the Scarborough Project, which included reference to the proposed activities for this EP.
- On 17 November 2022, Woodside presented an update to its planned Scarborough activities (Appendix F, Reference 1.24).
- On 1 February 2023, Woodside emailed the ECRG advising of the proposed activity (Appendix F, Reference 1.48) and provided an updated Consultation Information Sheet.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.78).
- On 3 March 2023, an Exmouth CRG representative emailed Woodside, provided comment on another proposed activity and requested information on the timeline for the activity, asking if it could potentially be for a continual period up to 70 days, or in intervals.
- On 17 March 2023, Woodside responded to the ECRG representative explaining the planned duration and the commencement date, based on acceptance of the EP. Woodside invited any further feedback specific to this activity and provided multiple contact details.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
An Exmouth CRG representative queried the timeline for the activity. Whilst feedback has been received, there were no objections or claims.	Woodside has provided relevant information and more clarification to address the ECRG representative's questions. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	No additional measures or controls are required.

Other non-government groups or organisations

350 Australia (350A)

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with 350 Australia 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 July 2021.
- Consultation information provided to 350A on 25 February 2022 based on their function, interest, and activities.
- Woodside published advertisements in a national, state, and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to 350A over a 15-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.
  - 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 emailed 350A and included responses to address specific claims and objections raised regarding the proposed activity, where appropriate.
  - 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 6 February 2023, Woodside emailed 350A, with an updated revision of the EP seeking feedback by 8 March 2023.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
350A self-identified, provided comment on the broader Scarborough development and requested to be consulted on the proposed activity. 350A provided feedback relating to:	Feedback has been assessed on merit as it applies to this EP and a summary of responses has been provided	No additional measures or controls are required.

- Impacts to marine wildlife from pollution - Carbon emissions and climate change caused by the Scarborough development. 350A asked for additional time to provide feedback. 350A provided additional feedback: - Consultation should be undertaken when Revision 3 of the EP is complete and available - 350A requested a JASCO report on marine acoustic impacts - Impacts of vessel use on turtles - Limiting vessel speed in relation to whales - Risks controlled to ALARP for vulnerable and endangered species.	to address specific claims and objections raised on the proposed activity, where appropriate. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	

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 July 2021.
- Consultation information provided to CCWA on 20 August 2021 based on their function, interest and activities.

  Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to CCWA over a 22 month period.

Summary of information provided and record of consultation:

- On 12 August 2021, CCWA emailed Woodside about the broader Scarborough Offshore Gas Project and upcoming draft Environmental Plans, and stating it wishes to be consulted as a relevant person.
- On 19 August 2021, Woodside emailed CCWA thanking them for the letter and advising they would contact them soon.
- On 20 August 2021, Woodside emailed CCWA advising of the proposed activities and provided a Consultation Information Sheet (Appendix F, Reference 1.18).
- On 14 September 2021, CCWA emailed Woodside requesting:
  - Additional time to provide feedback.
  - A copy of the draft EPs and other application documents including studies that will be submitted to the regulator in support of the EP's.
- On 17 September 2021, Woodside responded to CCWA's feedback requesting consultation responses by 20 September 2021 as this period is consistent with other stakeholder response times and an additional 30-day comment period had already been granted to CCWA. Woodside further responded to advise consistent with the

process in the legislation, consultation occurs while the draft EP is being developed. As EPs are in development, copies of the drafts are not provided to stakeholders during the consultation phase.

- On 20 September 2021, CCWA sent a letter to Woodside with the following key points:
  - CCWA is a “relevant person”
  - Form of consultation required under cl.11A of the Environment Regulations
  - The information sheet is not “sufficient information”
  - Information required by CCWA (12 technical queries)
  - “Reasonable period” for the consultation
  - Further submissions
- On 7 October 2021, Woodside advised CCWA that it is aiming to provide further information in the following week.
- On 15 October 2021, Woodside responded to CCWA and provided additional information on the proposed activity. Woodside noting advised that CCWA provided comments on the OPP during the eight-week public comment period, and recommended that CCWA consider this in addition to information provided in the consultation information sheet. CCWA had technical queries on the worst-case oil spill, greenhouse gas emissions, cumulative impacts, geotechnical information, cultural heritage, demonstration of ALARP, acceptability and environmental performance outcomes, standards and measurement criteria. Each of these points was addressed. This included providing a worst-case loss of containment modelling outcome figure, and a list of aspects considered in the D&C EP with reference to where this is addressed in the Scarborough OPP. Woodside requested any further comments about the proposed Drilling and Completions activities by 29 October 2021.
- During the course of the assessment of this EP, Woodside received feedback from CCWA via the Regulator:
  - CCWA asserts 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 asserts that previous requests for information on direct and indirect impact on the Murujuga Petroglyphs has not been met.
  - CCWA claim Woodside’s consultation process has been restricted and consultation with a wider group of ‘relevant’ persons is required - particularly Indigenous groups (i.e. MAC) but also trade union groups, youth groups, health sector groups and government agencies.
  - CCWA claims the Scarborough Project has not been properly referred, assessed and approved under EPBC Act with specific concerns about MNES inc. Great Barrier Reef.
  - CCWA claims Scarborough is excluded from class of actions covered by OPGGS Endorsed Program Approval as it is likely to have significant impact on World Heritage and National Heritage values of Great Barrier Reef.
  - CCWA objects to not being identified as a ‘relevant person’ in relation to the SCA D&C EP and the project more broadly, and that the information provided by WEL to date does not meet consultation requirements as defined in the Environment Regs (cl.11A).
  - CCWA claims that information provided has been ‘narrowly limited’ to D&C and have requested information on Trunkline, GHG emissions over the life of the project and the use of CCS. CCWA expects that impacts risks and consultation should not be narrowed to exclude key aspects of the Project.
  - CCWA claims it has not received sufficient information about GHG emissions and potential climate change impacts and risks of the Project.

- CCWA claims it requires information from Woodside about the total greenhouse gas emissions of the Project over its lifetime (i.e., including "indirect" emissions from processing and consumption) and potential direct and indirect impacts of emissions on the environment.
- CCWA requests confirmation of total GHG emissions for the project, warming scenarios with which the Project is consistent and any proposed control measures.
- CCWA claims that information previously provided by Woodside with respect to Paris Agreement alignment, warming and energy mix scenarios is insufficient and dispute it may be inaccurate.
- CCWA requires further information on how the Project's climate change impacts and risks will be made acceptable and ALARP and submits that the only "acceptable" impact of a new fossil fuel project is that it achieves net zero emissions.
- CCWA claims 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 requests 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 objects to NOPSEMA's acceptance of the SCA D&C EP until consultation has been properly undertaken with all relevant persons and Woodside has demonstrated that the impacts and risks of the activity are acceptable and ALARP.
- CCWA claims the direct and indirect impacts of methane and other hydrocarbon leaks from the Scarborough gas field resulting from the operations require more careful consideration, including risk modelling for shoreline impacts from field leakage of methane.

- On 15 December 2021, Woodside received third-party correspondence via NOPSEMA in relation to this Scarborough activity. Following assessment of the feedback, Woodside determined that the feedback from CCWA on 27 October 2021 had included the following feedback, claims and objections that could also be related to the proposed activity and 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 asserted its previous request for information on direct and indirect impact on the Murujuga Petroglyphs as it had not been met.
- CCWA claimed that Woodside's consultation process has been restricted and consultation with a wider group of 'relevant' persons is required (particularly Indigenous groups (i.e., MAC) but also trade union groups, youth groups, health sector groups and government agencies). On 16 March 2022, The Environmental Defender's Office (acting for CCWA) responded to the information provided. This feedback was again assessed on merit as it applies to this EP. Woodside confirms that following an assessment of the information contained in the letter, no new information has been presented for consideration under the PAP for this EP. Woodside considers the information previously provided on 25 February (and that presented above) adequately addresses feedback.
- On 25 February 2022, feedback has been assessed on merit as it applies to this EP and a summarised statement of response is presented below. A copy of these responses was provided to CCWA.
  - Woodside noted that the purpose of the Petroleum Activities program is to drill and install up to 10 development wells in Permit Area WA-61-L about 374 km west-north-west of Dampier, in Commonwealth waters. The Scarborough D&C EP assesses both direct and indirect environmental 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 included in the PAP for this EP. Therefore, indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of this PAP but will be evaluated in future Scarborough EPs as appropriate.

- Woodside noted that requirements of subregulations 11A (1) of the Environmental Regulations to identify relevant persons for the purposes of consultations on the Scarborough D&C EP has been followed. For the broader Scarborough project, Woodside has engaged closely with relevant stakeholders (including MAC and other relevant Traditional Owner groups) since 2019. This includes consultation on relevant Scarborough activities in Commonwealth waters under the Scarborough Offshore Project Proposal, and activities in State waters under the Scarborough Nearshore Component. Following further feedback and assessment the EP has been updated (Section 5) which includes an updated consultation approach and relevant person and additional person identification process (see Section 5.4).
- Woodside noted that the Scarborough Offshore Project Proposal has been appropriately authorised under the EPBC Act through its acceptance by the NOPSEMA, in accordance with the OPGGS Endorsed Program Approval. Specifically, the 'offshore component' of the Scarborough Project will be undertaken in accordance with the endorsed program referred to in the OPPGS Endorsed Program Approval. In that regard:
- On 30 March 2020, NOPSEMA accepted the Scarborough OPP which relates to the 'offshore component' of the Scarborough Project; and
- As foreshadowed in the Scarborough OPP, and consistent with the OPPGS Endorsed Program Approval, Woodside will continue to submit environment plans to NOPSEMA in relation to petroleum activities the subject of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth) as appropriate.
- Woodside does not accept the assertion that the Scarborough Project is likely to have a significant impact on the heritage values of the Great Barrier Reef, or the basis for that assertion as identified in the letter.
- Woodside acknowledges that CCWA has self-identified as a relevant person and confirms that Woodside has consulted with CCWA. Table 5.1 in Section 5 of the SCA D&C EP has been amended to confirm that during the course of preparing the EP, CCWA self-identified and requested to be consulted on Scarborough EPs.
- Woodside noted that CCWA was provided with information relevant to the EP that is consistent with information provided to other relevant persons in addition to extra information. For example, information provided to CCWA in relation to consultation to date, includes the Consultation Fact Sheet and a response to requests for additional information relating to the SCA D&C EP, including responses to technical queries on the worst-case oil spill, greenhouse gas emissions, cumulative impacts, geotechnical information, cultural heritage, demonstration of ALARP, acceptability and environmental performance outcomes, standards and measurement criteria. Each of these points was addressed. This included providing a worst-case loss of containment modelling outcome figure, and a list of aspects considered in the D&C EP with reference to where this is addressed in the Scarborough OPP. In addition, further information has been provided in this letter in response to CCWA's request for additional information. For subsequent Scarborough EP's and those under assessment already, Woodside will continue to apply the process for identification of 'relevant persons'.
- Woodside noted 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. In terms of timing:
    - Section 5 of the SCA D&C EP outlines the phased program of consultation undertaken for the Scarborough OPP:
    - Phase 1: Preliminary consultation undertaken during the impact assessment process and preparation of the OPP.
    - Phase 2: Formal consultation under the public review process of the draft OPP by NOPSEMA.
    - Phase 3: Ongoing consultation during project planning and execution and development of activity specific Environment Plans.
    - Phase 1 and Phase 2 relate to consultation that commenced in early 2018 and includes consultation undertaken for the OPP development, assessment and approval process. During these consultation phases, relevant persons (including CCWA) were provided with whole-of-project information.

  - Phase 3 of the consultation approach is the EP-specific consultation which covers activities specific to each of the EP's Petroleum Activities Program. Hence, the D&C EP consultation is activity specific. Information on other aspects of the project can be reviewed in the Scarborough OPP or, where relevant will be provided as part of consultation for the associated EP(s).

- Woodside noted that Section 7.1.3 of the Scarborough OPP which includes an assessment of GHG emissions associated with the Scarborough Development over its lifetime. 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 set in the EP.
- Woodside noted that GHG emissions associated with the production, processing and consumption of Scarborough gas are not within the scope of the D&C EP and will be addressed in future EPs, as appropriate.
- Woodside noted that additional information is available in Section 6.7.2 of the EP regarding GHG emissions of the D&C activity, including a summarized table for the estimated GHG emissions.
- Woodside noted that since the OPP was accepted, additional 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. Overall, the more recent climate change reports strengthen the findings of previous analysis, such as the AR6 which projects a slight increase in warming for similar emissions scenarios to AR5, with a narrower range of uncertainty of these projections (more 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). Australia's emissions projections demonstrate that it is on track to reduce emissions by up to 35% below 2005 levels by 2030 (UNFCCC, Australia's NDC 2021), in line with its NDC targets to reduce emissions by 26-28% below 2005 levels by 2030, under the Paris Agreement. 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 (aligned with Woodside's targets) 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). The D&C EP has been updated to consider more recent climate change reports, 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. Woodside notes that the Climate Analytics paper's focus is on project and lifecycle level GHG emissions and does not raise specific concerns relating to the GHG emissions generated by the D&C activity, which are well below 1% of the lifecycle GHG emissions considered in the OPP.
- Woodside noted that the Scarborough D&C EP assesses both direct and indirect environmental impacts and risks associated with the proposed Petroleum Activities Program and that are appropriate to the nature and scale of the Petroleum Activities Program. The extraction of Scarborough gas for onshore processing, and subsequent third-party use, is not included in the Petroleum Activities Program for this EP. Any indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of this Petroleum Activities Program, will be evaluated in future Scarborough EPs as appropriate.
- Woodside noted that a number of greenhouse related development alternatives are considered in Section 4.5 of the OPP, including a no development option. Woodside's approach to climate change includes corporate decarbonisation targets which will be achieved by avoiding emissions through the way facilities are designed; reducing emissions through the way facilities are operated; and offsetting emissions, by both acquiring and originating quality offsets. Please refer to our website and recently published Woodside Climate Report 2021 for further information on Woodside's corporate approach.
- Woodside has developed subsurface models of the Exmouth Plateau, which incorporate inputs from multiple surveys that have been conducted to investigate geohazards such as the area of pockmarks, and safely executed exploration drilling. These have been endorsed by external and in-house technical experts.

- Woodside's position is consistent with published evidence that there are no indications of present-day natural leakage, and that it is not credible that environmentally significant methane releases could be caused by Scarborough development activities. As this has been assessed as a non-credible risk, it has not been included in the Scarborough D&C EP.

- On 16 March 2022, the EDO emailed Woodside. (Responses were provided by Woodside on 7 June 2023 to each point raised by EDO in this correspondence, as demonstrated below.)
- On 7 June 2023, Woodside emailed the EDO (CCWA cc) thanking the EDO for their letter on behalf of CCWA (dated 16 March 2023 and sent to Allens) regarding this EP. An attachment sent with the email included responses to items raised in the EDO's letter (dated 16 March 2023). Woodside stated:
  - Requests for further information are provided to Woodside by NOPSEMA to be addressed by Woodside during the EP assessment process. Any potential revision of the EP will be made publicly available upon publication on NOPSEMA's website.
  - Regarding the claim that information provided by Woodside falls short of requirements, Woodside stated consultation requirements have been complied with as per the regulations and ongoing regulator guidance.
  - Regarding CCWA's relevant person status, Woodside follows the regulations in relation to consultation and that Woodside follows the same consultation process whether a person is a "Relevant Person" or not.
  - In response to claims over a lack of information on the potential impacts, risks and proposed control measures for this EP, Woodside stated a previous response had addressed this and GHG emissions information had been previously provided. Woodside went on to point to relevant sections in the publicly available EP.
  - In response to the claim that CCWA is not able to determine whether the amendments in the EP have addressed its concerns without a copy of the revised EP, Woodside stated that no controls in the EP were required to be updated as a result of the claims raised by CCWA. The EP had however been updated to reflect the correspondence that had occurred i.e. the content of letters and exchanges between CCWA and Woodside.
  - Regarding indirect impacts, Woodside confirmed:
    - This EP assesses both direct and indirect impacts and risks associated with the PAP.

      The extraction of Scarborough gas for onshore processing is not within the scope of this activity.
    - GHG emissions are considered in the publicly available EP.

      Emissions 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; damage to heritage sites is not anticipated; archaeological assessments and ethnographic surveys have not identified any heritage places, objects or values which will be impacted by the activities of this EP.
  - Regarding GHGs, the claim of potentially inaccurate or misleading information on warming scenarios and impacts on the Great Barrier Reef, Woodside stated it has provided CCWA with sufficient information.
  - Woodside stated in the letter that based on the information provided throughout extensive consultation with EDO and CCWA and set out within the Attachment of this email, Woodside had provided sufficient information to allow the EDO and CCWA to make an informed assessment of the possible consequences of the proposed activity and to provide Woodside with its objections or claims. Any further feedback would be accepted and considered as part of ongoing consultation.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**

CCWA has provided feedback / objections / claims on a broad range of topics including: - Impacts on the Dampier Archipelago National Heritage Place - Consultation requirements under the Regulations - Referral process of the broader Scarborough Project - Impact and risk assessments, including cumulative impacts and impacts to benthic communities - Quality and availability of baseline information relating to the Environmental Impact Assessment, noting potential impacts to nearby Marine Parks - Data Appropriateness of modelling and interpretation in context of receptors - EP activity as described in the OPP. CCWA has requested additional information on: Climate change impacts and risks and control measures for GHG reduction in alignment with the Paris Agreement.	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. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	No additional measures or controls are required.

Greenpeace Australia Pacific (GAP)

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Greenpeace Australia (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:

- Consultation Information Sheet publicly available on the Woodside website since July 2021.
- Consultation information provided to GAP on 29 April 2022 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to GAP over a 13 month period.

Summary of information provided and record of consultation:

- On 8 April 2022, during the course of preparing this EP, GAP self-identified and requested to be consulted on this and other Woodside EPs.
- On 29 April 2022, Woodside responded to GAP's feedback and provided a link to the EP on NOPSEMA's website.
- 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:
  - Woodside advised it had further reviewed GAP's letter from 8 April 2022 and considered that GAP was a relevant person under Regulation 11A of the OPGGS Regulations, for the purposes of consultation on this EP.

- 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):
  - Woodside had not consulted with all relevant persons and incorporated their feedback into the EP;
    - GAP recommended Woodside consult with the Australian Marine Conservation Society and marine tourism representatives that operate not just on the PAA but also near the pygmy blue whale BIA. GAP also requested Woodside outline its engagement with Indigenous stakeholders.
  - Woodside had not adequately evaluated all impacts and risks;
    - GAP requests that Woodside provide the regulator with additional information about the depth of experience and potential and actual conflicts of interest amongst the workshop participants to ensure the regulator and public can have confidence about the hazard identification and evaluation.
  - Woodside had not adequately demonstrated that the environmental impacts and risks would be reduced to as low as reasonably practicable;
    - GAP claims the risk assessment should be updated and reassessed based on more realistic impact durations and cumulative impacts.
    - GAP provided feedback about routine light emissions and recommended that a qualified frequency and duration threshold be added to the light pollution from flaring risk. GAP also requested Woodside demonstrate that its plan for management of excessive light emissions is online with best practice.
  - Woodside had not adequately demonstrated that the environmental impacts and risks would be of an acceptable level;
  - The Environmental Performance Outcomes did not reflect levels of environmental performance;
  - The EP was inconsistent with the Blue Whale Conservation Management Plan and threatened species recovery plans; and
  - The EP was inconsistent with the principles of ecologically sustainable development, specifically the 'intergenerational principle'.
  - GAP recommended that all vessels be restricted to a maximum speed of 8 knots.
  - GAP provided feedback about routine atmospheric GHG emissions:
    - The emissions generated by the activities are inconsistent with area A.3 of the Blue Whale Conservation Management Plan

      GAP recommended Woodside provide evidence for how the emissions are aligned with the Federal Government's emissions reduction commitment; and also requested an updated estimate of all upstream and downstream scope 1,2, and 3 emissions from the Scarborough Project and the 10 wells included in the EP; and include the upstream and downstream scope 1,2 and 3 emissions from the combined Scarborough-Pluto projects in the EP.
    - GAP recommends Woodside provide a summary of the expected offsets be provided in the EP, including when ACCUs will be generated or bought, and the accounting methods employed by the ACCUs. GAP also requested demonstration that offsets are additional, verified, measurable and permanent.

      GAP recommended that the definitions of impacts in the EP should be science-based and demonstrate that the activities will not be inconsistent with limiting global warming to 1.5°C.
    - GAP claims the air quality risk should be re-evaluated to take into account the impacts exceeding 1.5°C. warming and woodside should make amendments to the EP.

      The indirect scope 3 emissions should be included in the impacts and risks in the EP; and that the regulator should request the Scope 1 and 3 emissions from the 10 wells and that the cumulative emissions should be included in the impact analysis.
    - GAP recommends Woodside prepare an assessment of the climate-related impacts to the MNES coral reef systems based on direct and indirect impacts (i.e from emissions), and provide evidence if Woodside assets there is no impact.
  - GAP provide feedback on routine acoustic emissions:

- GAP recommended that Woodside assess and report on potential cumulative impacts from all activities at the Scarborough site.

  GAP claims that the McCauley 2004 study is out of date and that Woodside should commission a more up to date study.
- GAP claims Woodside should be taking a precautionary approach when behavioural impact and the long term consequences of those impacts are uncertain, and use more conservative estimates.

  GAP recommends that noise pollution exceeding 120dB re 1µPa is prohibited during seasons of peak cetacean activities in the area, that is, during the April to July northern migration and the November to December southern migration.

- GAP provided feedback about physical presence and disturbance to habitat:
  - GAP disputes the 'guesstimated' impact radius (100m from each well) and strongly recommends the regulator seek additional information

    Greenpeace strongly recommends that before and after monitoring of the seabed impacts, specifically related to concentrations of suspended solids and habitat modification from turbidity and sediment settling, is conducted.
- GAP provided feedback about routine and non-routine discharges: drill cutting & drilling fluids
  - GAP recommends that pre- and post-impact surveys of the benthic fauna are conducted.

    GAP encouraged further consideration of technologies, such as a thermomechanical system, to improve waste management and reduce environmental impacts.
- GAP provided feedback about unplanned hydrocarbon release from vessel collision
  - The Environment that May Be Affected (EMBA) by the Petroleum Activities Program (as depicted in Figure 4-1) should be recalculated based on this amended worst case scenario. Should the EMBA extend into the Ningaloo World Heritage area or any of the marine protected areas following this recalculation, then that should be taken into consideration. Marine protected areas identified following the recalculation should be considered

    Table 6-14 should be expanded to include Pygmy Blue Whale Migratory BIA
  - The risk posed to cetaceans by a worst-case scenario spill reinforces the importance of prohibiting activities during whale migration months.
- GAP provided feedback about unplanned hydrocarbon release from loss of well control
  - GAP attests it's imperative that spill and contamination modelling be conducted on the potential worst case scenario as a result of a well blowout, i.e. the sinking of the MODU.

    GAP disputes the summary of assessment outcomes provided in Section 6.7.3 and that additional controls could be implemented to mitigate impacts.
- GAP provided feedback about physical presence and unplanned collision with marine fauna:
  - GAP recommends that vessels be restricted to a maximum speed of 8 knots (except in the event of an emergency).
  - GAP requested more information on the aspects raised in its letter to assess whether impacts have been reduced to an acceptable and ALARP level.

    GAP requested an updated version of the EP to see how its feedback has been incorporated.

- On 5 September 2022, Woodside responded with the following:
  - Woodside has followed the requirements of subregulations 11A (1) of the Environment Regulations to identify relevant persons for the purposes of consultation on its EPs. Woodside considers factors including the above criteria as part of a case-by-case approach for each EP to identify relevant persons. The EP has been updated (Section 5) to outline Woodside's consultation approach and stakeholder identification process, consistent with the criteria above.

- Woodside has engaged with relevant stakeholders (including MAC and other relevant Traditional Owner groups) since 2018. This includes consultation on relevant Scarborough activities in Commonwealth waters during development of the Scarborough Offshore Project Proposal, and activities in State waters as part of the Scarborough Project Nearshore Component environmental review. Depending on the nature and scale of the activity, stakeholder consultation can occur during the life of an EP. Ongoing consultation enables updates on activities and a continued understanding of stakeholder views. The EP has been updated (Section 5.8 and Section 7.8.2.1) to outline Woodside's ongoing consultation approach and engagements in accordance with Regulation 14 (9) of the Environment Regulations.
- Woodside welcomes ongoing feedback on its activities from stakeholders. Information sheets on Woodside's EPs are made publicly available on the Woodside website for interested parties to review and provide feedback on. Woodside will continue to accept feedback from stakeholders during the assessment of this EP and throughout the duration of the accepted EP.
- 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. Table 6-2 in the EP (Rev 0) summarises the risk assessment outcomes from Section 6. The durations in Figure 2-2 relate to longevity of the consequence and not duration of the activity or impact pathway. The risk assessments in Section 6 take into consideration the total length of drilling and completions activities and present the extent of the impacts and risks. Cumulative impacts for drilling and completions activities are discussed in Section 6.2.1 of the EP. Activities within the drilling campaign are not termed 'cumulative' as activities are assessed as a whole in the EP.
- Section 6.7.1 of the EP (Rev 3, previously 6.6.1 (Rev 0)) outlines impact potential due to lighting from drilling and completions activities, including flaring during well unloading. As discussed in Section 6.7.1 (Rev 3); given the distance from shore, low sensitivity of receptors offshore (i.e. no presence of nesting turtles and low likelihood of hatchling turtles in the offshore environment), overall impact significance level for routine light emissions is expected to have no lasting effect to the high value receptors (seabirds, migratory shorebirds and marine turtles). Relating to seabirds, the PAA is offshore and away from islands or other emergent features therefore any presence of seabirds or shorebirds is considered likely to be of a transient nature only. The nearest BIA for birds within the EMBA is a breeding and foraging BIA for the wedge-tailed shearwater, located 115 km to the south-east of the PAA. Impacts to shearwaters within the BIA are therefore not expected. Given the slight impact potential in relation to the D&C activities and the PAP location, as well as the short and temporary nature of flaring, current controls in the EP are considered ALARP, with adequate Environmental Performance Outcomes and Measurement Criteria.
- Project vessels within the Operational Area are likely to be travelling <8 knots (and will often be stationary) within the 500 m zone for the MODU. At times, vessels will be transiting between wells where speed could be up to a maximum of about 15 knots, however these would only be transitory through the area. In addition, vessels adopt the go-slow buffers around marine fauna as per EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans (C3.1). As discussed in Section 6.8.9 of the EP (Rev 3) (previously 6.7.9 (REV 0)) the Operational Area does not overlap with any cetacean BIAs or critical habitat and the presence of marine fauna is likely to be limited to infrequent occurrences of individuals or small groups. Therefore, given the slow speeds at which the vessels operate, the likely presence of marine fauna and the controls currently in place (C3.1) the risk of a collision is considered highly unlikely and is considered ALARP with no further controls. The EP has been updated to include consideration of a vessel speed in the ALARP assessment (Section 6.7.6; Revision 3).
- Section 7.1.3 of the Scarborough OPP includes an assessment of GHG emissions associated with the Scarborough Development over its lifetime. 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 set out in the EP. GHG emissions associated with the production, processing and consumption of Scarborough gas are not within the scope of the D&C EP. Woodside has included additional information in Section 6.7.2 (Rev 3), previously 6.6.2 (Rev 0) of the EP regarding GHG emissions of the D&C activity, including the following table which summarises the estimated GHG emissions, considered indirect emissions of the proposed Petroleum Activity. This is estimated to be well below 1% of the Scarborough Project lifecycle GHG emissions as presented in the OPP, which were assessed as having a negligible impact significance level. GHG emissions associated with the Petroleum Activities Program set out in the EP will cease prior to the end of 2027 and are therefore aligned with Australia's emission reduction commitments.

- Lifecycle GHG emissions were assessed in the OPP against relevant receptors and were found to be negligible, and Section 6.7.2 of the EP (Rev 3) has been updated to consider more recent climate change reports, 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. 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. The assessment of GHG emissions from the Petroleum Activities Program described in the EP, less than 1% of that considered in the OPP, is appropriate to the nature and scale of the impact.
- The extraction of Scarborough gas for onshore (downstream) 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 may be evaluated in future Scarborough EPs as appropriate. Section 4 of the OPP outlines the list of broader Scarborough Development activities, which will be addressed in EPs submitted to NOPSEMA for assessment.
- Woodside's approach to climate change includes time based corporate decarbonisation targets which will be achieved by avoiding emissions through the way facilities are designed; reducing emissions through the way facilities are operated; and offsetting emissions, by both acquiring and originating quality offsets. The potential use of offsets is not determined at an activity level.
- 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 by:
  - Providing a clean and reliable energy source, as gas is expected to play a key role in the future energy mix as a partner to renewables.

    Contributing to the International Energy Authority's Sustainable Development Scenario which shows that Scarborough gas is consistent with objectives of mitigating climate change in line with Paris Agreement targets, providing universal energy access by 2030 and reducing health impacts of air pollution.
- The Scarborough D&C 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 extraction of Scarborough gas for onshore processing, and subsequent third-party use, is not included in the Petroleum Activities Program for this EP. Indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of this Petroleum Activities Program and may be evaluated in future Scarborough EPs as appropriate.
- Woodside does not accept the assertion that the Scarborough Project is likely to have a significant impact on the heritage values of the Great Barrier Reef.
- 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 relevant petroleum activities, including other Scarborough activities, that could realistically result in overlapping temporal and spatial extents. Other facilities located in proximity to the PAA were identified within of the EP (Rev 0). Given the distance between the location of the PAA and other nearby petroleum facilities and activities, no cumulative risks or impacts will credibly occur.
- Woodside has also identified and assessed the following proposed activities for WA-61-L that may overlap temporally and/or spatially (Section 6.2.1, Rev 0):
  - Scarborough 4D B1 marine seismic survey may be undertaken over WA-61-L however there will be no temporal overlap (activities will not occur concurrently) and therefore no cumulative impacts are predicted with this activity.

Scarborough trunkline installation may result in cumulative impacts due to both a spatial and temporal overlap, however any potential impacts will be described, assessed and managed under the Scarborough Seabed Intervention and Trunkline Installation EP (under development).

- 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 and applied impact evaluation threshold.
- The Thums et al. (2022) study does not support the Greenpeace hypothesis that "new research shows that the vicinity of the PAA (i.e. west of the BIA) is frequently used by pygmy blue whales as a migration pathway and also during assumed foraging, resting or breeding behaviour–in fact, it is one of the three most used areas by the species and substantial singing occurs in the area". There are no data that indicates that the area of the Exmouth Plateau overlapped by the PAA for the Scarborough Drilling & Completions represents an area where opportunistic foraging or breeding by pygmy blue whales occurs. 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 offshore from Western Australia includes the area of the shelf edge from Ningaloo Reef to the Rowley Shoals. However, this foraging area does not appear to extend out to the central portion of the Exmouth Plateau where the PAA is located, and hence it is unlikely foraging whales will be present in the Operational Area.
- The assessment of potential impacts of acoustic emissions on cetaceans in Section 6.7.3 (Rev 3) of the EP (previously 6.6.3 (Rev 0)) concludes that, given the proximity of the pygmy blue whale migration BIA to the PAA (about 35 km), it is likely that individuals may transit in and around the PAA during migratory periods; however, only transient individuals or small groups are expected. Individuals transiting through the PAA or adjacent waters may display a short-term behavioural response (i.e. avoidance, minor deviation to migration route) due to the presence of the MODU and support vessel and associated underwater acoustic emissions. This impact is highly unlikely to be ecologically significant at a population level. There are no data that indicates that the area of the Exmouth Plateau overlapped by the PAA for the Scarborough Drilling & Completions represents an area where opportunistic foraging or breeding by pygmy blue whales occurs regularly.
- The use of a temporal control to avoid overlap between the activities and the northbound and southbound pygmy blue whale migration was considered in the Demonstration of ALARP in Section 6.7.3 (Rev 3) of the EP (previously 6.6.3 (Rev 0)). This control was not adopted, on the basis that it was determined not to be feasible due to total length of the drilling campaign, the planned batch drilling sequence, and successive activities dependent upon completion timing of the D&C campaign execution. Implementation of this control would introduce significant cost and schedule impacts deeming the project unviable if activities had to avoid specific time periods.
- The EP includes a number of activity specific management controls Section 6.7.3 (Rev 3) of the EP (previously 6.6.3 (Rev 0)) that will be implemented if pygmy blue whales are encountered in the vicinity of drilling operations:
  - adaptive management procedure prior to and during MODU /installation vessel moves to the next well location, during daylight hours;

    collection of data on opportunistic sightings of pygmy blue whales to determine presence and behaviour; and
  - movement of support vessels >2 km away from the MODU if foraging pygmy blue whales are observed within 500 m of the MODU.
- The PAA does not overlap with any cetacean BIAs and the presence of pygmy blue whale is likely to be limited to infrequent occurrences of individuals or small groups. Therefore, given the likely presence of marine fauna and the controls currently in place the potential impact is considered ALARP with no adoption of a temporal control.
- The area of seabed disturbance related to physical presence is limited to the physical footprint of the offshore seabed infrastructure, contingent MODU anchoring (if DP MODU is not used) and associated installation support activities (e.g. ROV, positioning equipment) and maintenance activities as described in Section 6.7.5 (Rev 3) (previously Section 6.6.5 (Rev 0)). Seabed disturbance associated with the release of drill cuttings and fluids during drilling are described in Section 6.7.7 (Rev 3) (previously Section 6.6.7 (Rev 0)).

- Section 6.7.5 of the EP (Rev 3) has been updated with further context and to amend impact radius (from 100 m to 10 m) for the seabed disturbance associated with installation of the BOP and cementing of the conductor. Cementing of the conductor is carried out to secure the conductor in place and achieve adhesion between the conductor and subsurface. During this process cement is pumped into the space between the conductor and substrate until there is cement expression at seabed, to achieve acceptance criteria for the cement job and ensure adequate fatigue and structural support. The cement patio or excess cement at seabed is typically no more than 5 m radius, however disturbance to seabed has conservatively been calculated based on 10 m radius (formerly stated as 100 m in Rev 0 of the EP) to account for general seabed disturbance in the vicinity of the wellhead from PAP activities. Cement to seabed is minimised to ensure cement integrity down-well is maintained and reduce wastage / physical disturbance.
- Pre- and post-activity monitoring of the benthos related to the described activities is not considered warranted, as the changes to water quality and habitat are expected to be localized. The potential disturbance area represents a small proportion of the total area of deep water habitat and associated benthic communities of the PAA, that are known to be present in the wider region. Elevations in turbidity will be intermittent and temporary in nature depending on the phase of the activity (e.g., during installation, and/or ROV use etc.), and are not expected throughout the full 60 day campaign for each well. Further the sediment dispersed during these activities is naturally occurring and will settle under existing hydrodynamic conditions. Section 6.7.7 (Rev 3), previously 6.6.7 (Rev 0) has been updated to clarify the potential impacts from turbidity will be intermittent, temporary and localised.
- Section 4.5 of the EP (Rev 0) provides a description of the benthic habitat in the operational area based on a baseline study undertaken by ERM in 2013 (see OPP Appendix A) , which provided a characterization of the seasonal environmental conditions across the extent and topographical features of WA-1-R (now WA-61-L), including benthic communities, sediment infauna, water and sediment quality, and planktonic communities. Results from the wet and dry season studies indicate that the WA-1-R biophysical characteristics are generally typical of the region's tropical deep-water environments. The low energy, soft bottom seafloor of WA-1-R was found to support sparse marine fauna as reported for the Exmouth Plateau (ERM, 2013). Given, the total percentage area of the Exmouth Plateau seabed habitat and benthic communities affected is conservatively estimated to be 0.01% (based on conservatively applied zone of potential ecological impact of 500 m radius per well), pre- and post- monitoring of the benthos to assess drilling discharges is not considered warranted.
- Thermomechanical systems were considered with the ALARP justification provided in Section 6.7.7 (Rev 3), (previously 6.6.7 (Rev 0)), which included consideration of health and safety exposure, schedule, cost, and environment. Noting that the use of NWMB is a contingent activity and is not planned, this consideration has been added to the ALARP assessment in Section 6.7.7 (Rev 3).
- 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 of the MODU and currently considered vessels, including subsea installation vessels. Rationale for selection of credible loss of containment scenarios is provided in Section 6.8.2 (Rev 3) (previously 6.7.2 (Rev 0)) of the EP. In accordance with AMSA's Technical Guidance for Preparing Contingency Plans for Marine and Coastal Facilities (AMSA 2015), the indicative maximum credible spill volume for vessel collisions is the volume of the largest fuel tank, which was used as the basis for risk assessment in the EP.
- The inclusion of the probability of hydrocarbon contact with the BIA has not been included as it is not considered to help inform the impact assessment and demonstration of ALARP and acceptability. The impact assessment in the EP has demonstrated that even in the event of a spill reaching those BIAs that the risk is ALARP and acceptable.
- Ignited gas release associated with a loss of well containment may cause the MODU to founder, capsize and sink. In this scenario, it is likely that fuel and drilling fluid inventories would be released over a period of time, causing contamination. This is assessed in the EP, however an instantaneous release of diesel at the surface is considered to have a more significant environmental outcome due to the greater likelihood of impact at sensitive receptors and is therefore considered worst case.
- Woodside has more than 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. Further information is available on Woodside's website including in its 2021 Sustainable Development Report.

- Further information on Woodside activities can be found on the Woodside website.

- On 9 September 2022, GAP emailed a letter to NOPSEMA (Woodside CC) regarding this EP. GAP summarised correspondence with Woodside to date; stated that it considered the information provided to GAP by Woodside and the period afforded for consultation fell short of the regulations; stated that the EP did not meet the regulations and as such urged NOPSEMA to not accept the EP. GAP requested that NOPSEMA request for Woodside to provide further information on how it has provided a reasonable opportunity for GAP to provide feedback.
- On 28 October 2022, GAP emailed Woodside (NOPSEMA CC) with further feedback on this EP and the additional information Woodside sent.
  - GAP summarised correspondence to date.
  - GAP stated that the EP should not be accepted by NOPSEMA due to Woodside not consulting with all relevant persons and incorporating their feedback into the EP; not adequately evaluating all impacts and risks; not demonstrating the impacts and risks will be reduced to ALARP and that they are not of an acceptable level; the EP is inconsistent with the Blue Whale Conservation Management Plan and threatened species recovery plans and the EP is inconsistent with the principles of ecologically sustainable development, specifically the 'intergenerational principle'.
- On 6 June 2023, Woodside emailed GAP in response to GAP's letter dated 28 October 2023, regarding this EP.
  - Woodside provided an attachment with responses to items raised in GAP's letter of 28 October 2023.
  - Woodside stated it believes it has provided GAP with sufficient information throughout extensive consultation and that given the well-informed feedback received from GAP and the length of time this EP has been open for comment, any further feedback GAP provides on the D&C EP will be accepted and considered as part of ongoing consultation.
- 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 3 August 2023, Woodside wrote to NOPSEMA sharing Greenpeace'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 Greenpeace 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 Greenpeace.
- On 7 August 2023, GAP emailed a letter to NOPSEMA (Woodside CC) regarding this EP. GAP stated it's relevant person status and summarised correspondence with Woodside to date; stated that information provided to GAP falls short of the consultation requirements; stated that it considered the consultation requirements under the regulations have not been adequately discharged; stated GAP's functions, interests or activities and that GAP requires additional information in relation to the EP to make an informed assessment of the possible consequences of the activities on its functions, interests or activities.
  - GAP stated it requires:
    - a copy of the most recent version of the Environment Plan to see how our feedback has been incorporated
    - the potential impacts and risks of the activities' greenhouse gas emissions in relation to global warming and climate change, including whether and how those emissions would fit within a carbon budget and emissions reduction scenarios
    - confirmation that Woodside has provided NOPSEMA with additional information on potential conflicts
    - GAP requested for Woodside to provide clarification on information relating to greenhouse gas emissions and offsets; noise pollution modelling;
    - GAP recommended Woodside set up acoustic monitors on the boundary of the Pygmy Blue Whale migration BIA.
  - GAP contends that the EP does not meet criteria for acceptance in reg 34 of the Environmental Regulations, specifically criteria 34(b) and 34(c), and encouraged NOPSEMA to investigate several listed issues regarding:
    - Reduction of greenhouse gas emissions in the EP to net zero
    - Indirect impacts of scope 3 emissions
    - Reducing risk of vessel strikes on marine fauna to ALARP
    - GAP raised a letter that was sent to NOPSEMA in late 2021 regarding methane leakage from the Scarborough gas field
    - Non water-based mud system contingency plan and reducing the oil in drill cuttings.
    - PFAS substances in planned or unplanned activities
  - GAP contends that Woodside has not adequately discharged its consultation obligations to Greenpeace under 34(g) and as such, GAP urged NOPSEMA to not accept the EP.

- On 11 August 2023, Woodside emailed GAP noting its correspondence to NOPSEMA on 7 August 2023 regarding this EP. Woodside highlighted the continued dialogue and significant exchange of information that has occurred between GAP and Woodside since 2018 and stated that GAP has acknowledged this established history of engagement with Woodside's projects.
  - Woodside referred to the original meeting held in 2018, and GAP launching its campaign against Woodside the day after the meeting with social media, web-based and other protest-based campaigns, including unlawful entry to safety exclusion zones and boarding of Woodside's decommissioned infrastructure.
  - Woodside has and continues to accommodate Greenpeace with requests for information.
  - Woodside referred to several opportunities provided by Woodside to Greenpeace to meet with Woodside's climate team and highlighted that Greenpeace has not made a request to meet about the Scarborough EPs nor has Greenpeace disclosed to Woodside on how it would prefer to be consulted.
  - Greenpeace has not provided Woodside the opportunity to consider Greenpeace's consultation expectations or needs. This is inconsistent for example with other 'relevant persons' that have prepared and disclosed clear statements regarding their consultation preferences to Woodside, which has provided a clear understanding of consultation expectations and formed the basis of general principles for effective two-way consultation.
  - Greenpeace continues to correspond with Woodside in writing only, and therefore Woodside continues to respond in written detail to Greenpeace's claims and objections. Woodside summarised an extensive exchange of emails and letters since 8 April 2022 where Woodside has supplied Information Sheets and responses to issues, both around consultation and technical matters, in relation to all four Scarborough Environment Plans.
  - Woodside acknowledged that GAP has shown a high level of technical awareness and understanding of the Scarborough Project and this demonstrates Greenpeace's comprehensive and detailed understanding of the potential environmental risks and potential impacts posed by the activities in the EPs as well as the mitigations proposed by Woodside.
  - Woodside highlighted its advertisements and social media activity to promote Community Information Sessions and stated that as evidenced by GAP's wide-ranging use of social media in its campaigns against Woodside, this social media format is well known and accessible to GAP. Woodside highlighted that other ENGOs have taken the opportunity to attend these Community Information Sessions and had two-way dialogue with Woodside.
  - Woodside has made a genuine attempt to consult with GAP and has allowed GAP many opportunities to provide Woodside with its claims and objections as they relate to the proposed activities under the four Scarborough EPs.
  - With regards to the D&C EP, Woodside continues to act in good faith and continues to accept feedback from GAP to allow Woodside to consider the potential impacts and risk of the activities on functions, interests and activities and to provide input on things Woodside can do to mitigate those potential impacts and risks.
  - Given the length of time involved, the amount of information provided and the opportunity given to consult, Woodside is satisfied that an appropriate level of consultation has taken place with GAP to satisfy Reg 11A of the Environment Regulations.
  - Woodside confirmed that information has been provided that describes in detail, the activity proposed to be undertaken in the D&C EP, the location, the duration, the risks, impacts, and controls in place to minimise impacts and risks to ALARP.
  - Woodside acknowledged that despite being concerned that the protracted engagement may be aimed at achieving outcomes other than to provide input into the Scarborough Project and other related EPs, Woodside remains open to consulting with Greenpeace further, and additional feedback GAP provides on these EPs will be considered as part of ongoing consultation.
  - Woodside noted GAP's statement issued 1 August 2023: Greenpeace vows to fight Woodside's dangerous seismic blasting in which Greenpeace states it will "use every means possible to stop Woodside".
  - Woodside stated it considers it has satisfied the requirements of Regulation 11A of the Environment Regulations in accordance with the intended outcome of consultation.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
GAP has responded and: - self-identified as a relevant person and requested to be consulted on this EP and other Woodside EPs. - requested more information on the activity. GAP claims Woodside has not: - Consulted with all relevant persons; - Adequately evaluated all impacts and risks; - Adequately demonstrated that the environmental impacts and risks will be reduced to as low as reasonably practicable; - Adequately demonstrated that the environmental impacts and risks will be of an acceptable level; - And that the EP is inconsistent with the Blue Whale Conservation Management Plan and threatened species recovery plans; - The EP is inconsistent with the principles of ecologically sustainable development, specifically the 'intergenerational principle'. GAP has further responded and provided feedback via the regulator with objections and claims relating to: - Stakeholder identification - Impact and risk Identification - Environmental risk analysis and summary - Routine light emissions - Routine atmospheric and GHG emissions - Routine acoustic emissions - Physical presence - Routine and non-routine discharges - Unplanned hydrocarbon release - Woodside is not a fit and proper proponent.	Woodside assessed the feedback on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.6**).	Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on GAP's functions, interests or activities.
Australian Conservation Foundation (ACF)		

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:

- Consultation Information Sheet publicly available on the Woodside website since July 2021.
- On 15 July 2022, the ACF requested to be consulted on the EP.
- Consultation information provided to ACF on 30 August 2022 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to ACF over a 9 month period.

Summary of information provided and record of consultation:

Historical Engagement

- On 15 July 2022, during the course of preparing the EP, ACF self-identified, via a letter sent to Allens (NOPSEMA CC) from the EDO. Comment was provided on the proposed activity and ACF 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 15 November 2021. The topics covered the impacts and risks of marine and avian species, benthic habitats and communities and Gascoyne Marine Park.

Sufficient Time and Sufficient Information

- On 30 August 2022, Woodside emailed the EDO regarding EDO's letter dated 15 July 2022 to Allens (who provided Woodside with the letter).
  - Woodside confirmed it was open to receiving feedback and consultation is ongoing.
  - On impacts and risks of activities in relation to marine and avian species, benthic habitats and communities and Gascoyne Marine Park, Woodside confirmed that for the PAP, an environment risk assessment was carried out in the publicly available EP. The risk assessment covered marine and avian species, benthic habitats and communities and Gascoyne Marine Park, and includes a consideration of controls, performance outcomes, standards and measurement criteria relating to risks relevant to these aspects and receptors.
  - On GHG emissions, Woodside confirmed this EP assesses both direct and indirect impacts and risks associated with the proposed activities, having regard to the nature and scale of the proposed PAP. Woodside confirmed the extraction of Scarborough gas for onshore processing, and the combustion of Scarborough gas, are not activities within the scope of this EP.
  - Additional information Woodside has provided to non-government organisations in response to similar subjects to those outlined in EDO's letter were included in Attachment A of the email.
- On 5 September 2022, the EDO emailed Woodside's lawyers, Allens, (NOPSEMA CC), re the Scarborough Gas Project EPs and referred to their letters of 15 July and 30 August 2022. The EDO requested Woodside to confirm it will carry out consultation required as per the regulations.
- On 14 September 2022, the EDO on behalf of ACF sent a letter to NOPSEMA (Allens CC) regarding the Scarborough EPs and requesting further information necessary for ACF's consultation to be properly carried out in respect of this EP. As further information had not been provided, NOPSEMA should not be satisfied that this EP met the relevance criteria and that Woodside should be notified of this
- On 27 September 2022, ACF / EDO responded via email and advised it would like to meet with Woodside to discuss the proposed activity.

- On 29 September 2022, Woodside responded to EDO / ACF referring to their letters dated 5 September 2022 and 14 September 2022, addressed to Allens (Woodside's lawyers) and provided to Woodside by Allens.
  - In relation to the D&C EP, Woodside requested that ACF provides any further material that clarifies the possible consequences of the proposed activity for Woodside's consideration.
  - Woodside noted in the letter dated 14 September 2022, EDO identified that other environmental organisations had consulted with Woodside. Given the similarities to ACF, Woodside provided to ACF information exchanged in that consultation to confirm topics of interest raised and consulted on relevant to this EP. Woodside noted it had attempted to provide information that it assumed may be of interest to ACF to confirm issues that had been addressed and to allay potential concerns ACF may have had.
  - Woodside stated on impacts and risks of activities in relation to marine species and Marine Parks, Woodside confirmed that for the PAP), an environment impact and risk assessment was carried out in Section 6 (Rev 1) of the publicly available EP. The risk assessment included a consideration of controls, performance outcomes, standards and measurement criteria relating to risks relevant to these aspects and receptors.
  - Similarly on impacts and risks of activities in relation to GHGs, an environment impact and risk assessment was carried out in Section 6 (Rev 0) of the publicly available EP.
  - Woodside also noted the extraction of Scarborough gas for onshore processing, and subsequent third-party use, is not included in the PAP for this EP. Indirect impacts and risks arising from the onshore processing of Scarborough gas are not considered indirect impacts/risks of this PAP and may be evaluated in future Scarborough EPs as appropriate.
  - Woodside stated that if ACF wished to provide further consultation information to Woodside on this EP it should do so.
- On 29 September 2022, Woodside emailed ACF regarding a proposed meeting on 10 May 2022 to continue consultation on the Scarborough Gas project.
- On 5 October 2022, ACF responded and provided its availability to meet via video conference.
- On 5 October 2022, Woodside sent EDO a courtesy email reminder regarding the 29 September 2022 correspondence on this EP.
- 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 7 June 2023, Woodside emailed ACF thanking ACF for the meeting held on 11 October 2022 which continued consultation on the Scarborough Project and each of the activities proposed under Woodside's Scarborough Project EPs. With regard to this EP, Woodside acknowledged ACF's well-informed questions about the proposed activities and ACF's input.
  - Woodside stated it provided a summary of the issues raised by ACF in the 11 October meeting together with Woodside's responses and some clarifying information (in addition to the information Woodside emailed to ACF on 12 September 2022 in response to previous correspondence from ACF to Woodside). Attachment A sent with this email contained a summary of the issues raised in the meeting and Woodside's responses including:
    - In response to Woodside confirming with certainty that there is no risk of oil spills from Scarborough reservoir as there is no liquid component to the reservoir, Woodside confirmed there has been extensive sampling and the reservoir is well understood and that risk and management responses are set out in this EP.

      Regarding the proposed drilling activities having any acoustic impacts, Woodside stated it has undertaken a comprehensive assessment of acoustic emissions for NOPSEMA to assess in accordance with the regulations.

- Regarding the number of wells that will be drilled, Woodside the PAP for this EP, is proposed to consist of 8 wells with the potential for 2 additional contingency wells.

  Regarding Woodside considering more recent studies in relation to whale shark data, Woodside confirmed all available data is included in this EP and that whale sharks were not expected to be present in the EMBA.

- Woodside stated that given the meeting, ACF's feedback received and responded to in the meeting, together with the length of time the EP has been open for comment, any further feedback ACF provides will be accepted and considered as part of ongoing consultation.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
Woodside has met with ACF and provided additional consultation information on the broader Scarborough activities, including this proposed activity. ACF has provided feedback, objections and claims relating to: - The activity scope and scale - Alternative technologies (lower impact) - Perceived impacts on marine fauna - Cumulative impact assessment.	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. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	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.

The Wilderness Society (TWS)

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with The Wilderness Society 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 July 2021.
- Consultation information provided to TWS on 30 September 2022 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to TWS feedback over an 8 month period.

Summary of information provided and record of consultation:

Historical Engagement

- Throughout September and October 2022, Woodside was in discussions with The Wilderness Society about its Scarborough Project.

Sufficient Time and Sufficient Information

- On 30 September 2022, Woodside emailed TWS on the proposed activity (Appendix F, Reference 1.19) 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 OA.
- 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.
  - 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
  - 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.
  - 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.
  - 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.
  - 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.
- On 19 October 2022, Woodside received correspondence from TWS via NOPSEMA dated 14 October 2022 that contained a number of requests for information relating to the proposed activity.
  - Woodside's current methodology and application regarding offset (carbon and biodiversity), in response to the proposed activities.
  - Any remuneration or business unit KPIs to the progression of the Environmental Plan or the commencement of the related activities.
  - Confirmation that the development of a cumulative/holistic impact assessment covers the full breadth of the development, production, and decommissioning activities.

- An outline of how dissenting scientific or technical expertise to Woodside's proposal was identified, actively sought and considered in the EP.
- Queries relating to the Seismic EP (not relevant to the D&C activity)

- On 14 February 2023, TWS emailed Woodside in response to the letter provided by Woodside on 17 October 2022.
- On 22 February 2023, TWS emailed Woodside to check its 14 February 2023 email had been received.
- On 23 February 2023, Woodside emailed TWS to confirm its 14 February 2023 email had been received.
- On 17 March 2023, Woodside emailed TWS to respond the letter from 14 February 2023 with regards to queries relating to the Scarborough Seismic activity (not relevant to this PAP).

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
Woodside has received feedback from TWS during the course of consultation on a range of Woodside EPs covering the broader Scarborough activities. TWS has provided feedback, objections or claims about the proposed activity, and the broader Scarborough project relating to: - Consultation process - Industry funding, support or influence on scientific studies - Carbon and biodiversity offsets - KPIs and remuneration relating to EP process and completion	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. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	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.

Say No to Scarborough Gas (SNTSG)

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 July 2021.
- Consultation information provided to SNTSG on 30 September 2022 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has addressed and responded to SNTSG over an 8 month period.

Summary of information provided and record of consultation:

- On 30 September 2022, Woodside emailed SNTSG to advise it had identified that SNTSG had referred to the Scarborough Project in an online public campaign. Woodside advised it had submitted an EP to NOPSEMA for Scarborough drilling and completions activities. A Consultation Information Sheet was attached. Woodside noted it had reviewed SNTSG's online public campaign in relation to this EP and noted that content generally related to impacts and risks of the Scarborough Project to climate change, greenhouse gas (GHG) emissions, rock art and Aboriginal cultural heritage. Woodside invited comments on the proposed activities and extended an offer to meet with SNTSG to assist with consultation.
- On 4 October 2022 Woodside emailed SNTSG confirming its availability to meet on 10 October 2022.
- 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 2022, Woodside sent a courtesy reminder to SNTSG in relation to the correspondence sent on 30 September 2022 which included a consultation information regarding the Scarborough Drilling and Completions Environment Plan.
- On 11 October 2022 SNTSG emailed Woodside in response to other Scarborough EP consultation and referenced that its 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 it will discuss a number of Scarborough EPs.
  - Woodside encouraged SNTSG 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.
  - During the meeting, SNTSG asked questions and provided feedback regarding:
    - What determines whether Woodside will use a dynamic positioning (DP) drilling unit or anchored rig
    - When would a DP drilling unit likely be available
    - How long Woodside would wait for a DP drilling unit before utilising an anchored rig
    - How many anchors would be required for an anchored rig
    - Has Woodside assessed marine life in the area and any impacts anchors would have

  - Are impact assessments based on a time frame – were assessments independent or undertaken by Woodside
  - Was research paid for by Woodside
  - Has Woodside considered the release of diesel into the marine environment, the impact of spills on marine fauna reproductive cycles and what timeline is considered as part of Woodside's assessment
  - Which drilling muds will be used in the proposed activities, and what factors are considered to determine whether a WBM or NWBM is used.
- 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 correspondence from SNTSG via NOPSEMA dated 29 September 2022 which advised the regulator of the engagements and consultation conducted by Woodside.
- On 16 November 2022, SNTSG emailed Woodside and included a letter. The letter contained a number of claims/objections relating to the proposed activity.
  - SNTSG provided feedback about community consultation:
    - 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 its redrafted EPs
    - 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 commented it was concerned that project work was well underway, before approvals had been granted, and that parties are acting as though environmental approvals are guaranteed.
  - SNTSG provided feedback about consistency with existing conservation plans or ecological principles:
    - SNTSG claims the plans are not consistent with ecological principles of sustainable development, particularly the intergenerational principle. It asked how Woodside plans to meet these principles.
    - SNTSG asked how the plan is consistent with the Blue Whale Conservation Management Plan and threatened species recovery plans
  - SNTSG provided feedback about independence:
    - SNTSG asked about the skills of the people at the Environmental Risk and Impact identification workshop and their ties to Woodside and any conflicts of interest they hold. SNTSG also asked about the lifetime for identifying environmental risk and impact identification.
    - Regarding environmental impacts and risks being reduced to ALARP, SNTSG asked who is responsible for determining what is reasonably practical and what their ties are to Woodside, and what grounds are the determinants for ALARP based upon (economic or environmental)?
  - SNTSG provided feedback on emissions:

  - Emissions caused by the project are a major concern for SNTSG and it noted the EPs ignore scope 1,2, and 3 and they cannot be ignored when considering approvals. SNTSG requested more information and figures on the lifetime of emissions of the project and emissions forecasting, consistency with conservation management plans and species recovery plans, Woodside's response to various external reports and sources, CCS and carbon offset planning, emissions projections and Scope 3 emissions.
- SNTSG provided feedback on lighting:
  - What are the impacts of artificial lights on ecological processes and sea birds? Why are the routine light emissions impacts estimated to have an impact for less than one year? Will Woodside commit to the National Light Pollution guidelines for Wildlife?
- SNTSG provided feedback on drill cuttings:
  - How thick will cuttings piles be, what will be their radius and to what extent will fine particulate matter and its effects be measured?
  - What studies have been done on the effects of particulate matter from drilling on corals
  - What are the effects of cutting piles on benthic organisms – to what radius are they impacted
  - How is the level of habitat modification at 100m from each well substantiated when other studies have affected radius much higher
  - Regarding anchoring, how many anchoring sites will be used per drill site, what are the scarring effects, what is the impact of anchoring on benthic organisms
  - What are the changes to the local environment in terms of electrochemical processes, what are the changes in density and biomass of metazoan communities
  - Is there a reduction in oxygen concentration around drilling sites
  - What are the estimated turbidity levels and the impacts of these
- SNTSG provided feedback on ocean pollutants:
  - Can Woodside provide a breakdown and marine lifecycle of the components that are released into the food web, and then amplified through the food chain
  - Is there a detailed map of food chain amplification of toxins that are released during drilling activities
  - What are the long-term effects of the immune and reproductive systems of exposed birds, fish and shellfish
  - What is the combination of chemicals used in drilling mud – what happens to the stabilised hydrocarbon content of wastewater and who is responsible for testing the quality and hydrocarbon levels of stabilized drill cuttings that are discharged back to the ocean.
  - What is the long-term monitoring process of localised water toxins
  - What is the estimated ratio of contaminated water to oil production over the lifetime of the well
  - Is there independent testing of mud-pit residue, how much hydrogen sulphide and ammonia are produced and at what level does metal abundance alter biogeochemical processes
  - Will a thermomechanical system be used to reduce oil on cuttings
- SNTSG provided feedback on post extraction concerns:
  - What methods for long-term monitoring of environment health in the area are in place including post-production and decommissioning
  - What potential exists for the re-introduction of contaminants into the environment, will a good practise measure of conducting monitoring of the seabed be implemented and what is the likelihood of disturbed species recolonising affected areas
  - What happens to the Blowout Preventer post-drilling

- SNTSG provided feedback on ecosystem impacts:
  - Ecosystem impacts such as effects of climate change on interactions between marine life and the disturbance and pollution caused by the project, 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

- On 6 June 2023, Woodside emailed SNTSG and included responses to address claims and objections contained in the SNTSG online campaign material, raised during the 13 October 2022 meeting, and the 16 November 2023 correspondence regarding the proposed activity, where appropriate.
  - Relating to climate change and issues raised in the SNTSG online campaign material:
    - Woodside confirmed that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to the D&C EP.
    - Woodside confirmed the D&C 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.
    - Woodside confirmed the extraction of Scarborough gas for onshore processing is not within the scope of the activity described in the D&C 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 D&C EP but may be evaluated in Scarborough EPs as appropriate.
    - Woodside confirmed GHG emissions associated with the D&C activity (i.e., fuel combustion from project vessels) are considered in Section 6.6.2 (Revision 0) of the publicly available D&C EP.
  - Relating to mitigating risk to marine habitats – Section 6.6 and Section 6.7 of the publicly available EP assesses the risks to receptors such as marine habitats and propose controls to mitigate and manage risks / impact to ALARP and acceptable levels
  - Relating to rock art and Aboriginal cultural heritage, Woodside advised emissions from the activities covered by the D&C 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 PAP. Damage to heritage sites is not anticipated as a result of the proposed 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 D&C EP.
  - In response to claims and objections raised during the 13 October 2022 meeting:
    - Woodside confirmed a DP MODU is planned for use during the Scarborough Project and a moored MODU is included in the EP as contingency.
    - Details on typical rigs are included in Section 3 of the EP and risk assessed under Section 6. Marine life in the area (Section 4 of the EP) and any potential impacts from anchors (Section 6) are also covered.
    - Woodside confirmed impact assessments are completed for the duration of the PAP including any ongoing impacts
    - Woodside uses independent research in the assessment of risks and impacts and also commissions independent research if there is little or no information available
    - Woodside confirmed Section 6.7 of the EP (publicly available) addresses unplanned activities that may arise during the PAP including unplanned hydrocarbon release due to vessel collision. Impact assessment considers a full range of possible impacts including productivity, metabolism, behaviour, insulation and digestion (to name a few) across relevant receptors
    - As confirmed in the consultation meeting, Section 3 of the EP (publicly available) describes drilling muds and the EP considers both forms of drilling fluids (WBM and NWBM) in the risks and controls.

- In response to the letter sent by SNTSG on 16 Nov 2022:
- Regarding community consultation, Woodside advised that consultation requirements as set out in Reg 11A of the Environmental Regulations have been complied with in relation to the consultation process for EPs Woodside detailed during its consultation meeting with SNTSG on 13 October 2022.
  - Where feedback is received which informs Woodside of new risks or measures that it may take to mitigate the potential adverse environmental impacts from the PAP, Woodside incorporates this feedback into the EP, and where appropriate will introduce additional controls to ensure risks are managed to an ALARP and an acceptable level.
  - Woodside confirmed that the PAP of the EP remains the same as what is included in the Consultation Information Sheets. Woodside advised that after publishing to the NOPSEMA website, EPs may change whilst under assessment prior to the final EP being accepted. Following the initial public comments period, an additional round of stakeholder Consultation Information Sheets and advertisements in local publications were issued during the development of the EP.
  - Woodside advised it has undertaken extensive consultation with relevant Traditional Owners and Traditional Owner representative groups with respect to the proposed activities.
  - Woodside confirmed the engagement included archaeological and ethnographic surveys, which have informed the Scarborough EPs.
  - Woodside confirmed it has not undertaken any of the activities which are subject of environmental approvals which are currently under assessment.
- Regarding consistency with existing conservation plans or ecological principles, Woodside confirmed the PAP is carried out in a manner consistent with the principles of ecological sustainable development.
- Woodside advised it confirmed with SNTSG during the consultation meeting on 13 October 2022 that proposed activities are consistent with the Blue Whale Conservation Management Plan.
  - Woodside also confirmed that Table 6-19 and Demonstration of Acceptability in Section 6.6.3 in the EP (Revision 0) provides the assessment of the relevant activities against the Blue Whale Conservation Management Plan.
- Regarding independence, Woodside confirmed the experience of the participants in the Environmental Risk and Impact Identification Workshop, which included external environmental consultants supporting the EP development. Woodside referred to Figure 2-2 of the EP (Revision 0) for a summary of duration for identifying environmental risk and impacts.
- Regarding responsibility for determining what is reasonably practicable and ties to Woodside, Woodside confirmed the details are provided in Sections 2.2 and 2.3 of the EP (Revision 0).
- Regarding emissions and ecosystem impacts, Woodside advised that concerns relating to carbon and the impact on climate change from Scarborough gas are not relevant to the EP. The EP assesses both direct and indirect impacts and risks associated with the PAP, having regard for the nature and scale of the PAP.
  - Woodside also advised 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 those of the PAP for the EP but may be evaluated in other Scarborough EPs as appropriate.
  - Woodside advised well construction activities are conducted in a number of stages, as described in Section 3.7 of the EP (rev 0 publicly available). Detailed well designs will be submitted to the Well Integrity Department of NOPSEMA as part of the approval to drill and the accepted Well Operation Management Plan (WOMP), as required under the Regulations. The WOMP describes design and controls in place to prevent any hydrocarbon loss from wells over the design life.

- With regards to flaring time being restricted to a duration necessary to achieve well objectives, Woodside confirmed Sections 6.6.1 and 6.6.2 of the EP (rev 0 publicly available) includes information about flaring as required for the PAP. Control 1.2 contains the requirement that well unloading acceptance criteria be developed and flaring will occur to an extent to achieve these objectives. Flaring objectives / activity may differ between wells and as such flaring and emissions based on pre-existing projects are not relevant.
- Woodside also confirmed that Section 6.8 of the EP (Revision 0) Recovery Plan and Threat Abatement Plan Assessment describes the assessment that Woodside has undertaken to demonstrate that the PAP is not inconsistent with any recovery or threat abatement plans.
- With regards to Scope 3 emissions, Woodside referred to Section 6.6.2 of the EP which contains a risk assessment of routine atmospheric GHG emissions, including Scope 3 relevant to the PAP.

- Regarding lighting impacts, Woodside advised:
  - Routine Light Emissions associated with External Lighting on Mobile Offshore Drilling Unit (MODU) and Project Vessels are considered in Section 6.6.1 of the D&C EP (Revision 0 publicly available).
  - Woodside confirmed that the impact assessment is completed for the duration of the activities as outlined in the PAP
  - Woodside referenced Figure 2-2 of the D&C EP (Revision 0 publicly available) for a summary of duration for identifying environmental risk and impact identification.
  - The Petroleum Activity Area is about 215 km offshore and outside known Biologically Important Areas for turtles and seabirds/migratory shorebirds, therefore a specific assessment of potential impacts of artificial lighting is not required under the National Light Pollution Guidelines.
- Regarding drill cuttings, Woodside confirmed:
  - Section 6.6.7 of the EP (Revision 0 publicly available) assesses the impact of drill cuttings and drilling fluids. This impact assessment discusses factors influencing cuttings dispersion and pile size (in the case of riserless top hole drilling), including worst-case. The section also confirms there are no hard coral or other photo-sensitive benthic communities in the vicinity of the wells.
  - Section 6.6.7 of the EP (Revision 0 publicly available) assesses the impact of drill cuttings and drilling fluids. The impact assessment includes epifauna and infauna, concluding an Impact Significance Level of 'Slight (E)'. This section contains relevant references used and discusses material dispersion, transport, fate, and sediment impacts.
  - Section 6.6.5 of the D&C EP (Revision 0 publicly available) assesses the disturbance to seabed from MODU anchoring (moored MODU only). Moored MODU operations are included in the EP as a contingency, with anchoring pattern / number dependent upon the MODU used. Impact assessment considers an 8–12-point pre-laid mooring system at each well location and the disturbance footprint of these, as well as epifauna, infauna and Key Ecological Features (KEF's).
  - Section 6.6.7 of the EP (Revision 0 publicly available) assesses the impact of drill cuttings and drilling fluids, including turbidity and dispersion of cuttings / fluid plumes.
  - The impact assessment includes cuttings/retained fluids and bulk discharges of drilling fluids on relevant fauna, benthic communities, KEF's, water quality, plankton and epifauna / infauna. Dugongs and seagrass habitats are not relevant to the Operational Area for this PAP.
- Regarding ocean pollutants, Woodside advised:
  - Section 6 of the D&C EP (Revision 0 publicly available) assesses the impacts of activities relevant to the PAP, including lower order communities such as phytoplankton (cyanobacteria and other microalgae), zooplankton (such as copepods) and meroplankton, where relevant. Sections 6.6.7 and 6.6.8 in particular contain controls to reduce discharges and the impact potential of these.

- Section 6.6.7 of the D&C EP (Revision 0 publicly available) assesses the impact of drill cuttings and drilling fluids including chemical usage and controls to reduce discharges and the impact potential of these. This section also assesses the impact of drill cuttings and drilling fluids and use of thermomechanical cuttings treatment systems for oil on cuttings reductions.

- Regarding post extraction queries, Woodside informed that decommissioning is outside the scope of this PAP and will be the subject of a future EP; and Section 3.7.4 of the D&C EP describes the well completion process, including establishment of crown plugs, pressure testing and verification of suspension barriers prior to the removal of the BOP.
- Regarding ecosystem impacts, Woodside advised that Impacts to all relevant ecological parameters are considered in the risk/impact assessments in Section 6 of the EP (Revision 0).
  - Woodside referred to Section 4.5 (Revision 0) of the EP for information on the habitats and biological communities in the Operational Area.
  - Woodside referred to Sections 6.6.3 of the EP (Revision 0) which contain an ALARP assessment of the controls to reduce noise.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
SNTSG has provided feedback, objections and claims relating a broad range of topics including: • Assessment of climate change from activity • Rock art and Aboriginal cultural heritage • MODU type and mooring impacts • Light emissions • Community consultation • Consistency with existing conservation plans and ecological principles (including the Blue Whale CMP) • Independence of research and risk assessment processes • Emissions including GHG and drill cuttings / drilling fluids • Lighting • Ecosystem impacts • Post-extraction concerns	Woodside assessed the feedback on merit as it applies to this EP and a summary of responses has been provided to address specific claims and objections raised on the proposed activity, where appropriate. Woodside has 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). Woodside has provided specific information from the EP to address feedback, objections and claims, as well as Woodside's consultation approach and methodology to identify relevant persons (see **Section 5.7**). No amendments have been made to the EP in relation to any of the feedback, objections or claims raised. Woodside has provided responses to feedback received as shown above. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that	Woodside has consulted SNTSG in the course of preparing this EP. Woodside has assessed the claims or objections raised by SNTSG. No additional measures or controls have been put in place. Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on SNTSG's functions, interests or activities.

	further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	

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 July 2021.
- Consultation information provided to AMCS on 30 September 2022 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided the AMCS with the opportunity to provide feedback over an 8 month period.

Summary of Consultation Provided and Record of Consultation:

- On 30 September 2022, Woodside identified that AMCS had referred to the Scarborough Project in an online public campaign. Woodside responded by sending a Consultation Information Sheet on this EP and an attachment noting that the public campaign relating to this EP generally related to themes including climate change, marine life and drilling, light emissions, vessel/MODU noise and strikes, assessment of impacts on BIA for turtles and other marine fauna and marine diesel fuel risk.
- On 7 October 2022, Woodside sent a courtesy email reminder to AMCS and attached a Consultation Information Sheet requesting a response by 14 October 2022.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP should feedback be received, 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.

Sea Shepherd Australia (SSA)

Woodside has discharged its obligations for consultation under Regulation 11A(1) and consultation with Sea Shepherd Australia 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 July 2021.
- Consultation information provided to SSA on 30 September 2022 based on their function, interest and activities.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Woodside has sent a follow up email seeking feedback on the proposed activities.
- Woodside has provided SSA with the opportunity to provide feedback over an 8 month period.

Summary of Consultation Provided and Record of Consultation:

- On 30 September 2022, Woodside emailed SSA on the proposed activity and provided an updated Consultation Information Sheet.
- On 7 October 2022, Woodside sent a courtesy email reminder toand attached a Consultation Information Sheet requesting a response by 14 October 2022.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP should feedback be received, 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.

Research institutes and local conservation groups or organisations

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

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 July 2021.
- Woodside published advertisements in a national, state and relevant local newspapers on 21 October 2022 advising of the proposed activities and requesting comments or feedback.
- Consultation information provided to NERA on 11 November 2022 based on their function, interest and activities.
- Woodside has sent a follow up email seeking feedback on the proposed activities.

- Woodside has provided NERA with the opportunity to provide feedback over a 10 month period.

Summary of information provided and record of consultation:

- On 28 April 2022, NERA self-identified via email on a separate EP and requested information on the proposed activity. NERA noted that the Operational Area of the proposed activity overlaps with the area outlined in its Collaborative Seismic Environment Plan.
- On 11 November 2022, Woodside sent an email to NERA in relation to the Scarborough EPs. (Appendix F, Reference 1.23)
- On 22 February 2023, Woodside emailed NERA a reminder that consultation is closing soon (Appendix F, Reference 1.75).
- On 24 February 2023, NERA thanked Woodside for keeping it up to date and confirmed they have no comments and no planned activities for 2023.
- On 28 February 2023, Woodside emailed and confirmed they will provide NERA with commencement and cessation of activity notifications relating to the proposed activities.
- On 1 May 2023, NERA emailed Woodside on a separate project advising the Collaborative Seismic EP had been withdrawn and will no longer go ahead. NERA requested that the CSEP be removed from relevant person consultation.
- On 2 May 2023, Woodside emailed NERA confirming Woodside would remove the CSEP from its relevant person consultation for future EPs.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up. ther	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the 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.

Other

Save Our Songlines (SOS) [redacted] and [redacted]

Woodside has consulted in accordance with Regulation 11A with [redacted] 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 [redacted] 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 [redacted] 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] and SOS complies with Regulation 11A and is complete.

Summary

Sufficient information

Woodside has, since at least 2022, provided information to [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] and SOS' preferences and has included consultation meetings held on Country:

- Since at least 2022, [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] 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 has also provided power point slides tailored to topics that [redacted] and SOS have indicated are of interest to them. Woodside has also provided information in video format to [redacted] and SOS [Ref in particular: Woodside letter 22 July 2022; EDO email 25 July 2023; 1 September 2023; EDO letter 4 October 2023]
- Information has been provided to [redacted] and SOS in hard copy as well as electronic format. [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] 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: Woodside letter to NOPSEMA 17 April 2023]
- In addition to the information provided, Woodside has had several meetings with [redacted] and SOS since 2022 on Country and online in accordance with the meeting formats requested by [redacted] and SOS [Ref: 13 March 2023; 25 July 2023; 12 September 2023; 4 October 2023].
- Woodside has on a number of occasions, confirmed to [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:
  - [redacted] and SOS have confirmed that, since around 2022 they have received and read the Scarborough Project EP materials [most recently: 4 October 2023].
  - [redacted] and SOS have displayed an understanding of the activities under this Environment Plan as well as the broader Scarborough Project. [Ref Woodside 29 March 2023 email].

- Since around 2022, [redacted], [redacted] 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.
- [redacted], [redacted] 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 [redacted], [redacted] 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 all EPs as well as discussion on all EPs.
- Objections, claims and topics relevant to [redacted] and SOS and addressed by Woodside, were initially focused on the Burrup Peninsula 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 [redacted] 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 [redacted] Affidavit dated 7 September 2023 stated that [redacted] 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 [redacted] 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 [redacted] 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 [redacted] and SOS [4 October 2023]. Generally speaking, [redacted] has stated that whales carry important songlines, the whale Dreaming, and connection between land and sea [Second [redacted] 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 [redacted] 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, [redacted] 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, [redacted], [redacted] 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, [redacted], [redacted] and SOS have declined to provide the information to Woodside but have been prepared to provide the information publicly [Affidavits of [redacted] 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 [redacted], [redacted] 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 [redacted], [redacted] and SOS and has prepared and brought material in the form of presentations, tables, maps and video to share with [redacted], [redacted] and SOS.
- During meetings, Woodside has discussed with [redacted], [redacted] 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 [redacted] 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, [redacted] 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, [redacted] 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 on 13 March; 25 July; 12 September; 4 October].

- As part of consultation, Woodside has also taken time to show [redacted] and SOS how the information [redacted] 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 [redacted] and SOS into the proposed control measures or any other available measures. [redacted] 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, [redacted] 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, [redacted] 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 [redacted] affidavit 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 [redacted] and SOS on a number of occasions whether there are other individuals who ought to be consulted. [redacted] and SOS have made various references to MAC. Most recently, [redacted] 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 [redacted] 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 [redacted] and SOS to provide information to Woodside, including at meetings where [redacted] and SOS had confirmed they would provide information [25 July 2023; 12 September 2023].
- Throughout consultation, [redacted] 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 4th October 2023 meeting].
- Given those circumstances, and with a genuine concerted aim of attempting to manage potential impacts and risks to [redacted] 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, [redacted] and SOS' potential spiritual cultural and connections and values; Woodside has reviewed publicly available information. This has included reviewing [redacted] statement made to the Commonwealth Senate Standing Committee on Environment and Communications [Ref Opening Statement from [redacted], Chairperson Murujuga Aboriginal Corporation – Public Hearing, Perth – 20 April 2017], information provided by [redacted] and SOS on their SOS website, submissions made by [redacted] 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 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 [redacted] and SOS have an understanding of the Scarborough Project and the activities involved in the Scarborough Project.
- [redacted] 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 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: 20 April 2017 Opening Statement]. This position is at odds with the position being put forward by [redacted] and SOS in consultation with Woodside.

- [redacted] and SOS hold a fundamental objection to the Scarborough Project [for example: SOS website]
- On a number of occasions, [redacted] and SOS have declined to provide the information to Woodside and have instead provided information publicly [Affidavits of [redacted] 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

- [redacted] is a former member of MAC. Woodside's engagement and correspondence with [redacted] (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 [redacted] and SOS on the Seismic EP since at least July 2022 and D&C EP since at least September 2022.
- [redacted] 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 [redacted] 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.
- [redacted] 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, [redacted] 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 the information to Woodside imminently [Ref: 15 Sept 2023; August 2023; Federal Court proceedings]
- Woodside notes the assertion by [redacted] 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 objective timeframe allowed by Woodside for consultation, the history of engagement between Woodside and [redacted] and SOS and the transparency with which Woodside has communicated timeframes for consultation, Woodside has met its obligation to provide [redacted] and SOS a reasonable period for consultation.

Reasonable opportunity

- [redacted] 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 [redacted] 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 [redacted] and SOS. [redacted] and SOS has attended most agreed meetings, but has 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 [redacted], [redacted] and SOS' preferred consultation methods [Ref: Allens letter August 2023]. To further support the consultation process, Woodside also offered to engage in fortnightly meetings with [redacted], [redacted] and SOS. This offer was declined. [Ref 25 July 2023 meeting]
- Woodside has respectfully accommodated delay to meetings or rescheduling of meetings where [redacted], [redacted] and SOS have requested that to occur.
- Woodside has agreed with requests from [redacted], [redacted] and SOS in relation to meeting protocols. This has included significant efforts by Woodside to accommodate [redacted] and [redacted] cultural requests by allocating female subject matter experts to prepare and attend meetings with [redacted] and SOS where matters are otherwise managed by male subject matter experts for Woodside.
- Upon request from [redacted], [redacted] 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, [redacted], [redacted] and SOS have declined to provide this information.
- During the consultation, [redacted], [redacted] and SOS have stated that they will provide information to Woodside by way of video. 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].
- During the consultation, [redacted] 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 [redacted] Affidavit dated 7 September 2023]. Notwithstanding numerous opportunities, [redacted] and SOS have not provided any further information to Woodside. At the last meeting in October, [redacted] and SOS did not present Woodside with any viable way to receive the information when Woodside informed [redacted] 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 [redacted], [redacted] and SOS that their preference was to meet at Murujuga [Ref 8 Nov 2023 letter]. It was previously suggested that Hearson Cove on the Burrup Peninsula in the Pilbara was [redacted], [redacted] 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 [redacted], [redacted] and SOS at that location.
- In the meeting on 12 September 2023, [redacted] indicated that the preferred location was Rosemary Island and that Woodside would need to make arrangements (including chartering a boat) in order for [redacted], [redacted] and SOS to share information. This was the first time that [redacted], [redacted] 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 [redacted] an opportunity to bring with her, 3 support people on the vessel. [redacted] 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 [redacted], [redacted] and SOS, [redacted] 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 12 September meeting], 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. For example, a whale songline was expressed to Woodside as having been recently created 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 womans 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 [redacted] and [redacted], they are interests that are individual. They have not been expressed by [redacted] and [redacted] 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 [redacted] 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 [redacted] and [redacted], 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, [redacted], [redacted] 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 [redacted], [redacted] and SOS do not speak for them and [redacted] and SOS views are not held by the communities.

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.[1] Consultation does not require consent[2]. In carrying out consultation, Titleholders are not required to wait indefinitely for a response.[3]
- During consultation, [redacted], [redacted] 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 [redacted], [redacted] 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 [redacted], [redacted] 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 [redacted], [redacted] and SOS including because of these risks.
- Finally, Woodside has made clear to [redacted], [redacted] 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

- Consultation under Reg 11A is complete because sufficient information, a reasonable period of time and reasonable opportunity have been provided to [redacted], [redacted] 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

[1] *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 at [136], [138], [89], [95]

[2] F2023L00998ES Explanatory Statement issued by the authority of the Minister for Resources OPGGS (E) Regulations page 28

[3] F2023L00998ES Explanatory Statement issued by the authority of the Minister for Resources OPGGS (E) Regulations page 30

provided information to them or where they at various times, receive information in visions) [Ref meetings on 14 March 2014; [redacted] Affidavits dated August 2023; 12 September 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 [redacted] Affidavit 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:

- [redacted] is a Karuma Mardudhunera woman and a traditional custodian of Murujuga
- [redacted] is a Mardudhunera woman and a traditional custodian of Murujuga
- Save Our Songlines is an organisation formed by [redacted] and [redacted].

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, Yaburara and Coastal Mardudhunera Aboriginal Corporation (MAC), Wirrawandi Aboriginal Corporation and Ngarluma Aboriginal Corporation.

Woodside understands [redacted] was a member of MAC since inception, was the [redacted] 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 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] Chairperson 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 24 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] 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] and [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 form 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 1 September 2022, Woodside emailed [redacted] and [redacted] and Save Our Songlines with a response to the letter dated 6 June 2022.
  - Woodside confirmed it was open to receiving feedback; to discussing issues raised in relation to Scarborough EPs and noted that consultation is ongoing throughout the life of an EP. (4)
  - In relation to this EP, Woodside advised the Information Sheet was available on the Woodside website which sets out details regarding the proposed activities.
  - Woodside confirmed ethnographic surveys were undertaken with Traditional Custodians to gain insights into intangible heritage including songlines, cultural practices, beliefs and customs however the surveys had not identified ethnographic sites or values in the area.(5)
  - Indirect impacts and risks arising from onshore processing of Scarborough gas were not considered indirect impacts/risks of the PAP for this EP but would be evaluated in Scarborough EPs as appropriate.(2)
  - Woodside confirmed it would continue to accept feedback on the EPs which are made publicly available following final acceptance.
  - Woodside invited [redacted] and [redacted] to engage with Woodside so Woodside could further understand specific concerns or issues they may have.
- On 26 September 2022, [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 EMBAs of the Scarborough EPs (including this EP) which might be directly affected by the proposed activity.
  - [redacted] and Save Our Songlines requested that NOPSEMA refrain from accepting the Scarborough EPs (not this EP) 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 they had not shared with Woodside.
- On 29 September 2022, Woodside emailed [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] and Save Our Songlines via email and phone / voicemail.
- On 7 October 2022, [redacted] and Save Our Songlines responded to Woodside via phone to arrange a suitable date and time.
- On 7 October 2022, Woodside and [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] 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] and SOS and followed up with [redacted] and Save Our Songlines via phone and SMS.
- On 11 October 2022, [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 [redacted] or SOS provided an explanation to Woodside as to their non-attendance at this meeting.
- On 8 November 2022, [redacted] and Save Our Songlines sent a letter to Woodside in relation to the Scarborough gas project EP meetings request including this EP.
  - [redacted] 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.
  - [redacted] 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)

- [redacted] 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.
- [redacted] and Save Our Songlines offered several dates on which they were available to meet and shared their preference to meet on Murujuga.
- [redacted] and [redacted] 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 [redacted] and [redacted] "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). [redacted] and [redacted] therefore represented they were ready and able to discuss all Scarborough EPs. [redacted] and [redacted] also requested 4 weeks notice for meetings, and proposed a meeting in late November 2022.

- On 22 November 2022, Woodside emailed [redacted] and Save Our Songlines:
  - Woodside acknowledged the letter addressed to Woodside on 8 November 2022 that was passed on via NOPSEMA.
  - Woodside confirmed its availability to meet in Karratha on Tuesday 29 November 2022 or a date suitable to [redacted] and SOS.
- On 24 November 2022, [redacted] 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, [redacted] and [redacted] 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. [redacted] and [redacted] 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 [redacted] 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] 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] 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] 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] 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 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] 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] and Save Our Songlines to share relevant information such as matters that are restricted to women or men only. Woodside requested for [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] and Save Our Songlines so a meeting could not proceed (8).

- On 4 January 2023, Woodside emailed [redacted] and Save Our Songlines to follow-up on its meeting request (Appendix F, Reference 1.105). Woodside reiterated its availability to meet and provided an option for any date in January 2023.
- On 13 January 2023, [redacted] and Save Our Songlines emailed Woodside:
  - [redacted] and Save Our Songlines confirmed it would like to meet with Woodside, but reiterated its requests contained within its 24 November 2022 correspondence.
  - [redacted] 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] and Save Our Songlines. Woodside included the following responses to address the items raised, where appropriate:
  - Woodside reiterated it is open to continue consulting with [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)
  - That consultation on the Scarborough EPs began when Woodside provided [redacted] and Save Our Songlines with consultation information on the Scarborough EPs.(8)
  - That Woodside has made every effort to meet with [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)
  - That it has been trying to arrange a meeting with [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)
  - 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] 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] and Save Our Songlines. Woodside reiterated its availability to meet and, based on dates suggested within the 8 February correspondence, provided [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] 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] 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] and Save our Songlines intended to share cultural information at the meeting.
- On 28 February 2023 the EDO (acting on behalf of [redacted] and Save Our Songlines) emailed Woodside to follow up on the request to secure a meeting.
- On 1 March 2023 Woodside emailed [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] 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] 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] 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 there would be no audio or video recording of the meeting to respect privacy, safety and cultural values (7).
- **MEETING**: On 14 March 2023 (summarised in 16 March 2022 email), Woodside met with EDO, [redacted] and Save Our Songlines on-country and discussed the proposed activity. Despite Woodside's continued efforts and offers to meet since at least September 2022, this meeting represented the first time Woodside and [redacted] 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 [redacted] and Save Our Songlines (at the on-Country meeting):

  - [redacted] and Save Our Songlines told Woodside that the proposed activities gave them a sick feeling and the activities should be stopped (10). [redacted] 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] 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 not to 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 (for instance, wisdom that Murujuga rocks have for the past and future) (9).
- On 16 March 2023, Woodside emailed EDO, [redacted] and 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] and Save Our Songlines in the future (8).
- Woodside is open to consulting further with [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] 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 24 March 2023, the EDO (acting on behalf of [redacted] 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 [redacted] and [redacted] 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 at this stage.
  - 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). The 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 29 March 2023 Woodside emailed the EDO, [redacted], [redacted] and Save Our Songlines (CC to NOPSEMA) in response to the 24 March 2023 letter. Woodside reiterated its responses to topics raised during the meeting and in previous correspondence, relevant to the proposed activity. The response included the following responses which are summarised as follows:

  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 provide in future meetings can still be taken into account and, where appropriate, can be incorporated in the EP during the life of the activity.
  - Woodside advised that following the meeting, based on the information provided, no updates were required to the EP via the Management of Knowledge process.
  - In regards to Functions, interests and activities
  - Woodside acknowledged that it had been advised that [redacted], [redacted] and Save our Songlines' functions interests and activities are distinct from those of MAC and that it was interested to learn about this further (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 [redacted]'s previous role with MAC at the time the ethnographic survey was being undertaken, Woodside suggested that [redacted] may have contacts at MAC to request a copy of that survey (12).
  - Woodside advised that as to [redacted], [redacted] 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 [redacted], [redacted] and Save Our Songlines' were not prepared to share some information with Woodside, it remains open to hearing from them when this is known, and it is ready to be shared (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 [redacted], [redacted] 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 [redacted], [redacted] and Save Our Songlines.
- In relation to Further consultation (8, 9), Woodside noted that [redacted], [redacted] and Save Our Songlines' correspondence, it would like to organise another meeting and will require approximately six weeks to read into materials and prepare for a meeting.
- Woodside requested for [redacted] 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 6 April 2023, the EDO sent a letter to NOPSEMA and copied Woodside with a subject of "Relevant interested person" consultation requirements – Scarborough Trunkline Installation 4D B1 Marine Seismic Survey Environment Plan (sic)". The letter suggests that consultation with the EDO's clients [redacted] and Save Our Songlines (SOS) has not been completed and therefore the Scarborough 4DMSS Seismic EP should not be accepted.
- 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. Woodside stated:
  - The letter sent by EDO dated 6 April 2023 suggests that consultation with the EDO's clients [redacted] and [redacted] and Save Our Songlines (SOS) has not been completed and therefore the Scarborough 4DMSS Seismic EP should not be accepted by NOPSEMA (8).
  - Woodside provided notes giving additional context in relation to items raised in the letter, including in relation to Woodside's repeated and protracted attempts to meet, engage and consult with [redacted] and [redacted] and SOS on the Scarborough Project, including the Scarborough 4DMSS Seismic EP (8).
  - Woodside confirmed the Scarborough 4DMSS Seismic EP was submitted for approval on the grounds it met the regulations and that the underpinning consultation effort is documented within the EP, demonstrating provision of sufficient information, time and opportunity to consult over an extended period (8).
  - Woodside reiterated the process for consultation remains open post EP approval and that it has consistently offered an open invitation to [redacted] and [redacted] 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. (8)
  - An attachment of 5 pages sent with this response to NOPSEMA sets out the history of Woodside's extensive engagements with [redacted] and [redacted] 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 [redacted] and [redacted] and SOS, and stated Woodside's position i.e. having regard to all of the circumstances of the consultation undertaken with [redacted] and [redacted] 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 [redacted] and [redacted] 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 [redacted], [redacted] and Save Our Songlines via the EDO reiterating Woodside's willingness to engage in ongoing consultation on another EP (Seismic) and other Scarborough EPs; On proposed meeting dates in May 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 [redacted], [redacted] and Save Our Songlines, with respect to the SITI EP and included responses to relevant objections, claims and additional information raised on 6 June 2022, 26 September 2022 and 24 November 2022:
  - Woodside confirmed it has conducted an ethnographic survey to support the development of EPs for the Scarborough Project (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 in 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 (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], 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], and Save Our Songlines were available to meet in Karratha on Tuesday, 13 June 2023 (8).
- On 6 June 2023, Woodside emailed [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 D&C 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 D&C 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 D&C 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 D&C 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 D&C 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 in appropriate to do so (12)
- Woodside shared a link to the publicly available Scarborough Project Cultural Heritage Management Plan (12)
- In response to the Save our Songlines letter dated 26 September 2022, Woodside referred to responses provided to address claims in the 6 June 2022 Save our Songlines 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 D&C EP (5).
- In response to the Save our Songlines 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 Save our Songlines 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], 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 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 no audio or visual recording being taken. On 9 June 2023, Woodside emailed the EDO, [redacted], 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 [redacted] 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 [redacted] 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 [redacted] 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 [redacted] and Save Our Songlines and the EDO regarding meeting arrangements and a draft agenda. Woodside requested next available dates for a meeting with [redacted] and Save Our Songlines and the EDO.
- On 12 June 2023, the EDO emailed Woodside to advise the [redacted] 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, [redacted] 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 [redacted] 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, [redacted] 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, [redacted] 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 the SOS 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, 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] and SOS while preparing the 4 Scarborough Project EPs since March 2022. Woodside reaffirmed [redacted] and SOS's relevant persons status (4, 8).
  - Consultation between Woodside and [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] 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] 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] 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] 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 no audio or video recordings.
- On 19 July 2023, Woodside provided the EDO with NOPSEMA consultation documents (brochure, guideline and policy) and asked they be provided to [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 [redacted] 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, [redacted], [redacted] 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, [redacted] and [redacted] via web meeting:
  - After 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, [redacted], [redacted] and SOS would not participate in the meeting.
  - 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, [redacted] and [redacted] could have raised an objection 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. Detailed information on each EP was provided for in the slide pack (8, 15).
  - On behalf of [redacted], [redacted] and SOS, EDO intervened and told Woodside words to the effect that [redacted], [redacted] 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 attempted to provide information on these EPs and an opportunity to hear [redacted], [redacted] 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, [redacted] 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.
  - Woodside provided an overview of the Scarborough Seismic survey activity. [redacted] 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. [redacted] 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 [redacted] 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).
  - [redacted], [redacted] and SOS provided feedback and asked questions relevant to a different Scarborough EP (Seismic EP). No new cultural information was provided relevant to any of the Scarborough activities. [redacted], [redacted] and SOS declined to provide further detail about the nature of their cultural values at the meeting (8, 9).

- [redacted], [redacted] 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.
- [redacted] 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 (18).
- [redacted], [redacted] 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). While these questions were not necessarily asked in relation to this activity, some of them are relevant to this activity. Woodside also pointed Save Our Songlines, [redacted] and [redacted] 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, [redacted] and [redacted] could share information about themselves and Save Our Songlines, in particular the communal and/ or iindividual interests held (9). [redacted] declined to do so and suggested that this meeting was not the time for that. [redacted] stated the focus of herself, [redacted] 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 [redacted], [redacted] 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 [redacted], [redacted] and SOS had told Woodside they would provide it.
- Woodside offered to establish fortnightly meetings to provide [redacted], [redacted] and SOS opportunities to provide the information to Woodside. [redacted], [redacted] 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 [redacted], [redacted] and SOS, where letter 24 March 2023 consultation had just commenced (11).
- The parties agreed to share the recording of the meeting.

- On 25 July 2023, EDO emailed Woodside:
  - Requesting a copy of the recording,
  - Requesting a response to seven follow up questions from [redacted], [redacted] 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).
  - Informing Woodside of [redacted], [redacted] and SOS' desired approach for response to the meeting on 25 July and further engagements, including that [redacted], [redacted] and SOS would provide a preliminary response to the meeting in video format on country, which may need to be supplemented (14). This has never been provided to Woodside.
  - Proposing a sequence of meetings and responses be adopted on a per-EP basis (15)
  - Requesting confirmation that the consultation meeting on 25 July formed part of the consultation requirements required by Reg 11A of the OPGGS (Environment) Regulations 2009 for a different EP (Seismic EP) (8).
- 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 [redacted] 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 [redacted] 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).
- 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
  - Noting that its clients expect Woodside to comply with EP acceptance conditions related to a recently accepted Scarborough EP with the same EMBA
  - Reiterating its "clients explained they were not ready to provide Woodside with information following the presentation". This was contrary to previous correspondence where [redacted] and [redacted] 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, [redacted] and [redacted] 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 9 August 2023, Woodside emailed EDO, requesting that a message be passed on to SOS:
  - Confirming that Woodside had previously consulted with SOS regarding the separate, accepted Scarborough EP with the same EMBA (8)
  - Informing that the activity described in the separate Scarborough EP is planned to commence on a specified date, and requesting that SOS inform Woodside whether it is aware of any other people that have not been afforded the ability to provide information, or of any information SOS wishes to provide on cultural or heritage features/values prior to the activity commencing (8, 9).
- On 10 August 2023, the EDO emailed Woodside (and copied NOPSEMA) regarding a Foreshadowed breach of conditions related to the separate, accepted Scarborough EP and advised its clients were alarmed that Woodside intended to commence activities on 12 August 2023 before it had complied with certain conditions

in the Approval. The EDO further stated Woodside had not met the conditions and that its clients did not consider they had been sufficiently consulted on the separate Scarborough EP. The EDO requested an undertaking from Woodside that it would not commence an activity until it had fully consulted with its clients and that that undertaking was provided by 12 noon AEST on 11 August 2023. If this did not occur the EDO was instructed to seek injunctive relief in the Federal Court of Australia.

- The EDO also stated it considered the Approval invalid and without a valid approval Woodside could not commence the activities under the separate accepted Scarborough EP.

Correspondence 11 August – 12 September 2023

An amount of correspondence was exchanged in relation to the Federal Court proceedings. A relevant summary is below:

- On 17 August 2023, [redacted] and SOS commenced Federal Court proceedings seeking a judicial review of NOPSEMA's decision to accept the Seismic EP with conditions. An affidavit of [redacted] was filed on that date which referenced [redacted], [redacted] and SOS
- 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 [redacted], [redacted] and SOS, and requested available date to meet.
- 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 [redacted] 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 [redacted], [redacted] 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 one specific EP (not this 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 [redacted], [redacted] 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 for the EP previously discussed (not this EP).

  - 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 [redacted] was filed. This affidavit sets out information relating to [redacted], [redacted] and SOS. It contains information that [redacted] 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 [redacted], [redacted] 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 [redacted] 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 [redacted], [redacted] 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 a specific EP (seismic) to better understand the nature of the activities and ask questions to Woodside (15).
- On 11 September 2023, given the context of the Federal Court proceedings focused on the Seismic EP, Woodside emailed the EDO:
- Confirming that the meeting proposed is to go over a specific EP (not this EP) and answer any further questions their clients have (15, 8, 9).
- Asking [redacted], [redacted] 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 [redacted], [redacted] 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 [redacted], [redacted] and SOS as part of its commitment to ongoing consultation during the life of an environment plan.
- MEETING: On 12 September, Woodside met with [redacted], SOS and EDO in Karratha. [redacted] sent her apologies as she could not make it and asked for 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 [redacted] opened the meeting by stating that [redacted] would like to learn more about the activities covered under another Scarborough EP (seismic), 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 [redacted], [redacted] and SOS. [redacted], 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).

- Throughout the meeting, [redacted] 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 another Scarborough activity (seismic) 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 [redacted] 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 [redacted], [redacted] and SOS (1).
- In response to these concerns and questions, Woodside asked [redacted] and SOS whether there was anything that Woodside might be able to do to help minimise any impacts to cultural values. [redacted] 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, [redacted] and SOS questioned why there was a focus on pygmy blue whales, rather than humpback whales, which [redacted] and SOS stated they were more concerned about. In particular, [redacted] expressed her desire to see controls adopted for humpback whales, which Woodside considered, implemented and showed to [redacted] and SOS at a subsequent meeting [ref meeting 4 October 2023).
- Woodside encouraged [redacted] and SOS to take some time and read through materials provided to her. Woodside asked whether [redacted] 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. [redacted] and SOS again stated that she could not share any further information until she is provided with the cultural heritage surveys WEL has had completed. Woodside said they would share the publicly available content from the report, and repeated that [redacted] and SOS would need to speak to MAC if they wanted access to the full report (12).
- [redacted] 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 [redacted], [redacted] 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 [redacted], [redacted] 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, [redacted] 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 [redacted] 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 Border affidavit was field. This affidavit confirmed that [redacted] "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], [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, 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.
- 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 and controls suggested to demonstrate how Woodside had addressed each of the topics and cultural values previously raised by [redacted], [redacted] 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 [redacted], [redacted] 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, [redacted], SOS and EDO provided views on some controls including the cultural awareness crew training control that had been included in all Scarborough EPs. [redacted] and SOS' feedback on the control was adopted (1).

- While Woodside was presenting on the controls implemented for humpback whales, [redacted] 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). [redacted] and SOS noted that all marine animals are important, not just whales. Woodside asked [redacted] and SOS to clarify, as in the previous meeting on 12 September [redacted] and SOS had specified humpback whales as being of particular importance. [redacted] 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 [redacted] 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 gave an overview of the Scarborough Drilling and Completions activity (this EP), including the number of wells, well depth, vessels used and length of time of activity. Woodside gave an overview of the drilling process and, when requested by [redacted], showed [redacted] and SOS a drilling video to provide greater visual context. [redacted] said she had an understanding of mining equipment and had worked on the Pluto project, she said that she had the 'gist' of what Woodside was telling her, however she wanted to see the equipment. While the video played, [redacted] identified a number of relevant technical issues relating to drilling. After the video was played, [redacted] asked:
- What the environmental impacts and risks from the activity are (1). Woodside responded to this by outlining key environmental impacts and risks from drilling, including a detailed explanation of noise impacts from DP MODUs, light emissions, atmospheric emissions and marine discharges arising from the activity (1).
- Woodside then provided an overview of the Scarborough Subsea Infrastructure Installation activity. [redacted] and SOS had various questions, relating to both the drilling, subsea installation and SITI EPs specifically, including (1);
- How equipment withstands earthquakes and tectonic movements. Woodside explained the basic requirements of a Well Operations Management Plan, and the safety factors that are considered in the well design process (1) as well as considerations for well location.
- [redacted] 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 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 described the subsea installation activity and showed a Scarborough field lay out figure for context. [redacted] and SOS expressed concern about the nature of the activity. Woodside asked whether [redacted] and SOS could expand on her concern and queried whether she was concerned about the laydown of flowlines and equipment on the seabed, or more concerned about the presence of vessels in the field. [redacted] and SOS expressed it was the 'whole lot' she was concerned about. [redacted] and SOS expressed her desire to seek external experts to provide her with their perspective on the subsea activities (1).
- Woodside moved on to the last Scarborough EP in the suite (SITI EP) and provided an overview of the proposed Trunkline and explained the process for selecting the Trunkline route and Trunkline construction methodology. [redacted] 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 [redacted] 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. [redacted] 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 [redacted], the meeting ended (8, 9, 14).
  - After the close of the meeting, Woodside informed EDO lawyers that another option available for [redacted], SOS and [redacted] 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, [redacted] and EDO declined to attend.

Correspondence following the 4 October meeting

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 [redacted] 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.
  - [redacted], through EDO, emphasised the importance of understanding the impacts and controls relating to animals affected by the activities (1).
  - EDO stated that [redacted] did not agree to meet again on the 5th October in Karratha and [redacted] 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. [redacted] 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 [redacted] sharing information (7).
- On 5 October 2023 Woodside emailed EDO acknowledging the email sent on 4th Oct 2023 and stating that Woodside's understanding of the meeting differs. Woodside enquired if there were alternative approaches for [redacted] 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 [redacted] and EDO would not be attending the meeting that day.
  - [redacted] considered Woodside had seriously damaged the relationship of trust and confidence required for consultation. EDO were instructed to say that [redacted] 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 [redacted] and SOS would not be attending the meeting that day. Woodside confirmed employees were at the Red Earth Arts Precinct centre, as agreed, and was ready, willing and able to participate in the meeting, and that this was another opportunity for [redacted] to share her information on the Scarborough EPs. Woodside re-iterated that there was no disrespect intended towards [redacted], that they had accommodated the consultation requests put forward by [redacted], 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 [redacted] 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 [redacted] or SOS on Rosemary Island and asked again if there were alternatives available for [redacted] 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 [redacted] to NOPSEMA, cc'd Woodside, which:
  - Acknowledged that, in [redacted] 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 [redacted] 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 [redacted] 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 [redacted] and SOS to share information and engage in two-way dialogue and had attempted to accommodate the varied consultation requests made by [redacted] and SOS (7, 8, 9, 14).

Summary of Feedback, Objection or Claim	Assessment of Merits of Feedback, Objection or Claim and Response	Environment Plan Controls
(1) Questions raised and addressed in meetings or in subsequent emails: - Whether the Scarborough activity included fracking - How credible spill scenarios are determined and who determines these. - Oil spill modelling Woodside undertakes. - Freshwater environments in the EMBA - Whale migration patterns - Seagrass distribution - Acoustic emissions, particularly from seismic acquisition. - How MFOs observe whales in the distance from the vessels. - Where Woodside sources information relating to species, migration patterns and Biologically Important Areas, particularly those relating to whales. - Credibility of the science underpinning Woodside's assessment of noise impacts on species (particularly in reference to the Scarborough seismic EP).	(1) Woodside has addressed the questions raised by SOS, [redacted] and [redacted] 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]. (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	(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

- How equipment installed as part of the Scarborough project withstands earthquakes. - The nature of the credible spill scenario associated with the various Scarborough activities (including this EP), and underlying information on how oil spill modelling is undertaken. - Whether NOPSEMA approves OSPRMAs for EPs. - Whether [redacted] could seek her own external experts to provide opinion on the EPs. - Additional information on the Jupiter field - Environmental controls included in the EPs, including how these have changed overtime, and what controls have been considered and not implemented. - Environmental impacts from Scarborough activities and how Woodside determines that environmental impacts are at an ALARP and acceptable level. (2) Threat posed to Murujuga rock art by Scarborough LNG and industrialization on the Burrup, and values associated with: - Murujuga - Murujuga rock art (3) Murujuga Aboriginal Corporation (MAC) are subject to gag clauses (4) Save Our Songlines, [redacted] and [redacted] desire to be consulted as a relevant person (5) Need for EPs to consider cultural heritage impacts, both direct and indirect. (6) MAC does not represent the interests of Save Our Songlines, [redacted] and [redacted]. Save Our Songlines, [redacted] and [redacted] have interests that are separate and distinct from those of MAC. (7) Sensitive information shared by Save Our Songlines, [redacted] and [redacted] was to be treated with high sensitivity and confidentiality. Meeting protocols agreed by both parties should be met. (8) Save Our Songlines, [redacted] and [redacted] have not been afforded reasonable opportunity or sufficient information for consultation. (9) Save Our Songlines, [redacted] and [redacted] have interests they wish to share with Woodside, for consideration in Woodside's Scarborough Environment Plans. (10) Objection to the Scarborough gas project, including the view that no controls could be implemented to minimise potential impacts to cultural values. (11) Consultation with Save Our Songlines, [redacted] and [redacted] is still in its early stages [Ref: EDO letter 10 August 2023].	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 email from Woodside 5 Jan 2023 and letter dated 17 April 2023] (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 [redacted], [redacted] or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates. (4) Woodside has consulted extensively with [redacted], [redacted] and Save Our Songlines on both the proposed activity and the broader Scarborough project.	assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7.8.1). (2) Not required (3) Not required (4) Not required (5) Not required (6) Not required. (7) Not required. (8) Not required. (9) Not required. (10) Not required (existing controls are sufficient) (11) Not required. (12) Not required. (13) Woodside has considered [redacted], [redacted] and SOS's feedback and updated Section 4.9.1.5 to record topics of interest and cultural value, including those relating to whales. As a result of consultation with [redacted] and SOS, Woodside has updated the noise adaptive management control relating to pygmy blue whales to also include humpback whales (C 3.2). (14) Not required. (15) Not required.

(12) Request for MAC ethnographic survey results to be shared with Save Our Songlines, [redacted] and [redacted] Requests to know who from MAC participated in the ethnographic surveys. (13) Cultural features associated with whales. (14) Need for Save Our Songlines, [redacted] and [redacted] to share their cultural knowledge and story on Country. (15) That it is not appropriate for Woodside to consult on the Scarborough project as a whole (suite of 4 EPs) in each meeting. (16) Demonstrated an interest in: - Marine animals - Seagrass and dugongs - Pygmy blue whales - Whales - Turtles - Underwater heritage - Where saltwater and freshwater meet - Potential impacts of the Scarborough project activities on whales (particularly the seismic activity). - Sharks - Water quality - Seabirds - Plankton - Pelagic fish (17) The need for Woodside to consider all animals in EP impact assessments. (18) Cultural features associated with songlines, dreaming and energy lines. (19) Cultural values publicly available in the Affidavits of [redacted] (September 2023) and Concise Statement (Ref. Section 4.9.1): - Murujuga - Rock art - Caring for Country - Bungarra - Eagle - Kangaroo	Woodside has confirmed [redacted] 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 [redacted] or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates (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 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] (6) Woodside has consulted with [redacted] and SOS separately from MAC and other relevant representative bodies. [See consultation record] In any event, as above at (3), Woodside notes	(16) Woodside has considered topics raised by [redacted] and SOS's as to interests and updated Section 4.9.1.5 to record these. At this stage, no additional control measures have been 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 7.8.1). (17) Not required. (18) Woodside has considered [redacted] and SOS's feedback and updated Section 4.9.1.5 to record topics of interest and cultural values, including songlines and energy lines. At this stage, Woodside has not been provided with specific information on these potential values so as to

	that to the extent that this assertion is considered an objection or claim by [redacted] or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates. (7) Sensitive information has been appropriately handed by Woodside in accordance with agreed protocols. Woodside has agreed with requests from [redacted] 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 [redacted] 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 [redacted] or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates (8) Woodside has, since at least 2022, provided information to [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. The information provided by Woodside meets the requirements of Regulation 11A for the reasons set out above. [redacted]	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 (C 28.3). This control was updated further during the October 4th 2023 meeting based on feedback received during the meeting that the control should be timebound. (19) Woodside has considered [redacted] and SOS's feedback and updated Section 4.9.1.5 to record indicated topics of interest and cultural values, including those relating to areas where freshwater and saltwater meet. 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 (C 28.3). This control was updated

	[redacted], [redacted] and SOS have been provided a reasonable time and 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 [redacted], [redacted] or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates. (9) Woodside has provided a reasonable period of time and ample opportunity for [redacted], [redacted] and SOS to provide the information that they say Woodside requires for its EPs. Despite providing that reasonable period of time and opportunity, [redacted], [redacted] and SOS have not provided the information. Woodside has consistently sought to provide a culturally safe space for [redacted], [redacted] and SOS to share the information they wish to share with Woodside. Throughout consultation, [redacted], [redacted] 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. [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 5October 2023 correspondence]. There is a limit to consultation – Woodside is not	further during the October 4th 2023 meeting based on feedback received during the meeting that the control should be timebound.

	required to wait indefinitely to receive this information. On a number of occasions, [redacted], [redacted] and SOS have declined to provide the information to Woodside and have instead provided information publicly [Affidavits of [redacted] 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 objection or claim by [redacted] or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates (10) Woodside considers that [redacted], [redacted] 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 [redacted], [redacted] and SOS. [See for example, consultation record and discussions with [redacted], [redacted] 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]. (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 [redacted] 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 [redacted] or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates (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 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. Woodside has provided Save Our Songlines, [redacted] and [redacted] 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 [redacted], [redacted] or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates (13) Woodside understands that whales hold spiritual and cultural importance to [redacted] and SOS. Woodside has implemented controls to reduce potential risks and impact to whales to ALARP and to an acceptable level, and has discussed with [redacted] and SOS, controls that Woodside has put in place to manage topics relating to the spiritual and cultural connection to whales that Woodside understands [redacted] and SOS hold. [Ref for example, 25 July 2023 meeting and following correspondence, 12 September 2023 meeting and following correspondence as well as 4 October meeting] (14) Woodside has consistently sought to make arrangements for [redacted] 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 [redacted] 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 [redacted] reached a compromise relating to circumnavigating Rosemary Island rather than going on	

	shore. [redacted] later refused this compromise 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 [redacted], [redacted] or SOS, the objection or claim relates to consultation, and not to an adverse impact of an activity to which the EP relates (15) [redacted], [redacted] 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 [redacted] 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 [redacted] or SOS, the objection or claim relates to consultation, and not to an adverse	

	impact of an activity to which the EP relates (16) [redacted], [redacted] and SOS have not expressly confirmed their interests and rather, have raised topics of interest to them. Woodside has considered [redacted] and SOS's topics of interest and shared relevant information with [redacted], [redacted] 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] (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] (18) Woodside understands that songlines and energy lines to hold spiritual and cultural value to [redacted], [redacted] and SOS. Woodside has consistently sought to understand the nature of these values to ensure impacts to these values can be minimised. [redacted], [redacted] 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 [redacted] and [redacted] and SOS" views on the proposed controls. [Ref for example, 12 September 2023 meeting and following correspondence; 4 October 2023 meeting] (19) Through the publicly available Affidavits of [redacted] (September 2023) and Concise Statement, Woodside has been made aware that [redacted], [redacted] 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 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 appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7.8.1**). Woodside and [redacted], [redacted] and SOS have engaged in extensive two-way dialogue on both the proposed activity and the broader Scarborough project. [redacted], [redacted] and SOS have sought clarification on specific aspects of the activity, as outlined above (1). These queries were responded to in respective meetings and/ or in subsequent email correspondence. [redacted], [redacted] and SOS have been afforded sufficient information, a	

	reasonable period of time and opportunity in their individual Traditional Owner and eNGO capacities.	

Table 2: Engagement Report with Persons or Organisations Assessed as Not Relevant

Commonwealth Commercial fisheries and representative bodies

Tuna Australia

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 3 February 2023, Woodside emailed Tuna Australia on the proposed activity (Appendix F, Reference 1.48) and provided a Consultation Information Sheet and fisheries map.
- On 3 February 2023, Tuna Australia responded and requested remuneration for consultation, a previously discussed in 2022.
- On 15 March 2023, Woodside emailed Tuna Australia:
  - Woodside advised that the level of feedback provided by an organisation, if any, is at the person or organisation's discretion.
  - Woodside advised it would be happy to meet with Tuna Australia to provide an overview of our proposed activities, how we develop our environment plans and the extensive controls we have in place to reduce impacts to as low as reasonable practical (ALARP) and acceptable level.
  - The aim is to provide an efficient and simple way to obtain feedback and to assist in an understanding of Woodside's activities.
- 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 of 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. • On 18 July 2023, Tuna Australia emailed Woodside and confirmed: - Woodside should send a marked up version of the Service Agreement for TA to review. - Tuna Australia would fill out the Supplier Questionnaire and return in the next couple of days. • On 18 July 2023, Woodside emailed Tuna Australia and sent a marked-up version of the Service Agreement for Tuna Australia to review. • On 19 July 2023, Tuna Australia emailed Woodside and thanked it for sending through edits to Tuna Australia's services agreement and commented: - 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. - Tuna Australia would like further details on the Annual service for the Woodside Master Existing document including the rationale for the payment proposed. - 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. - 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. - 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. • 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. • On 3 August 2023, Tuna Australia replied, apologised for the delay and sent the completed Supplier Questionnaire to Woodside. • On 8 August 2023, Tuna Australia responded in regard 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. • 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 • 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. • 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.		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its**	**Environment Plan Controls**

	Response	
Tuna Australia responded, providing Woodside their position statement for engaging with energy companies seeking consultation advice from stakeholders on environmental plans and project proposals. 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. Tuna Australia advised the name of another energy company where a service agreement had been executed. Tuna Australia committed to provide more information on how it would manage consultation distribution and a report under its service agreement. Tuna Australia and Woodside are working towards completing a service agreement. Whilst feedback and claims have been received, there were no objections.	The Western Tuna and Billfish Fishery management area overlaps the Operational Area and the EMBA presented in the Scarborough Drilling and Completions (D&C) EP (Section 4.9.2). • No fishing effort has occurred within or nearby to the Operational Area or EMBA for at least the last ten years, with the nearest fishing effort occurring ~460 km and ~110 km away respectively. • ABARE (2021) indicates current fishing effort is concentrated between Carnarvon and Albany (2016–2021). • In the highly unlikely event of a marine diesel spill (represented by the EMBA under a range of different weather conditions), there is considered to be no potential for interaction with the fishery, with its nearest fishing effort ~110 km to the west of the EMBA boundary. In respect to Tuna Australia's concern around potential interaction, 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. In order to manage potential interactions, Woodside has the following controls in place with regard to the PAP of the D&C EP. • Establishment of a 500 m petroleum safety zone around MODU and installation vessel and communicated to marine users. • Vessels adhere to regulatory requirements for navigational safety. • 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)).	Tuna Australia and Woodside are working towards completing a service agreement. Woodside has assessed the potential for interaction with Commonwealth and State managed commercial fisheries in Section 4.9.2 of this EP. Woodside has adopted the following controls to manage potential interactions with commercial fisheries: • C 4.1 – vessels will comply with the Navigation Act and Marine Order 21 • C 4.3 – notifications to AHO to allow generation of navigation warnings and Notice to Mariners • C 4.2 – establishment of petroleum safety zone(s) • C 4.4 – 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 Woodside has also adopted the following controls to manage the points raised in Tuna Australia's Feedback • C 6.2 and **C 6.1** vessels will comply with Marine orders 95 and 96 Woodside considers the measures and controls described within this EP address the potential impact from the proposed activities on Tuna Australia's functions, interests or activities. No additional measures or controls are required.

	• Vessels comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements. Woodside also notes the following in relation to the points raised in Tuna Australia's feedback: • Routine marine MODU and vessel discharges will be managed in accordance with legislative and regulatory requirements (e.g. marine orders) • All chemicals intended or likely to be discharged into the marine environment reduced to ALARP using the chemical assessment process. Water based mud drill cuttings that are returned to the MODU will be processed using solids control equipment (SCE) equipment. Non-water based muds (NWBM) only used where written justification process has been followed, with no overboard disposal of bulk NWBM. Displacement, brine, workover or intervention fluids contaminated with hydrocarbons will be treated prior to discharge or contained. If discharge specification is not met the fluid will be returned to shore. • Seabed disturbance will be managed by ensuring infrastructure is placed on the seabed within the predefined design footprint using positioning technology. For an anchored MODU a project specific Mooring Design Analysis will be completed. • Acoustic emissions from MODU and vessels in field will be managed by complying with regulatory requirements (e.g. EPBC Regulations 2000 – Part 8 Division 8.1), as well as additional adaptive management controls where pygmy blue whales (certain or possible) are observed. Woodside has provided consultation information to AFMA, DAFF – Fisheries, CFA, ASBTIA, Tuna Australia, WAFIC and individual relevant licence holders.	

	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	

Other non-government groups or organisations

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 a 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 emailed DEA and included responses to address specific claims and objections raised regarding the proposed activity, where appropriate.
  - 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.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
DEA self-identified, provided comment on the broader Scarborough development and requested to be consulted on the proposed activity. DEA provided feedback relating to: • Climate change and global impacts to human health. • Pollutants produced by gas processing.	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 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.	No additional measures or controls are required.

	Woodside confirms this 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 this 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 Scarborough EPs as appropriate. GHG emissions associated with this activity (i.e., fuel combustion from project vessels) are considered in Section 6.7.2 Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	

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 provided comment on the broader Scarborough development and requested to be consulted on the proposed activity.
  - 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 28 January 2022, Woodside received correspondence from FARA, via NOPSEMA (letter dated 16 January 2022) providing comment on the broader Scarborough development and requested to be consulted on the proposed activity.
- 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 provided further comment on the broader Scarborough development.

- 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 the 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.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
FARA self-identified and provided comment on the broader Scarborough development. FARA's feedback relating to: • Relevant person Murujuga rock art and surrounding landscape • Climate change • Socio-economic pressures on remote and Indigenous communities • Direct and indirect impacts on Traditional custodians of Murujuga and the Dampier Archipelago • Burrup Peninsula's World Heritage listing application compromised • Their members being affected by impacts of emissions from Scarborough activities	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**) 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 confirms this 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 this EP. Therefore, indirect impacts and risks arising from the onshore processing of	No additional measures or controls are required.

• The impacts to marine environment and endangered species • Impacts from all pollution sources on all potential receptors.	Scarborough gas are not considered indirect impacts/risks of the PAP for this EP but may be evaluated in Scarborough EPs as appropriate. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	

Lock The Gate Alliance (LTGA)

Summary of information provided and record of consultation:

- 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:
  - 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.
  - 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.
  - LTGA believe that the Scarborough development will lead to damage to the National Heritage values of the Burrup Peninsula.
- On 25 February 2022, Woodside emailed LTGA and included responses to address specific claims and objections raised regarding the proposed activity, where appropriate.
  - Woodside advised it had assessed 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.
  - Woodside provided a link to the publicly available draft EP on the NOPSEMA website which has been available since 31 August 2021.
  - Woodside invited LTGA to provide further feedback on the proposed activity.

Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
LTGA self-identified, provided comment on the broader Scarborough development and requested to be consulted on the proposed activity. LGTA provided feedback relating to:	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.	No additional measures or controls are required.

• Socio-economic impacts of climate change and carbon emissions on its members • Damage to National Heritage values of the Burrup Peninsula.	Based on Woodside's methodology for the Assessment of Additional Persons (see Section 5.3) 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. Woodside confirms this 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 this 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 Scarborough EPs as appropriate. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	

Australasian Centre for Corporate Responsibility (ACCR)		
Summary of information provided and record of consultation: • On 30 September 2022, Woodside emailed ACCR advising that Woodside had identified that ACCR had referred to the Scarborough Project in an online public campaign. Woodside attached a Consultation Information Sheet on the proposed activity and stated that it had reviewed the online campaign and noted that content generally related to impacts and risks of the Scarborough Project to climate change and GHGs. - Woodside confirmed that concerns related to carbon and the impact on climate change from Scarborough gas were not relevant to this EP. - Woodside also confirmed this EP assesses both direct and indirect impacts and risks associated with the proposed PAP and that the extraction of Scarborough gas for onshore processing is not within the scope of this activity. Therefore the 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 Scarborough EPs as appropriate. GHG emissions associated with the D&C activity (i.e., fuel combustion from project vessels) are considered in the publicly available EP. - Woodside welcomed the opportunity to meet with ACCR and noted that after 14 October 2022, consultation would be ongoing and feedback would be accepted throughout the life of the EP. • On 7 October 2022, Woodside sent a courtesy email reminder to ACCR and attached a Consultation Information Sheet requesting a response by 14 October 2022. • On 10 October 2022, Woodside followed up with ACCR via email and confirmed no response had been received.		
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 ACCR public website that cover topics relevant to the proposed activity, where appropriate and provided responses to ACCR (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.

The Climate Council (TCC)		
Summary of information provided and record of consultation: • On 30 September 2022, Woodside emailed TCC advising of the proposed activity and provided a Consultation Information Sheet. • On 7 October 2022, Woodside sent a courtesy email reminder to The Climate Council and attached a Consultation Information Sheet requesting a response by 14 October 2022. • On 10 October 2022, Woodside followed up with TCC via email and confirmed no response had been received.		
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.

World Wildlife Fund (WWF) Australia		
Summary of information provided and record of consultation: • On 19 September 2022, WWF sent an automatic reply to Woodside acknowledging an email for another EP had been received. • On 30 September 2022, Woodside emailed WWF (Appendix F, Reference 1.20) advising of the proposed activity and provided a Consultation Information Sheet. • On 7 October 2022, Woodside sent a courtesy email reminder to WWF and attached a Consultation Information Sheet requesting a response by 14 October 2022. • On 10 October 2022, Woodside followed up with WWF via email and confirmed no response had been received.		
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 WWF public website that cover topics relevant to the proposed activity, where appropriate and provided responses to WWF (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.

Extinction Rebellion WA (XRWA)		
Summary of information provided and record of consultation: • On 30 September 2022, Woodside emailed XRWA to advise that Woodside had identified that XRWA had referred to the Scarborough Project in an online public campaign. Woodside advised it had submitted an EP for this activity and attached a Consultation Information Sheet. Woodside stated it had reviewed the online campaign and noted content generally related to impacts and risks in relation to climate change, GHG emissions, rock art and Aboriginal cultural heritage. Woodside addresses these concerns in the email. • On 7 October 2022, Woodside emailed XRWA with a reminder and the Consultation Information Sheet.		
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 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 Section 7).	No additional measures or controls are required.

International Fund for Animal Welfare (IFAW)		
Summary of information provided and record of consultation: • On 30 September 2022, Woodside emailed IFAW advising of the proposed activity (Appendix F, Reference 1.21) and provided an updated Consultation Information Sheet • On 7 October 2022, Woodside sent a courtesy email reminder to IFAW and attached a Consultation Information Sheet requesting a response by 14 October 2022. • On 10 October 2022, Woodside followed up with IFAW via email and confirmed no response had been received.		
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 IFAW public website that cover topics relevant to the proposed activity, where appropriate and provided responses to IFAW (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.

Market Forces

Summary of information provided and record of consultation:

- On 30 September 2022, Woodside emailed Market Forces to advise it had identified that Market Forces has referred to the Scarborough Project in an online public campaign. Woodside advised it had submitted an EP to NOPSEMA for the proposed activity. A Consultation Information Sheet for this EP was attached.
  - Woodside advised it had reviewed the online campaign and noted the content generally related to impacts and risks of the Scarborough Project to climate change, GHGs, rock art, Aboriginal cultural heritage and an unplanned oil spill.
  - Woodside confirmed that concerns related to carbon and the impact on climate change from Scarborough gas are not relevant to this EP.
  - Woodside also confirmed this EP assesses both direct and indirect impacts and risks associated with the proposed PAP. 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 for this EP but may be evaluated in Scarborough EPs as appropriate. GHG emissions associated with the proposed activity (ie fuel combustion from project vessels) are considered in the publicly available EP.
  - On rock art and Aboriginal cultural heritage, Woodside confirmed the activities covered by this EP are located ~430 km away from Murujuga and will have no impact on access to sites of cultural and spiritual significance.
  - 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 PAP and damage to heritage sites is not anticipated. Woodside has undertaken archaeological assessments and ethnographic surveys to identify cultural heritage that may be impacted by the Scarborough development.
  - Regarding assessment on marine diesel spill risk, Woodside confirmed that Unplanned Activities from the proposed activity are assessed in the publicly available EP.
- On 7 October 2022, Woodside sent a courtesy email reminder to Market Forces and attached a Consultation Information Sheet requesting a response by 14 October 2022.
- On 10 October 2022, Woodside followed up with Market Forces via email and confirmed no response had been received.
- On 10 October 2022, Market Forces emailed Woodside noting it would like to continue to receive correspondence regarding EPs for Woodside projects and the opportunity to consult and provide feedback on those plans.

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 Market Forces public website that cover topics relevant to the proposed activity, where appropriate and provided responses to Market Forces (shown above). Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the	No additional measures or controls are required.

	EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see **Section 7**).	

Research Institutes and Local Conservation Groups or Organisations

University of Western Australia (UWA)

Summary of information provided and record of consultation:

Historical Engagement

- 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.
- On 17 November 2022, UWA emailed Woodside:
  - UWA undertook a Multibeam Survey of the Madeline Shoals and, although it captured most of the area, the geology appears to continue north into the Dampier Marine Park.
  - The northern tip of UWA's MBES survey mapped outcropping igneous rock on the seabed is 1.3 km south of the Borrow Grounds SW boundary.
  - UWA has heard from Oceanic Offshore that they know of other hardgrounds north of the Madeline Shoals but they did not have the time to follow up on their lead.
  - UWA also noted it has a Parks Australia Grant to undertake habitat mapping of the Dampier Marine Park (early 2023) and it is to investigate the extent of the hard rocky terrains within this zone.
- On 18 November 2022, UWA emailed Woodside:
  - UWA also shared that the Madeleine Shoals have been added to the cultural landscape boundaries of the World heritage nomination dossier.
- On 14 December 2022, Woodside emailed UWA in response to an email regarding Woodside's Scarborough State EP and arranged a time to meet.

Sufficient Time and Sufficient Information

- On 15 December 2022, Woodside met with representatives from UWA via video conference to provide a briefing on the broader Scarborough Project activities and related EPs. During its meeting UWA confirmed:
  - In general, Woodside's offshore activities are out of the scope of interest for UWA; however, it has a particular interest in the Madeleine Shoals and the adjacent borrow ground in Commonwealth waters;
  - There is a lack of data on terrain outside of the current mapping on Madeleine Shoals that, while unlikely, may extend north (towards the borrow ground area);
  - The full extent of the terrain was not captured given time and cost constrains; and,
  - The current mapping has the Shoals mapped ~100 m from the marine park boundary and ~1.3 km from the borrow ground boundary.
  - UWA also acknowledged Woodside may already have mapping of the borrow ground that indicates no exposed rock or hard material.
  - Woodside confirmed extensive studies of the borrow ground and adjacent marine park found no hard material and a substantial depth of sand.
  - UWA concluded it has submitted for additional funding for further exploration of Madeleine Shoals.

- On 6 February 2023, Woodside emailed UWA advising of the proposed activity (Appendix F, Reference 1.58) and provided an updated Consultation Information Sheet.

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
UWA has advised that the proposed Scarborough activities are predominantly outside the scope of interest for UWA. Whilst feedback has been received, there were no objections or claims.	Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

Western Australian Marine Science Institution (WAMSI)

Summary of consultation provided and responses:

- On 3 February 2023, Woodside emailed WAMSI advising of the proposed activity (Appendix F, Reference 1.54) and provided an updated Consultation Information Sheet.
  - Woodside also asked for details of any research activities WAMSI is undertaking that may overlap with the proposed activity.
- On 22 February 2023, Woodside sent a follow up email (Appendix F, Reference 1.70).

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

Commonwealth Scientific and Industrial Research Organisation (CSIRO)		
Summary of information provided and record of consultation: • On 6 February 2023, Woodside emailed CSIRO advising of the proposed activity and provided an updated Consultation Information Sheet (Appendix F, Reference 1.57). - 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 1.80).		
Summary of Feedback, Objection or Claim	**Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response**	**Environment Plan Controls**
No feedback, objections or claims received despite follow up.	Woodside engages in ongoing consultation throughout the life of an EP. Should feedback be received after the 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.
Australian Institute of Marine Science (AIMS)		
Summary of information provided and record of consultation: • On 6 February 2023, Woodside emailed AIMS advising of the proposed activity (Appendix F, Reference 1.60) and provided an updated Consultation Information Sheet. Woodside also asked for details of any research activities AIMS is undertaking that may overlap with the proposed activity. • On 9 February 2023, AIMS emailed Woodside thanking it for the opportunity to consider the proposed activity. AIMS confirmed there are no overlaps with planned AIMS science activities in the area.		

Summary of Feedback, Objection or Claim	Woodside Energy's Assessment of Merits of Feedback, Objection or Claim and its Response	Environment Plan Controls
AIMS provided feedback to Woodside and confirmed there are no overlaps with planned AIMS science activities in the area. Whilst feedback has been received, there were no objections or claims.	Woodside noted AIMS' feedback that there were no overlaps with research activities in the area. Woodside engages in ongoing consultation throughout the life of an EP. Woodside notes that further feedback may be received as part of ongoing consultation. Should feedback be received after the EP has been accepted, it will be assessed and, where appropriate, Woodside will apply its Management of Change and Revision process (see Section 7).	No additional measures or controls are required.

1. CONSULTATION

1.1 Woodside Consultation Information Sheet (July 2021) (sent to all relevant stakeholders)

Woodside

STAKEHOLDER CONSULTATION

INFORMATION SHEET

July 2021

WA-61-L SCARBOROUGH DRILLING AND COMPLETIONS

CARNARVON BASIN, NORTH-WEST AUSTRALIA

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth). The Petroleum Activities Program is located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The activity is planned to occur anytime within a five-year window commencing in H2 2022, pending approvals. Relevant stakeholders will be advised of the timing once determined.

The EP will cover drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells. Woodside may also need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.

Woodside is operator of the Scarborough field (within permit area WA-61-L) with a 73.5% interest. BHP Petroleum (North West Shelf) Pty Ltd holds the remaining 26.5% share in the field.

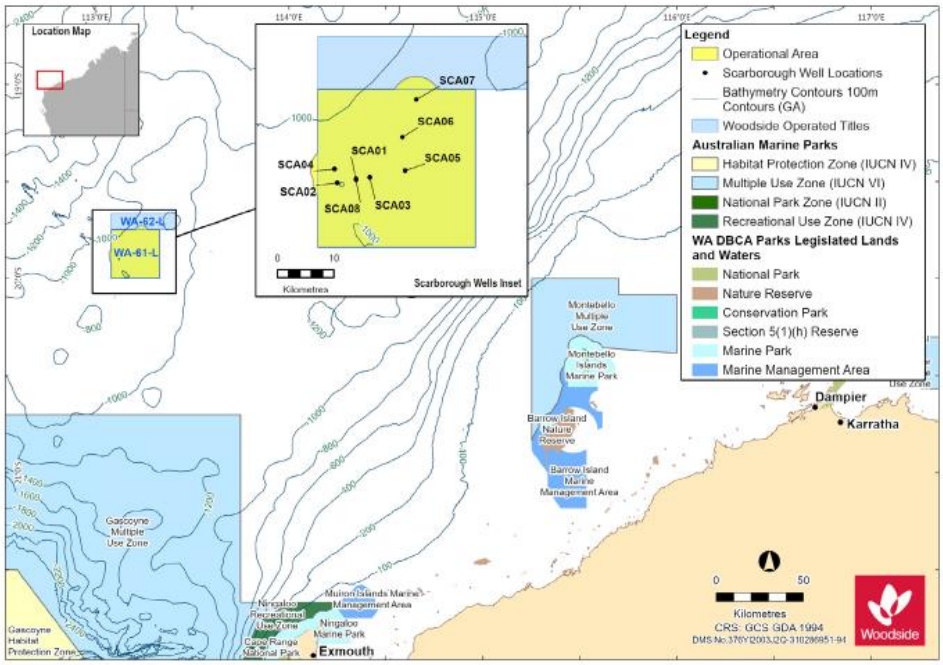

Figure 1. Proposed Scarborough Drilling and Completions Operational Area

1 WA-61-L Scarborough Drilling and Completions Carnarvon Basin, North-West Australia | June 2021

Table 2 – Proposed well locations

Activity	Water Depth (Approx. m LAT)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53' 30.499" S	113° 08' 43.568" E	WA-61-L
SCA02 well	912	19° 53' 48.471" S	113° 06' 55.261" E	WA-61-L
SCA03 well	912	19° 53' 18.551" S	113° 10' 03.300" E	WA-61-L
SCA04 well	918	19° 52" 30.359" S	113° 06' 41.412" E	WA-61-L
SCA05 well	918	19° 52' 38.718" S	113° 13' 24.437" E	WA-61-L
SCA06 well	902	19° 49' 27.763" S	113° 13' 08.300" E	WA-61-L
SCA07 well	907	19° 45' 52.900" S	113° 14' 27.449" E	WA-61-L
SCA08 well	909	19° 53' 27.254" S	113° 08' 43.647"E	WA-61-L
Contingent wells	Within permit area WA-61-L			

Table 3 – Summary of key risks and/or impacts and management measures.

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to: • Defence activities • Petroleum activities • Commercial fishing activities • Shipping activities	• 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. • Advice to relevant stakeholders prior to the commencement of activities. • All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.
Chemical use	• Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.
Marine fauna interactions	• Vessel masters will implement interaction management actions in accordance with the EPBC Regulations 2000.
Marine discharges	• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards where applicable. • Drill Cuttings returned to the MODU will only be discharged if requirements relating to treatment and discharge location in the EP are met.
Seabed disturbance	• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance. • MODU mooring analysis and anchor deployment in accordance with internal standards. • No anchoring of support and installation vessels during drilling, construction and installation activities.
Vessel interaction	• 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. • A 500 m radius petroleum safety zone will be in place around the MODU or drill ship and installation vessel for the duration of activities. • Commercial fishers and other marine users are permitted to use but should take care when entering the Operational Area around the MODU or drill ship. The Operational Area varies depending on the activity and vessel ranging from a 500 m radius for a DPMODU or 4000 m radius for a moored MODU, and a 1500 m radius around subsea installation vessel.
Waste management	• Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. • Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. • Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.

Potential Risk and/or Impact	Mitigation and/or Management Measure
Unplanned activities	

Hydrocarbon release	• Valid and appropriate Shipboard Oil Pollution Emergency Plan (SOPEP) or Shipboard Marine Pollution Emergency Plan (SMPEP) for all operating vessels.
	• Environment Plans and Oil Pollution Emergency Plans (OPEP) will be accepted and in place, appropriate to the credible hydrocarbon spill scenario associated with activities.
	• Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.
	• Well Operations Management Plan accepted and in place for all wells, in accordance with the Offshore Petroleum and Greenhouse Gas Storage Act requirements, which include:
	  • Blowout Preventer (BOP) installation during drilling operations.
	  • Regular testing of BOP.

Introduction of invasive marine species	• All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. • Compliance with Australian biosecurity requirements and guidance. • Contracted vessels comply with Australian ballast water requirements.

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 2 August 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.

Woodside

www.woodside.com.au

1.2 Email sent to the following relevant stakeholders DISER, ABF, DMIRS, DoT, DBCA, APPEA (2 July 2021)

Dear Stakeholder,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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 .

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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here .

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the mobile offshore drilling unit (MODU) and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities: • Dynamically Positioned MODU/drillship – 500 m radius from each well centre; or • Moored MODU – 4,000 m radius from each well centre. Subsea installation activities: • Installation vessel – 1500 m radius around subsea locations Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Vessels:

Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a dynamically positioned MODU.

A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels.

Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53’ 30.499” S	113° 08’ 43.568” E	WA-61-L
SCA02 well	912	19° 53’ 48.471” S	113° 06’ 55.261” E	WA-61-L
SCA03 well	912	19° 53’ 18.551” S	113° 10’ 03.300” E	WA-61-L
SCA04 well	918	19° 52” 30.359” S	113° 06’ 41.412” E	WA-61-L
SCA05 well	918	19° 52’ 38.718” S	113° 13’ 24.437” E	WA-61-L
SCA06 well	902	19° 49’ 27.763” S	113° 13’ 08.300” E	WA-61-L
SCA07 well	907	19° 45’ 52.900” S	113° 14’ 27.449” E	WA-61-L
SCA08 well	909	19° 53’ 27.254” S	113° 08’ 43.647” E	WA-61-L
*Contingent wells – **located within permit area WA-61-L***				

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 2 August 2021.

Regards,
[redacted]

[redacted] Developments

1.3 Email sent to AHO (2 July 2021)

Dear Stakeholder,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions

activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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 vessel density is also attached for reference.

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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here .

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the mobile offshore drilling unit (MODU) and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities: • Dynamically Positioned MODU/drillship – 500 m radius from each well centre; or • Moored MODU – 4,000 m radius from each well centre. Subsea installation activities: • Installation vessel – 1500 m radius around subsea locations Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a Dynamically Positioned MODU. A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels. Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53’ 30.499” S	113° 08’ 43.568” E	WA-61-L
SCA02 well	912	19° 53’ 48.471” S	113° 06’ 55.261” E	WA-61-L
SCA03 well	912	19° 53’ 18.551” S	113° 10’ 03.300” E	WA-61-L
SCA04 well	918	19° 52” 30.359” S	113° 06’ 41.412” E	WA-61-L
SCA05 well	918	19° 52’ 38.718” S	113° 13’ 24.437” E	WA-61-L
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SCA07 well	907	19° 45’ 52.900” S	113° 14’ 27.449” E	WA-61-L
SCA08 well	909	19° 53’ 27.254” S	113° 08’ 43.647” E	WA-61-L
*Contingent wells – **located within permit area WA-61-L***				

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977

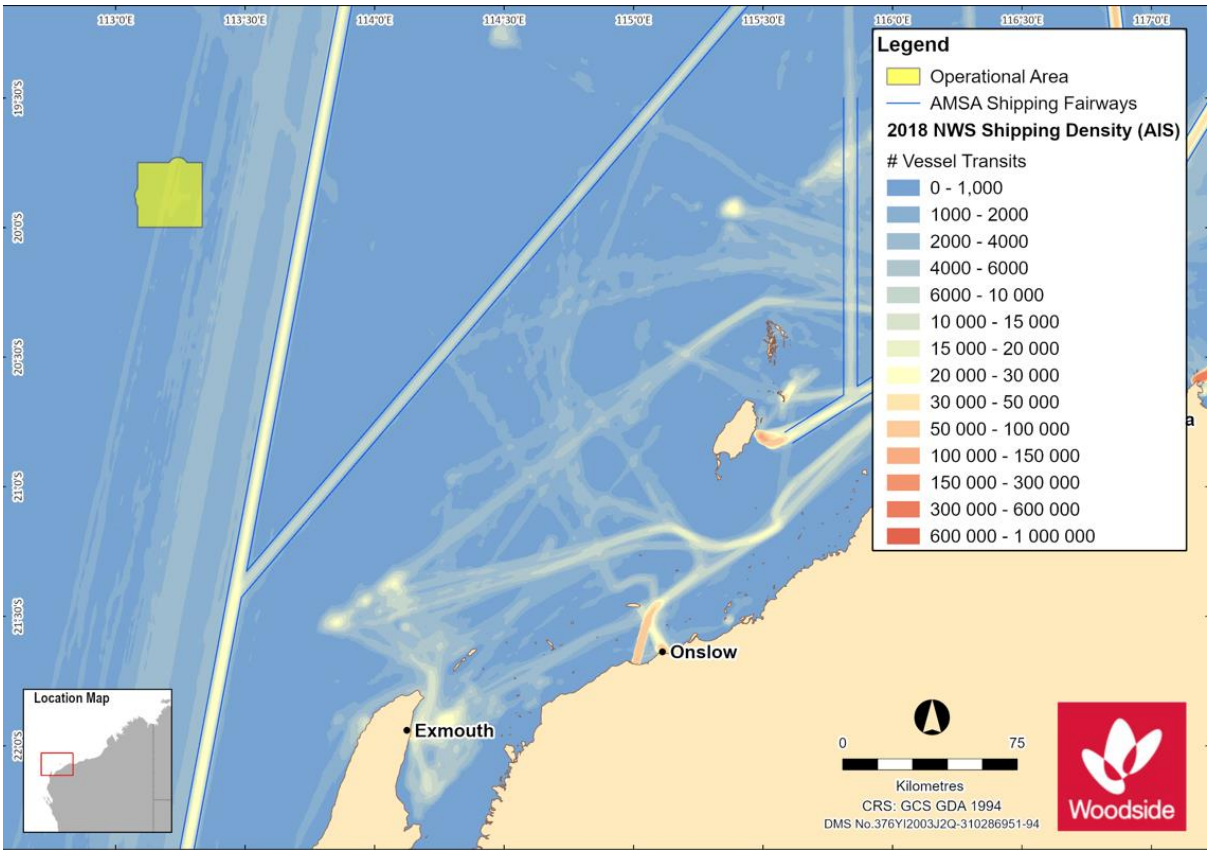
Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 2 August 2021.

Regards
[redacted] | Developments

1.4 Shipping lanes map sent to AHO and AMSA (2 July 2021)



1.5 Email sent to AMSA (2 July 2021)

Dear Stakeholder,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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 vessel density is also attached for reference.

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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here .

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the mobile offshore drilling unit (MODU) and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities: • Dynamically Positioned MODU/drillship – 500 m radius from each well centre; or • Moored MODU – 4,000 m radius from each well centre. Subsea installation activities: • Installation vessel – 1500 m radius around subsea locations Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a Dynamically Positioned MODU.

A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels.

Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53' 30.499" S	113° 08' 43.568" E	WA-61-L
SCA02 well	912	19° 53' 48.471" S	113° 06' 55.261" E	WA-61-L
SCA03 well	912	19° 53' 18.551" S	113° 10' 03.300" E	WA-61-L
SCA04 well	918	19° 52" 30.359" S	113° 06' 41.412" E	WA-61-L
SCA05 well	918	19° 52' 38.718" S	113° 13' 24.437" E	WA-61-L
SCA06 well	902	19° 49' 27.763" S	113° 13' 08.300" E	WA-61-L
SCA07 well	907	19° 45' 52.900" S	113° 14' 27.449" E	WA-61-L
SCA08 well	909	19° 53' 27.254" S	113° 08' 43.647" E	WA-61-L
*Contingent wells – **located within permit area WA-61-L***				

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 2 August 2021.

Regards
[redacted] | Developments

1.6 Email sent to DoD (2 July 2021)

Dear Department of Defence,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here .

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the mobile offshore drilling unit (MODU) and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities: • Dynamically Positioned MODU/drillship – 500 m radius from each well centre; or • Moored MODU – 4,000 m radius from each well centre. Subsea installation activities: • Installation vessel – 1500 m radius around subsea locations Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a Dynamically Positioned MODU. A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels. Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53’ 30.499” S	113° 08’ 43.568” E	WA-61-L
SCA02 well	912	19° 53’ 48.471” S	113° 06’ 55.261” E	WA-61-L
SCA03 well	912	19° 53’ 18.551” S	113° 10’ 03.300” E	WA-61-L
SCA04 well	918	19° 52” 30.359” S	113° 06’ 41.412” E	WA-61-L
SCA05 well	918	19° 52’ 38.718” S	113° 13’ 24.437” E	WA-61-L
SCA06 well	902	19° 49’ 27.763” S	113° 13’ 08.300” E	WA-61-L
SCA07 well	907	19° 45’ 52.900” S	113° 14’ 27.449” E	WA-61-L
SCA08 well	909	19° 53’ 27.254” S	113° 08’ 43.647” E	WA-61-L
*Contingent wells – **located within permit area WA-61-L***				

Feedback:
If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977

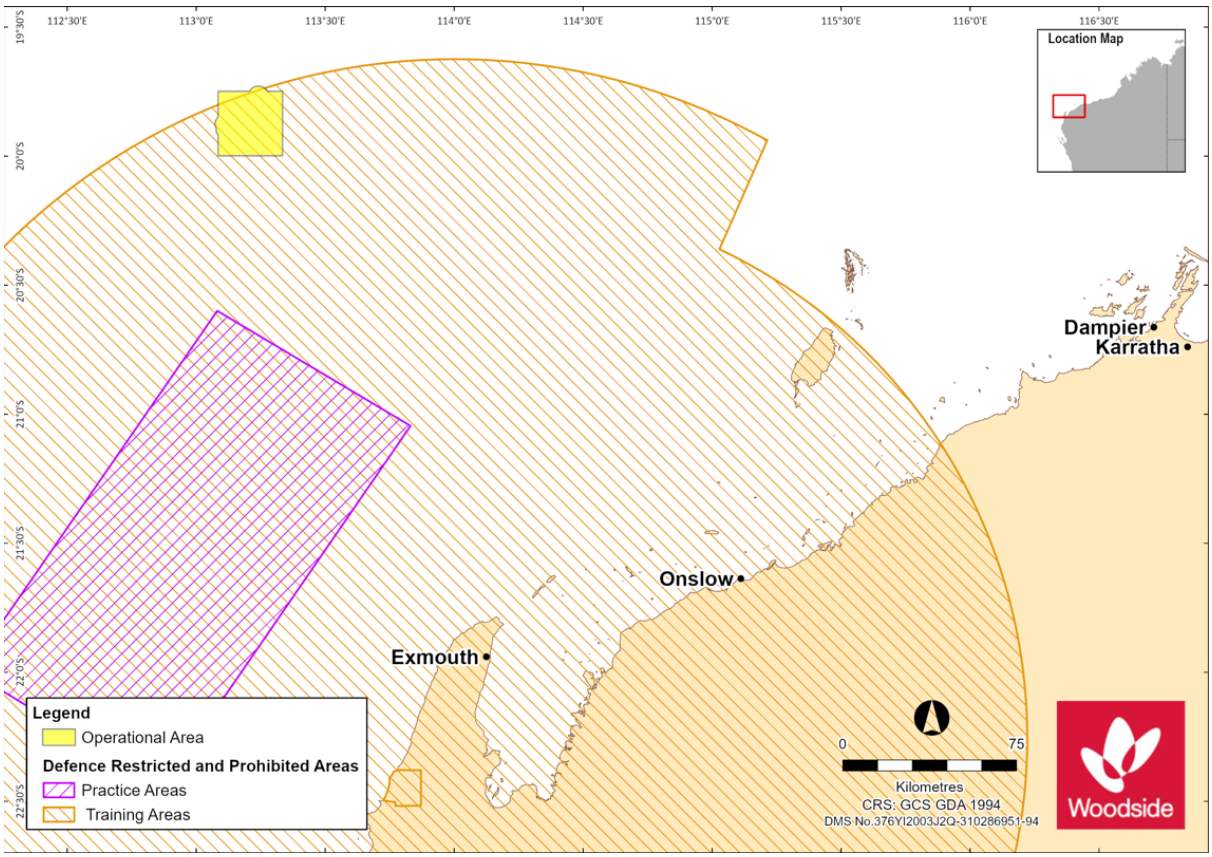
Your feedback and our response will be included in our Environment Plans which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 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 2 August 2021.

Regards
[redacted] | Developments

1.7 Defence map sent to DoD (2 July 2021)



1.8 Email sent to DNP (2 July 2021)

Dear Director of National Parks,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

An EP for this activity will be submitted 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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

Implications for Parks Australia interests

We note Australian Government Guidance on consultation activities with respect to the proposed activities and confirm that:

- We have assessed potential impacts and risks to AMPs in the development of the proposed Environment Plan for this activity and believe that there are no credible impacts associated with planned activities that have potential to impact marine park values.

- In the unlikely event of a hydrocarbon release there is risk of hydrocarbons contacting the Abrolhos, Carnarvon Canyon, Gascoyne and Ningaloo AMPs. The worst-case credible spill scenario assessed for this activity is a marine diesel oil spill resulting from the highly unlikely event of a vessel collision.
- A Commonwealth Government approved oil spill response plan will be in place for the duration of the activities, which includes notification to relevant agencies and organisations as to the nature and scale of the event, as soon as practicable following an occurrence. The Director of National Parks will be advised if an environmental incident occurs that may impact on the values of a marine park.

A Consultation Information Sheet about the planned activity is attached, which provides background on the 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 .

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,

[redacted] | Developments

1.9 Email sent to Chevron, Western Gas, ExxonMobil and Shell (2 July 2021)

Dear Stakeholder,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here.

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional

	contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the mobile offshore drilling unit (MODU) and installation vessel for the duration of activities.The following Operational Areas will also apply: Drilling activities: • Dynamically Positioned MODU/drillship – 500 m radius from each well centre; or • Moored MODU – 4,000 m radius from each well centre. Subsea installation activities: • Installation vessel – 1500 m radius around subsea locations Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a Dynamically Positioned MODU. A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels. Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53’ 30.499” S	113° 08’ 43.568” E	WA-61-L
SCA02 well	912	19° 53’ 48.471” S	113° 06’ 55.261” E	WA-61-L
SCA03 well	912	19° 53’ 18.551” S	113° 10’ 03.300” E	WA-61-L
SCA04 well	918	19° 52” 30.359” S	113° 06’ 41.412” E	WA-61-L
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SCA08 well	909	19° 53’ 27.254” S	113° 08’ 43.647” E	WA-61-L

*Contingent wells – **located within permit area WA-61-L***

Feedback:

If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977

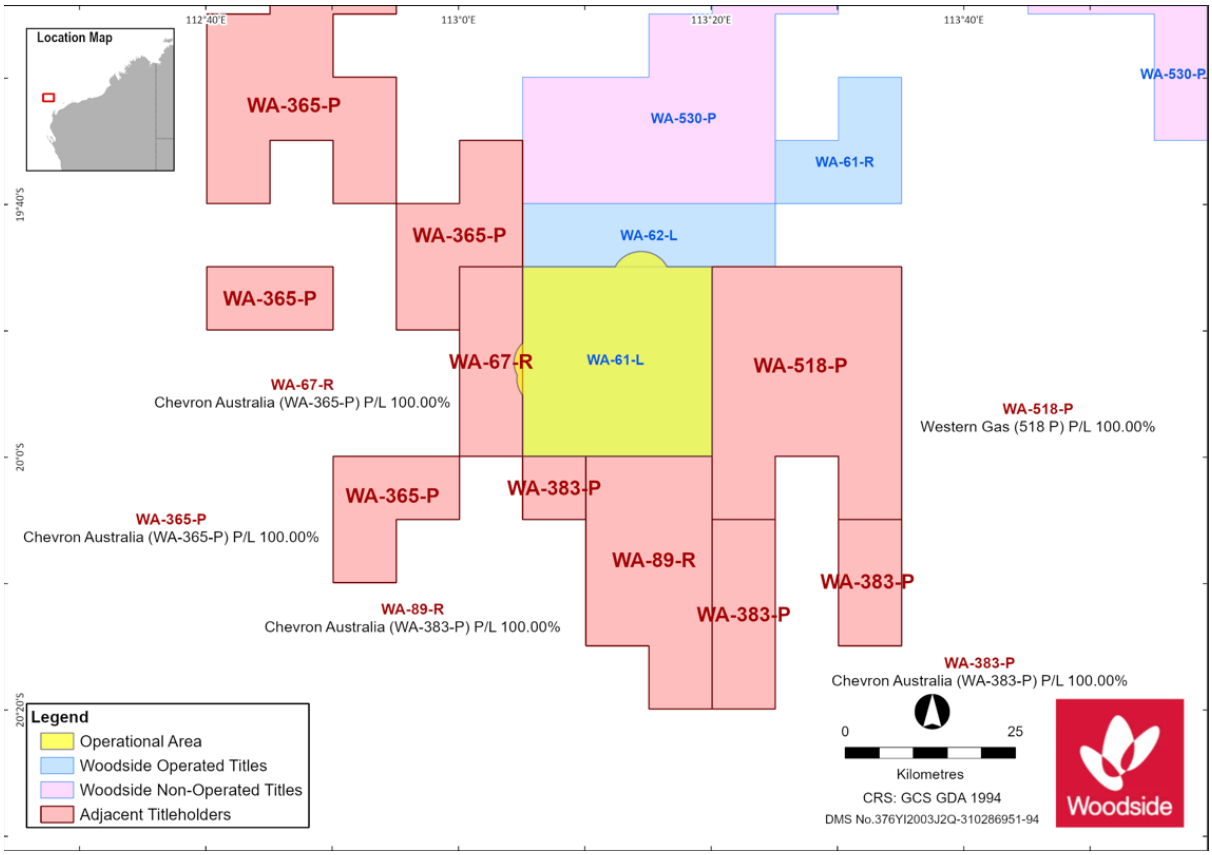
Your feedback and our response will be included in our Environment Plans which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 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 2 August 2021.

Regards
[redacted] | Developments

1.10 Titleholders map sent to Chevron, Western Gas, ExxonMobil, Shell (2 July 2021)



1.11 Email sent to Western Deepwater Trawl Licence Holders (2 July 2021)

Dear Licence Holder,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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.

Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible mobile offshore drilling unit (MODU), a dynamically positioned drill ship or a dynamically positioned MODU. A temporary petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. Marine users are requested to avoid this area during activity to ensure the safety of the project vessels and third-party vessels.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here .

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Relevant fisheries:	Commonwealth: • **Western Deepwater Trawl Fishery**
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the MODU and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities: • Dynamically positioned MODU/drillship – 500 m radius from each well centre; or

- Moored MODU – 4,000 m radius from each well centre.

Subsea installation activities:

- Installation vessel – 1500 m radius around subsea locations

Vessels:

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby. Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a dynamically positioned MODU.

A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels.

Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53’ 30.499” S	113° 08’ 43.568” E	WA-61-L
SCA02 well	912	19° 53’ 48.471” S	113° 06’ 55.261” E	WA-61-L
SCA03 well	912	19° 53’ 18.551” S	113° 10’ 03.300” E	WA-61-L
SCA04 well	918	19° 52” 30.359” S	113° 06’ 41.412” E	WA-61-L
SCA05 well	918	19° 52’ 38.718” S	113° 13’ 24.437” E	WA-61-L
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SCA08 well	909	19° 53’ 27.254” S	113° 08’ 43.647” E	WA-61-L
Contingent wells – ***located within permit area WA-61-L***				

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to: • ***Defence activities*** • ***Petroleum activities***	• Consultation with petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform

• ***Commercial fishing activities*** • ***Shipping activities***	decision making for the proposed activity and development of the EP. • Advice to relevant stakeholders prior to the commencement of activities. • All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.
Chemical use	• Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.
Marine discharges	• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards where applicable. • Drill Cuttings returned to the MODU will only be discharged if requirements relating to treatment and discharge location in the EP are met.
Seabed disturbance	• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance. • MODU mooring analysis and anchor deployment in accordance with internal standards. • No anchoring of support and installation vessels during drilling, construction and installation activities.
Vessel interaction	• 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. • A temporary 500 m radius petroleum safety zone will be in place around the MODU or drill ship and installation vessel for the duration of activities • Commercial fishers and other marine users are permitted to use but should take care when entering the Operational Area around the MODU or drill ship. The Operational Area varies depending on the activity and vessel ranging from a 500 m radius for a DPMODU or 4000 m radius for a moored MODU, and a 1500 m radius around subsea installation vessel.
Waste management	• Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan.

	• Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. • Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Unplanned activities	

Hydrocarbon release	• Valid and appropriate Shipboard Oil Pollution Emergency Plan (SOPEP) or Shipboard Marine Pollution Emergency Plan (SMPEP) for all operating vessels.
	• Environment Plans and Oil Pollution Emergency Plans (OPEP) will be accepted and in place, appropriate to the credible hydrocarbon spill scenario associated with activities.
	• Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.
	• Well Operations Management Plan accepted and in place for all wells, in accordance with the Offshore Petroleum and Greenhouse Gas Storage Act requirements, which include:
	  ○ Blowout Preventer (BOP) installation during drilling operations.
	  ○ Regular testing of BOP.

Introduction of invasive marine species	• All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. • 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 or 1800 442 977

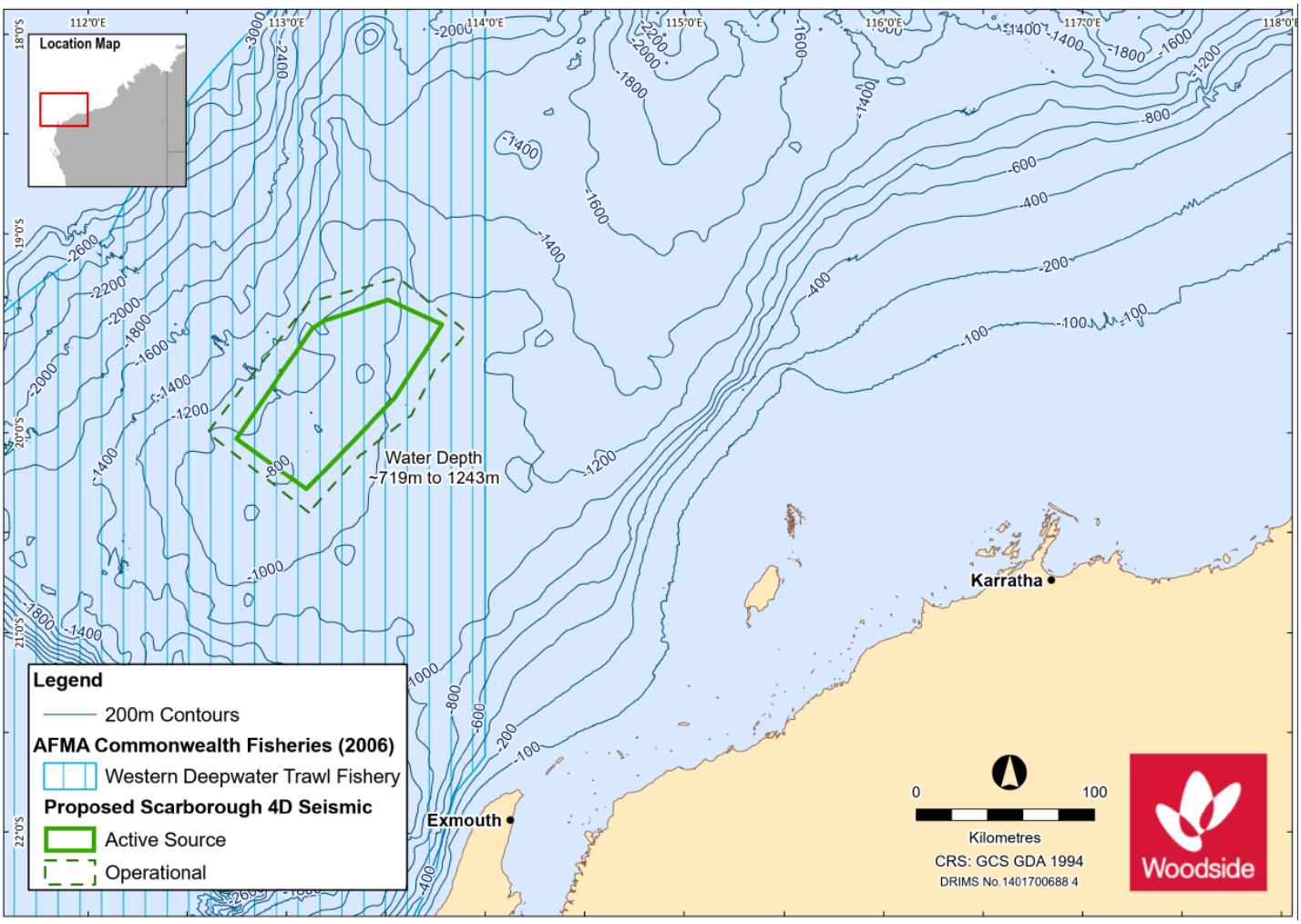
Your feedback and our response will be included in our Environment Plans which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 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 12 August 2021.

Regards

[redacted]



1.12 Email sent to CFA (2 July 2021)

Dear Stakeholder,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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.

Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible mobile offshore drilling unit (MODU), a dynamically positioned drill ship or a dynamically positioned MODU. A temporary petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. Marine users are requested to avoid this area during activity to ensure the safety of the project vessels and third-party vessels.

We have identified potential impacts to commercial fishers and the environment and have

endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here .

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Relevant fisheries:	Commonwealth: • **Western Deepwater Trawl Fishery**
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the MODU and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities: • Dynamically positioned MODU/drillship – 500 m radius from each well centre; or • Moored MODU – 4,000 m radius from each well centre. Subsea installation activities: • Installation vessel – 1500 m radius around subsea locations Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a

dynamically positioned drill ship or a dynamically positioned MODU.

A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels.

Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
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SCA02 well	912	19° 53' 48.471" S	113° 06' 55.261" E	WA-61-L
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SCA04 well	918	19° 52" 30.359" S	113° 06' 41.412" E	WA-61-L
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SCA08 well	909	19° 53' 27.254" S	113° 08' 43.647" E	WA-61-L
Contingent wells – ***located within permit area WA-61-L***				

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to: • ***Defence activities*** • ***Petroleum activities*** • ***Commercial fishing activities*** • ***Shipping activities***	• Consultation with 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. • Advice to relevant stakeholders prior to the commencement of activities. • All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.

Chemical use	• Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.
Marine discharges	• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards where applicable. • Drill Cuttings returned to the MODU will only be discharged if requirements relating to treatment and discharge location in the EP are met.
Seabed disturbance	• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance. • MODU mooring analysis and anchor deployment in accordance with internal standards. • No anchoring of support and installation vessels during drilling, construction and installation activities.
Vessel interaction	• 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. • A temporary 500 m radius petroleum safety zone will be in place around the MODU or drill ship and installation vessel for the duration of activities • Commercial fishers and other marine users are permitted to use but should take care when entering the Operational Area around the MODU or drill ship. The Operational Area varies depending on the activity and vessel ranging from a 500 m radius for a DPMODU or 4000 m radius for a moored MODU, and a 1500 m radius around subsea installation vessel.
Waste management	• Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. • Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. • Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.

Unplanned activities	

Hydrocarbon release	• Valid and appropriate Shipboard Oil Pollution Emergency Plan (SOPEP) or Shipboard Marine Pollution Emergency Plan (SMPEP) for all operating vessels.
	• Environment Plans and Oil Pollution Emergency Plans (OPEP) will be accepted and in place, appropriate to the credible hydrocarbon spill scenario associated with activities.
	• Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.
	• Well Operations Management Plan accepted and in place for all wells, in accordance with the Offshore Petroleum and Greenhouse Gas Storage Act requirements, which include:
	  ○ Blowout Preventer (BOP) installation during drilling operations.
	  ○ Regular testing of BOP.

Introduction of invasive marine species	• All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. • Compliance with Australian biosecurity requirements and guidance. • Contracted vessels comply with Australian ballast water requirements.

Feedback:

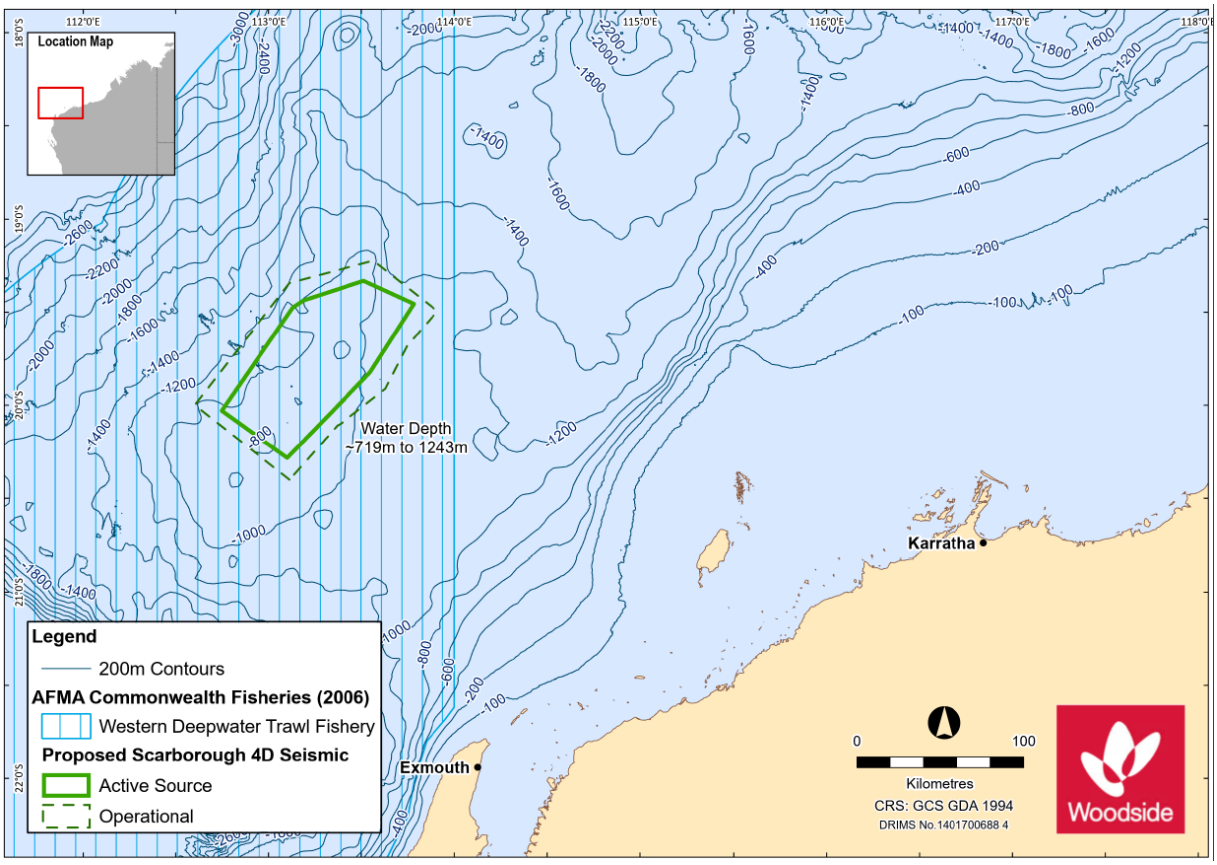
If you have any issues or concerns with these activities, any other issues relevant to this location then please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977

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 2 August 2021.

Regards
[redacted] | Developments



1.13 Email sent to AFMA (2 July 2021)

Dear Stakeholder,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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.

Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible mobile offshore drilling unit (MODU), a dynamically positioned drill ship or a dynamically positioned MODU. A temporary petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. Marine users are requested to avoid this area during activity to ensure the safety of the project vessels and third-party vessels.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

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. Woodside is proposing

four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here .

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Relevant fisheries:	Commonwealth: • **Western Deepwater Trawl Fishery**
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the MODU and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities: • Dynamically positioned MODU/drillship – 500 m radius from each well centre; or • Moored MODU – 4,000 m radius from each well centre. Subsea installation activities: • Installation vessel – 1500 m radius around subsea locations Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a dynamically positioned MODU. A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels.

Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53' 30.499" S	113° 08' 43.568" E	WA-61-L
SCA02 well	912	19° 53' 48.471" S	113° 06' 55.261" E	WA-61-L
SCA03 well	912	19° 53' 18.551" S	113° 10' 03.300" E	WA-61-L
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SCA05 well	918	19° 52' 38.718" S	113° 13' 24.437" E	WA-61-L
SCA06 well	902	19° 49' 27.763" S	113° 13' 08.300" E	WA-61-L
SCA07 well	907	19° 45' 52.900" S	113° 14' 27.449" E	WA-61-L
SCA08 well	909	19° 53' 27.254" S	113° 08' 43.647" E	WA-61-L
Contingent wells – ***located within permit area WA-61-L***				

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to: • ***Defence activities*** • ***Petroleum activities*** • ***Commercial fishing activities*** • ***Shipping activities***	• Consultation with 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. • Advice to relevant stakeholders prior to the commencement of activities. • All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.
Chemical use	• Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.
Marine discharges	• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance

	Standards where applicable. • Drill Cuttings returned to the MODU will only be discharged if requirements relating to treatment and discharge location in the EP are met.
Seabed disturbance	• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance. • MODU mooring analysis and anchor deployment in accordance with internal standards. • No anchoring of support and installation vessels during drilling, construction and installation activities.
Vessel interaction	• 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. • A temporary 500 m radius petroleum safety zone will be in place around the MODU or drill ship and installation vessel for the duration of activities • Commercial fishers and other marine users are permitted to use but should take care when entering the Operational Area around the MODU or drill ship. The Operational Area varies depending on the activity and vessel ranging from a 500 m radius for a DPMODU or 4000 m radius for a moored MODU, and a 1500 m radius around subsea installation vessel.
Waste management	• Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. • Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. • Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Unplanned activities	
Hydrocarbon release	• Valid and appropriate Shipboard Oil Pollution Emergency Plan (SOPEP) or Shipboard Marine Pollution Emergency Plan (SMPEP) for all operating vessels.

	• Environment Plans and Oil Pollution Emergency Plans (OPEP) will be accepted and in place, appropriate to the credible hydrocarbon spill scenario associated with activities.
	• Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.
	• Well Operations Management Plan accepted and in place for all wells, in accordance with the Offshore Petroleum and Greenhouse Gas Storage Act requirements, which include:
	  ○ Blowout Preventer (BOP) installation during drilling operations.
	  ○ Regular testing of BOP.

Introduction of invasive marine species	• All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. • 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 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 2 August 2021.

Regards
[redacted] | Developments

1.14 Email sent to WAFIC (2 July 2021)

Dear [redacted]

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of

Dampier, Western Australia.

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.

Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible mobile offshore drilling unit (MODU), a dynamically positioned drill ship or a Dynamically Positioned MODU.A temporary petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. Marine users are requested to avoid this area during activity to ensure the safety of the project vessels and third-party vessels.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

We welcome WAFIC's feedback on the activity and information provided by 2 August 2021, and subject to this feedback, we will consult individual relevant Licence Holders.

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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here .

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Relevant fisheries:	Commonwealth: • **Western Deepwater Trawl Fishery**
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the MODU and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities:

- Dynamically positioned MODU/drillship – 500 m radius from each well centre; or
- Moored MODU – 4,000 m radius from each well centre.

Subsea installation activities:

- Installation vessel – 1500 m radius around subsea locations

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Vessels:

Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a dynamically positioned MODU.

A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels.

Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53’ 30.499” S	113° 08’ 43.568” E	WA-61-L
SCA02 well	912	19° 53’ 48.471” S	113° 06’ 55.261” E	WA-61-L
SCA03 well	912	19° 53’ 18.551” S	113° 10’ 03.300” E	WA-61-L
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SCA05 well	918	19° 52’ 38.718” S	113° 13’ 24.437” E	WA-61-L
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SCA08 well	909	19° 53’ 27.254” S	113° 08’ 43.647” E	WA-61-L
Contingent wells – ***located within permit area WA-61-L***				

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk and/or Impact	Mitigation and/or Management Measure

Planned activities	
Interests of relevant stakeholders with respect to: • ***Defence activities*** • ***Petroleum activities*** • ***Commercial fishing activities*** • ***Shipping activities***	• Consultation with 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. • Advice to relevant stakeholders prior to the commencement of activities. • All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.
Chemical use	• Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.
Marine discharges	• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards where applicable. • Drill Cuttings returned to the MODU will only be discharged if requirements relating to treatment and discharge location in the EP are met.
Seabed disturbance	• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance. • MODU mooring analysis and anchor deployment in accordance with internal standards. • No anchoring of support and installation vessels during drilling, construction and installation activities.
Vessel interaction	• 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. • A temporary 500 m radius petroleum safety zone will be in place around the MODU or drill ship and installation vessel for the duration of activities. • Commercial fishers and other marine users are permitted to use but should take care when entering the Operational Area around the MODU or drill ship. The Operational Area varies depending on the activity and vessel ranging from a 500 m radius for a

	DPMODU or 4000 m radius for a moored MODU, and a 1500 m radius around subsea installation vessel.
Waste management	• Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste Management Plan. • Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. • Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Unplanned activities	

Hydrocarbon release	• Valid and appropriate Shipboard Oil Pollution Emergency Plan (SOPEP) or Shipboard Marine Pollution Emergency Plan (SMPEP) for all operating vessels.
	• Environment Plans and Oil Pollution Emergency Plans (OPEP) will be accepted and in place, appropriate to the credible hydrocarbon spill scenario associated with activities.
	• Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.
	• Well Operations Management Plan accepted and in place for all wells, in accordance with the Offshore Petroleum and Greenhouse Gas Storage Act requirements, which include:
	  ○ Blowout Preventer (BOP) installation during drilling operations.
	  ○ Regular testing of BOP.

Introduction of invasive marine species	• All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. • 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 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).

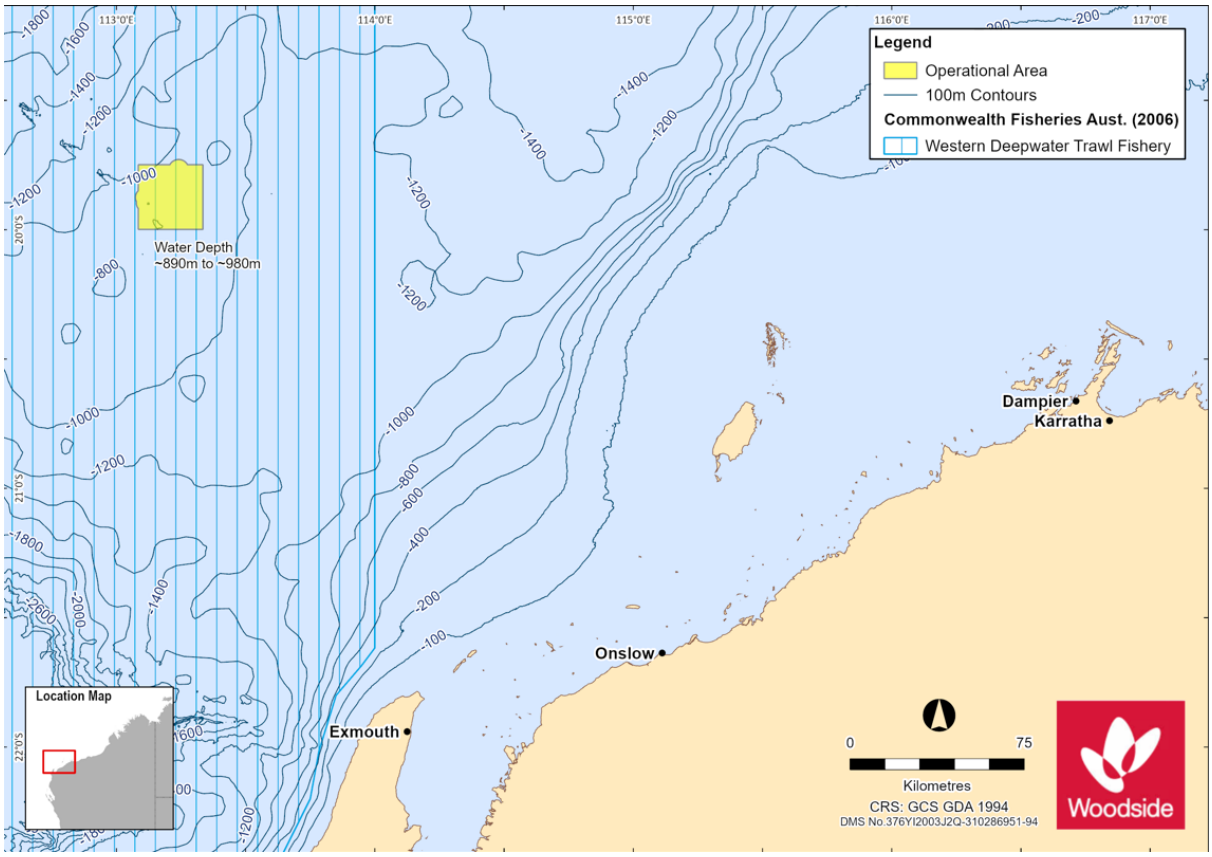
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by 2 August 2021.

Regards

[redacted] Adviser | Developments

1.15 Fisheries map sent to WAFIC, AFMA, CFA, DPIRD, DAWE, PPA, Western Deepwater Trawl Licence Holders (2 July 2021)



1.16 Email sent to DPIRD (2 July 2021)

Dear Stakeholder,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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.

Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible mobile offshore drilling unit (MODU), a dynamically positioned drill ship or a dynamically positioned MODU. A temporary petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. Marine users are requested to avoid this area during activity to ensure the safety of the project vessels and third-party vessels.

We have identified potential impacts to commercial fishers and the environment and have endeavoured to reduce these risks to as low as reasonably practicable. Fisheries have been identified as being relevant based on fishing area overlap with the activity area, assessment of government fishing effort data from recent years, fishing methods and water depth.

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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here .

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Relevant fisheries:	Commonwealth: • **Western Deepwater Trawl Fishery**
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the MODU and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities: • Dynamically positioned MODU/drillship – 500 m radius from each well centre; or • Moored MODU – 4,000 m radius from each well centre.

Subsea installation activities:

- Installation vessel – 1500 m radius around subsea locations

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Vessels:

Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a dynamically positioned MODU.

A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels.

Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
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SCA04 well	918	19° 52” 30.359” S	113° 06’ 41.412” E	WA-61-L
SCA05 well	918	19° 52’ 38.718” S	113° 13’ 24.437” E	WA-61-L
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SCA08 well	909	19° 53’ 27.254” S	113° 08’ 43.647” E	WA-61-L
*Contingent wells – **located within permit area WA-61-L***				

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned activities	
Interests of relevant stakeholders with respect to: • ***Defence activities***	• Consultation with petroleum titleholders, commercial fishers and their representative organisations, and government departments and agencies to inform

• ***Petroleum activities*** • ***Commercial fishing activities*** • ***Shipping activities***	decision making for the proposed activity and development of the EP. • Advice to relevant stakeholders prior to the commencement of activities. • All vessels within the Scarborough activity area will adhere to the navigation safety requirements including the Navigation Act 2012 and any subsequent Marine Orders.
Chemical use	• Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints.
Marine discharges	• All routine marine discharges will be managed according to legislative and regulatory requirements and Woodside's Environmental Performance Standards where applicable. • Drill Cuttings returned to the MODU will only be discharged if requirements relating to treatment and discharge location in the EP are met.
Seabed disturbance	• Infrastructure will be positioned on the seabed within design footprint to reduce seabed disturbance. • MODU mooring analysis and anchor deployment in accordance with internal standards. • No anchoring of support and installation vessels during drilling, construction and installation activities.
Vessel interaction	• 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. • A temporary 500 m radius petroleum safety zone will be in place around the MODU or drill ship and installation vessel for the duration of activities • Commercial fishers and other marine users are permitted to use but should take care when entering the Operational Area around the MODU or drill ship. The Operational Area varies depending on the activity and vessel ranging from a 500 m radius for a DPMODU or 4000 m radius for a moored MODU, and a 1500 m radius around subsea installation vessel.
Waste management	• Waste generated on the vessels will be managed in accordance with legislative requirements and a Waste

	Management Plan. • Wastes will be managed and disposed of in a safe and environmentally responsible manner that prevents accidental loss to the environment. • Wastes transported onshore will be sent to appropriate recycling or disposal facilities by a licensed waste contractor.
Unplanned activities	

Hydrocarbon release	• Valid and appropriate Shipboard Oil Pollution Emergency Plan (SOPEP) or Shipboard Marine Pollution Emergency Plan (SMPEP) for all operating vessels.
	• Environment Plans and Oil Pollution Emergency Plans (OPEP) will be accepted and in place, appropriate to the credible hydrocarbon spill scenario associated with activities.
	• Appropriate refuelling procedures and equipment will be used to prevent spills to the marine environment.
	• Well Operations Management Plan accepted and in place for all wells, in accordance with the Offshore Petroleum and Greenhouse Gas Storage Act requirements, which include:
	  ○ Blowout Preventer (BOP) installation during drilling operations.
	  ○ Regular testing of BOP.

Introduction of invasive marine species	• All vessels will be assessed and managed as appropriate to prevent the introduction of invasive marine species. • 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 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 2 August 2021.

Regards
[redacted]

1.17 Email sent to DAWE (2 July 2021)

Dear DAWE,

Woodside is planning to submit an Environment Plan (EP) for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the Scarborough development can be found here .

Activity:

Summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Relevant fisheries:	Commonwealth: • **Western Deepwater Trawl Fishery**
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the MODU and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities:

- Dynamically Positioned MODU/drillship – 500 m radius from each well centre; or
- Moored MODU – 4,000 m radius from each well centre.

Subsea installation activities:

- Installation vessel – 1500 m radius around subsea locations

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Vessels:

Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a Dynamically Positioned MODU.

A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels.

Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
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SCA08 well	909	19° 53’ 27.254” S	113° 08’ 43.647” E	WA-61-L
Contingent wells – ***located within permit area WA-61-L***				

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:

One Commonwealth-managed fishery has been identified as being relevant to the proposed Activity, this being the **Western Deepwater Trawl Fishery.**

Woodside will consult licence holders in this fishery, including the provision of a fact sheet specific to

commercial fishing interests.

Fisheries were assessed for relevance on the basis of fishing licence overlap with the Operational Area, as well as consideration of government fishing effort data from recent years, fishing methods, and water depth.

Biosecurity implications:

With respect to the biosecurity matters, please note the following information below.

Potential IMS risk	***IMS mitigation management***
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 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 2 August 2021.

Regards

Senior Corporate Affairs Adviser | Developments

1.18 Email sent to CCWA (20 August 2021)

Dear [redacted]

Thank you for your letter (*Scarborough Offshore Gas Project – Upcoming draft Environment Plans – Thursday, 12 August 2021).* Woodside consults with relevant stakeholders for all of our activities.

Woodside is planning to submit an Environment Plan (EP) for Scarborough Drilling and Completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Our Consultation Information Sheet for our Scarborough Drilling and Completions activity including feedback details has been on our website since 2 July 2021 and is attached.

The Consultation Information Sheet provides background on the proposed activity, including a summary of potential key risk and associated management measures.
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. Woodside is proposing four Commonwealth EPs for the Scarborough development and will consult with all relevant stakeholders ahead of each EP.

More information on the proposed Scarborough development can be found here.

If you have any comments about these activities in this location then please respond to Woodside at: Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your feedback by **20 September 2021.**

Woodside Feedback

1.19 Email sent to TWS (30 September 2022)

Dear Wilderness Society

Please be advised that Woodside has submitted an Environment Plan to NOPSEMA for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The drilling and subsea tree installation activities are for eight planned development wells and the potential for a further two additional contingency wells. Activities are planned to commence in H2 2022 for a period of around 50-60 days per well, pending approvals, vessel availability and weather constraints.

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 July 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 November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public).

Noting consultation material has been available since July 2021 and feedback was sought by 2 August 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 Drilling and Completions 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 Drilling and Completions 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:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the mobile offshore drilling unit (MODU) and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities: • Dynamically positioned MODU/drillship – 500 m radius from each well centre; or • Moored MODU – 4,000 m radius from each well centre. Subsea installation activities: • Installation vessel – 1500 m radius around subsea locations Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.
Vessels:	Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a dynamically positioned MODU.

A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels.

Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53’ 30.499” S	113° 08’ 43.568” E	WA-61-L
SCA02 well	912	19° 53’ 48.471” S	113° 06’ 55.261” E	WA-61-L
SCA03 well	912	19° 53’ 18.551” S	113° 10’ 03.300” E	WA-61-L
SCA04 well	918	19° 52” 30.359” S	113° 06’ 41.412” E	WA-61-L
SCA05 well	918	19° 52’ 38.718” S	113° 13’ 24.437” E	WA-61-L
SCA06 well	902	19° 49’ 27.763” S	113° 13’ 08.300” E	WA-61-L
SCA07 well	907	19° 45’ 52.900” S	113° 14’ 27.449” E	WA-61-L
SCA08 well	909	19° 53’ 27.254” S	113° 08’ 43.647” E	WA-61-L
*Contingent wells – **located within permit area WA-61-L***				

Feedback:

If you have any issues or concerns with the proposed drilling and completions 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 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 **14 October 2022**.

Regards

Woodside Feedback

1.20 Email sent to WWF (30 September 2022)

Dear World Wildlife Fund

Please be advised that Woodside has submitted an Environment Plan to NOPSEMA for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The drilling and subsea tree installation activities are for eight planned development wells and the potential for a further two additional contingency wells. Activities are planned to commence in H2 2022 for a period of around 50-60 days per well, pending approvals, vessel availability and weather constraints.

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 July 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 November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public).

Noting consultation material has been available since July 2021 and feedback was sought by 2 August 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 Drilling and Completions 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 Drilling and Completions 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:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
Schedule:	H2 2022 pending approvals, vessel availability and weather constraints
Duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the mobile offshore drilling unit (MODU) and installation vessel for the duration of activities. The following Operational Areas will also apply: Drilling activities: • Dynamically positioned MODU/drillship – 500 m radius from each well centre; or • Moored MODU – 4,000 m radius from each well centre. Subsea installation activities:

- Installation vessel – 1500 m radius around subsea locations

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Vessels:

Woodside is currently considering rig options for drilling of the wells which include a moored semi-submersible MODU, a dynamically positioned drill ship or a dynamically positioned MODU.

A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels.

Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Scarborough Well Locations:

Subsea Wells	Water Depth (m)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53’ 30.499” S	113° 08’ 43.568” E	WA-61-L
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Contingent wells – ***located within permit area WA-61-L***				

Feedback:

If you have any issues or concerns with the proposed drilling and completions 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 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 **14 October 2022**.

Regards

Woodside Feedback

1.21 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 for Scarborough drilling and completions activities located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The drilling and subsea tree installation activities are for eight planned development wells and the potential for a further two additional contingency wells. Activities are planned to commence in H2 2022 for a period of around 50-60 days per well, pending approvals, vessel availability and weather constraints.

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 July 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 November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public).

Noting consultation material has been available since July 2021 and feedback was sought by 2 August 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 Drilling and Completions 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 Drilling and Completions 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:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Approx. Water Depth (m):	~ 900 m – 955 m
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Exclusionary/Cautionary Zone:	A temporary petroleum safety zone (exclusion zone) of 500 m will be in place around the mobile offshore drilling unit (MODU) and installation vessel for the duration of activities. The following Operational Areas will

also apply:

Drilling activities:

- Dynamically positioned MODU/drillship – 500 m radius from each well centre; or
- Moored MODU – 4,000 m radius from each well centre.

Subsea installation activities:

- Installation vessel – 1500 m radius around subsea locations

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Vessels:

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Contingent wells – ***located within permit area WA-61-L***				

Feedback:

If you have any issues or concerns with the proposed drilling and completions 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 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).

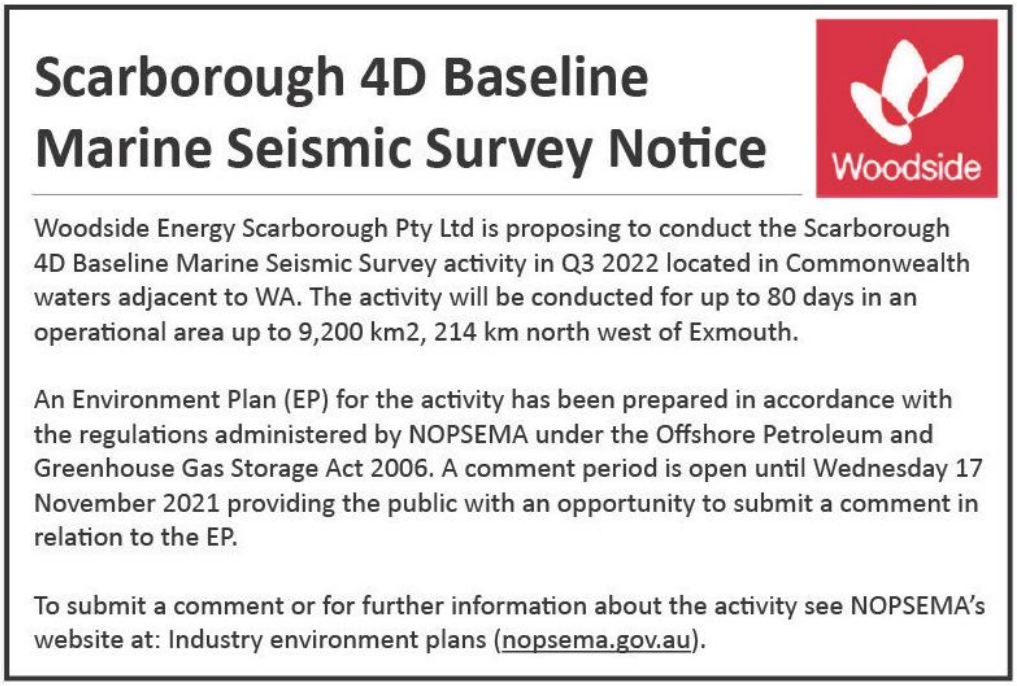
Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Please provide your views by **14 October 2022**.

Regards

Woodside Feedback

1.22 NOPSEMA public comment period newspaper advertisements (21 October 2022) placed in the Pilbara News, The West Australian and The Australian



Scarborough 4D Baseline Marine Seismic Survey Notice

Woodside

Woodside Energy Scarborough Pty Ltd is proposing to conduct the Scarborough 4D Baseline Marine Seismic Survey activity in Q3 2022 located in Commonwealth waters adjacent to WA. The activity will be conducted for up to 80 days in an operational area up to 9,200 km2, 214 km north west of Exmouth.

An Environment Plan (EP) for the activity has been prepared in accordance with the regulations administered by NOPSEMA under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. A comment period is open until Wednesday 17 November 2021 providing the public with an opportunity to submit a comment in relation to the EP.

To submit a comment or for further information about the activity see NOPSEMA's website at: Industry environment plans (nopsema.gov.au).

1.23 Email sent to National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP) (11 November 2022)

Dear [redacted]

Further to the below correspondence regarding Woodside's Scarborough 4D B1 Marine Seismic Survey, please be advised that Woodside has submitted an Environment Plan (EP) to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for the following proposed activities:

- Scarborough Seabed Intervention and Trunkline Installation Environment Plan (SITI EP)
- WA-61-L Scarborough Drilling and Completions (D&C EP)

Woodside has previously submitted Revision 1 of the SITI EP to NOPSEMA. This revision of the EP has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Woodside has also previously submitted Revision 0 of the D&C EP to NOPSEMA. This revision of the EP has been available on the

NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Woodside is preparing an updated revision of the SITI EP and D&C EP for submission to NOPSEMA. We confirm the activities, location and duration described in these revisions remain the same, with no material changes.

Woodside is also proposing to undertake seabed site surveys and installation of subsea production infrastructure within Permit Areas WA-61-L and WA-62-L, about 374 km west-northwest of Dampier, Western Australia under the WA-61-L and WA-62-L Subsea Infrastructure Installation Environment Plan (Subsea EP). This EP has not yet been submitted to NOPSEMA.

A Consultation Information Sheet for each of the activities is linked above, which provides background on the proposed activity, including a summary of potential key risk and associated management measures. They are also available on our website.

The proposed activities under the SITI EP, D&C EP and Subsea EP are planned to be undertaken within a subset of the activity area for the Scarborough Seismic Survey and may be of interest to you.

Each of these EPs fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP) and will be conducted in line with relevant requirements of the OPP. The OPP includes a detailed description of activities and an assessment of impacts; with controls to develop acceptability criteria. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.
Should NERA CESP have feedback on the SITI EP, D&C EP or Subsea EP, please provide your views by **25 November 2022.**

Your feedback and our response will be included in our Environment Plan which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

Regards,

Woodside Feedback

1.24 Presentation to Exmouth Community Reference Group (17 November 2022)

ENVIRONMENT PLANS

Scarborough

- State and Commonwealth primary environmental approvals for the Scarborough Project secured
- Project and related activity-specific Environment Plans in development / under NOPSEMA assessment

Scarborough 4D B1 Marine Seismic Survey (Cth)

- Submitted for assessment October 2021
- Proposal to conduct a 4D baseline marine seismic survey over the Scarborough field within Commonwealth waters, ~ 214 km north-west of Exmouth

Scarborough Drilling and Completions (Cth)

- Submitted for assessment November 2021
- Proposal for drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells, ~244 km north-northwest of Exmouth

Scarborough Seabed Intervention and Trunkline Installation (Cth)

- Submitted for assessment Dec 2021
- Proposal for seabed intervention and installation activities for the section of the Scarborough Trunkline in Commonwealth waters that runs ~ 430 km from the proposed offshore Scarborough Floating Production Unit (FPU) (~244 km north-northwest of Exmouth) to the existing onshore Pluto LNG facility on the Burrup Peninsula

Scarborough Subsea Infrastructure Installation (Cth)

- In development
- Proposal for visual and gravimetric surveys, plus installation of flowlines, umbilicals, risers, mooring legs, concrete pads and ancillary infrastructure, required for the flow and control of hydrocarbons to the Scarborough FPU, ~244 km north-northwest of Exmouth

11 |

1.25 Woodside Consultation Information Sheet – (updated January 2023)

Woodside Energy

STAKEHOLDER CONSULTATION

INFORMATION SHEET

January 2023

WA-61-L SCARBOROUGH DRILLING AND COMPLETIONS

CARNARVON BASIN, NORTH-WEST AUSTRALIA

Woodside is planning to conduct drilling and completions activities in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth). The Petroleum Activities Program is located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia.

The activity is planned to occur anytime within a five-year window commencing in late H2 2023, pending approvals. Relevant stakeholders will be advised of the timing once determined.

The WA-61-L Scarborough Drilling and Completions Environment Plan (EP) will cover drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells. Woodside may also need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.

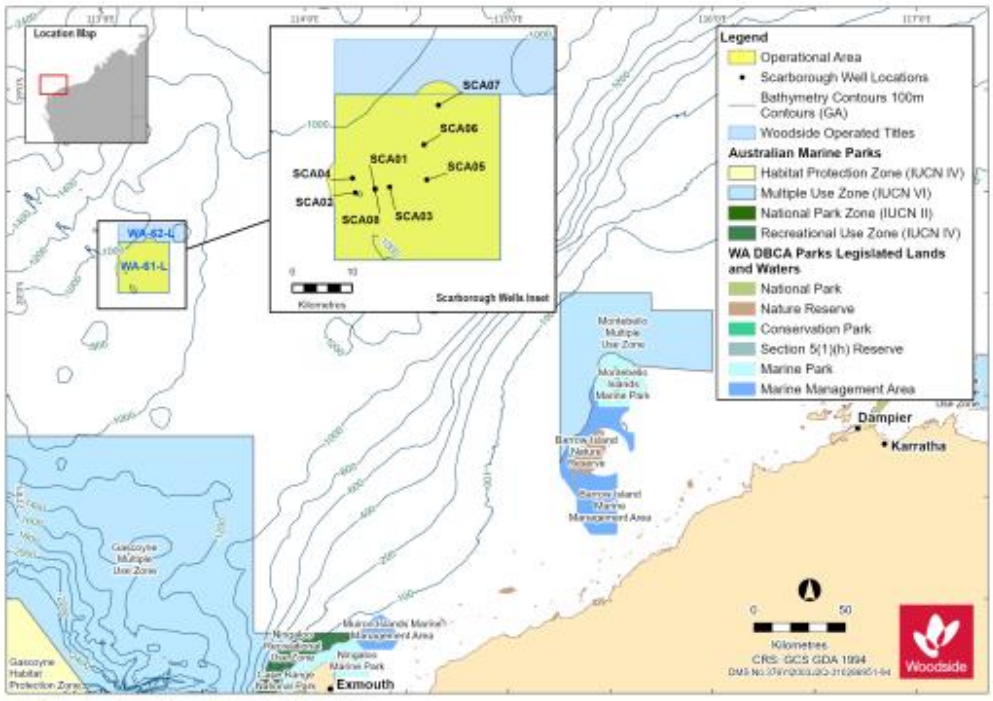


Figure 1. Proposed Scarborough Drilling and Completions Operational Area.

Table 2 – Proposed well locations

Activity	Water Depth (Approx. m LAT)	Latitude	Longitude	Permit Area
New development wells				
SCA01 well	910	19° 53' 30.499" S	113° 08' 43.568" E	WA-61-L
SCA02 well	912	19° 53' 48.471" S	113° 06' 55.261" E	WA-61-L
SCA03 well	912	19° 53' 18.551" S	113° 10' 03.300" E	WA-61-L
SCA04 well	918	19° 52' 30.359" S	113° 06' 41.412" E	WA-61-L
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SCA08 well	909	19° 53' 27.254" S	113° 08' 43.647"E	WA-61-L
Contingent wells	Within permit area WA-61-L			

Environment That May Be Affected (EMBA)

The environment that may be affected (EMBA) is the largest spatial extent where the Scarborough Drilling and Completions 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 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.

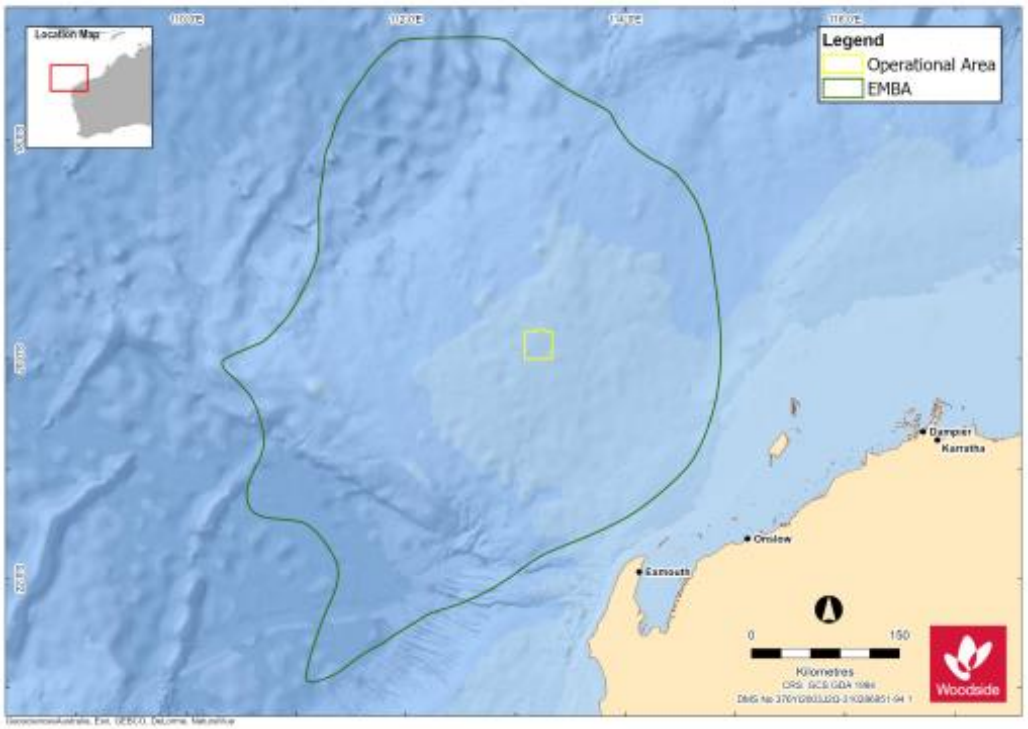

Figure 2: Environment that May Be Affected by the Scarborough Drilling and Completions Activity.

Mitigation and management measures

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from the Scarborough Drilling and Completions Activity.

A number of mitigation and management measures for the Scarborough Drilling and Completions Activity are outlined in **Table 3**.

Table 3 - Summary of key risks and/or impacts and preliminary management measures for the Scarborough Drilling and Completions Activity

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Planned			
External lighting on the MODU and project vessels	• Project vessels and the Mobile Offshore Drilling Unit (MODU) will use external lighting to navigate and conduct safe operations at night. • Vessel lighting will also be used to communicate the MODU and vessel presence to other marine users (i.e. navigation/warning lights). • Light may also be emitted from flaring during well unloading.	• Light emissions can affect fauna (such as marine turtles and birds) in two main ways: 1. Behaviour: artificial lighting has the potential to create a constant level of light at night that can override natural levels and cycles. 2. Orientation: if an artificial light source is brighter than a natural source, the artificial light may override natural cues, leading to disorientation. • Given the distance from shore >215 km from the North West Cape), low sensitivity of receptors offshore (i.e., no presence of nesting turtles and low likelihood of hatchling turtles in the offshore environment), and the negligible contribution of light emissions to the environment from the activity, light emissions to marine turtles are unlikely to result in more than slight, localised behavioural disturbance to isolated transient individuals, with no lasting effect to the species. • As the Operational Area is offshore and away from islands or other emergent features, presence of seabirds or shorebirds is considered likely to be of a transient nature only. Behavioural disturbance to birds from light is expected to be localised to within the vicinity of the MODU and vessels, and will not seriously disrupt the lifecycle of an ecologically significant proportion of migratory birds.	• Lighting limited to the minimum required for navigational and safety requirements, except for emergency events. • Flaring restricted to a duration necessary to achieve the well objectives, eliminating unnecessary flared volumes and corresponding light emissions.
Atmospheric emissions and greenhouse gas (GHG) emissions	• Atmospheric emissions and GHG emissions will be generated by the project vessels and MODU from internal combustion engines and incineration activities. • Well flowback if carried out, will result in flaring and/or venting of hydrocarbons. • Contingent venting of gas during drilling in the unplanned event of a well-kick will also result in release of some GHG emissions.	• Emissions from project vessels and MODU could result in temporary, localised reductions in air quality in the immediate vicinity. • Given the offshore location of the activity, and the low volumes of atmospheric emissions which will be generated, biodiversity, ecological integrity, social amenities and human health will not be impacted and potential impact to air quality is considered negligible. • Given the nature and scale of GHG emissions from vessel and MODU fuel usage for this activity, the potential GHG impact and risk from this activity is considered negligible.	• Comply with regulatory requirements for marine air pollution and GHG emissions reporting. Vessel speed will be managed to reduce fuel consumption where practicable. • Wells drilled in compliance with the accepted Well Operations Management Plan (WOMP), including implementation of barriers to prevent a loss of well integrity. • Flaring restricted to a duration necessary to achieve the well objectives, eliminating unnecessary flared volumes and corresponding GHG emissions. • Assess opportunities to eliminate well flowback flaring to MODU to reduce GHG emissions. • Contractors engaged on energy/ GHG emissions efficiencies and opportunities identified are implemented where feasible and as low as reasonably practicable (ALARP). • Track and review GHG emissions during the activity to identify further opportunities to improve efficiencies if possible.

1 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[1]

Physical presence – disturbance to Benthic Habitat from MODU anchoring, drilling operations, subsea installation and ROV operations	• Seabed disturbance may result from:
	  • Drilling operations (from installation of the blowout preventer (BOP) and conductor), mooring installation (if a moored MODU is used instead of a DP MODU) and
	  • Remotely Operated Vehicle (ROV) operations and other activities in proximity to the seabed such as marine growth removal from infrastructure.
		• Habitat modification as a result of seabed disturbance (excluding drill cuttings and fluids) could occur within a radius of up to 10 m from each well (10 wells in total). Near this area, benthic communities may be reduced or altered, leading to a highly localised impact to epifauna and infauna benthic communities present.
		• The Exmouth Plateau Key Ecological Feature (KEF) overlaps the Operational Area and seabed disturbance may lead to a highly localised change in habitat and water quality, which will be short-term. These potential short-term impacts are unlikely to impact on the ecological value of the KEF.
			• Mooring systems (chains/wires and anchors) will be removed.
			• Infrastructure will be placed on the seabed within the predefined design footprint using positioning technology to limit seabed disturbance. Project specific Mooring Design Analysis (for anchored MODU) to reduce the likelihood of anchor drag leading to seabed disturbance.

Routine and non-routine discharges – MODU and project vessels	• Sewage, greywater and macerated food waste will be discharged from project vessels and MODU. • Bilge water, deck drainage and brine and cooling water may also be discharged.	• The main impact associated with ocean disposal of sewage and other organic wastes (i.e. putrescible waste) is eutrophication. Eutrophication occurs when the addition of nutrients, such as nitrates and phosphates, causes adverse changes to the ecosystem including short-term, localised impacts to water quality. • No significant impacts are expected to water quality from planned discharges because of the minor quantities involved, the expected localised mixing zone, and the high level of dilution into the open water marine environment of the Operational Area. • Similarly, although some marine fauna may transit the Operational Area, potential for impacts remains low due to the localised nature of discharges and rapid dilution.	• Marine discharges will be managed according to regulatory requirements. • Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Routine and non-routine discharges – drill cuttings and drilling fluid	• Routine discharge of Water Based Mud (WBM) and/or treated Non-Water Based Mud (NWBM) and drill cuttings to the seabed and marine environment will occur. • Discharges of other fluids may occur as required such as wash water from mud pits, vessel tank wash fluids and well clean-out fluids.	• Drill cuttings and retained drilling fluid discharges are expected to increase turbidity and total suspended sediment (TSS) levels above ambient concentrations above the seabed (for top-hole well sections) or in the upper surface layers (for bottom-hole well sections). This reduction in water quality will be temporary (limited to the operational discharges during drilling) and subject to rapid dispersion and dilution by prevailing seabed currents. • It is expected that impacts to plankton species will be highly localised and return to previous conditions within a relatively short period of time due to the open nature of the marine environment and associated environmental conditions, the content and dispersive nature of drilling muds within the marine environment and the high population replenishment of these organisms. • Impacts to benthic communities will be largely limited to an area surrounding the well locations. The low sensitivity of the benthic communities/habitats within and in the vicinity of the Operational Area, combined with the low toxicity of WBMs and residual NWBMs, no bulk discharges of NWBM and the highly localised nature and scale of predicted physical impacts to seabed biota, mean predicted impact is considered to be slight. • Potential impacts to the Exmouth Plateau KEF, which overlaps the Operational Area, relate to ecological impacts to the seabed habitat and benthic communities. The extremely small portion of the overall KEF area predicted to be impacted in combination with the predicted recovery of the affected benthic communities, mean that predicted impact is considered to be minor.	• All chemicals intended or likely to be discharged into the marine environment reduced to ALARP using the Woodside chemical assessment process. • NWBM base oils selected based on expected toxicity. • NWBMs only used where written justification process has been followed and bulk NWBM will be retained for disposal onshore or maintained on rig for re-use. • Fluids contaminated with hydrocarbons will be treated to meet specified discharge limits prior to discharge or contained. If discharge specification not met the fluid will be returned to shore. Drill cuttings returned to the MODU will be discharged below the water line to facilitate dispersion.
Routine and non-routine discharges – cement, cementing fluids, subsea well fluids, produced water and unused bulk product	• Routine discharge of cement and cementing fluids to the seabed and marine environment. • Routine discharge of subsea well fluids, completion fluids, produced water and well intervention/ workover fluids. • Non-routine discharge of unused bulk product.	• Cement operations during drilling involve routine and non-routine discharges that can result in turbidity in the water column. Reduction in water quality will be temporary (limited to the cement operational discharges during drilling) and subject to rapid dispersion and dilution by prevailing currents. • The highly localised physical footprint of cement on the seabed at the well site is not expected to affect the overall diversity or ecosystem function of the benthic communities of the area. • Given the small volumes associated with subsea control fluids discharge and limited exposure times due to rapid dilution, potential impacts from these fluids is expected to be minor, localised and short term. • Well intervention fluids are typically inert and of low-toxicity. These fluids may include subsea control fluid, completions fluids and well annular fluids. Changes to water quality are expected to be localised and temporary as discharges would be discrete and short in duration.	• Chemicals intended or likely to be discharged into the marine environment reduced to ALARP using Woodside's chemical assessment process. • Fluids contaminated with hydrocarbons will be treated to meet specified discharge limits prior to discharge or contained. If discharge specification not met during well unloading and completion activities, if produced water is not flared, it will be processed through the well test water filtration treatment package prior to discharge to the environment. • No bulk cement, bentonite or barite discharged without a documented environmental assessment.

7 WA-61-L Scarborough Drilling and Completions Environment Plan

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Unplanned			

Unplanned hydrocarbon release – vessel collision	• Project vessels will use marine diesel fuel, meaning a vessel collision involving a project vessel or third-party during the activity may result in the release of marine diesel.
	• For a collision to result in the worst-case scenario diesel release, several factors must occur as follows:
	  • Identified causes of vessel interaction must result in a collision.
	  • The collision has enough force to penetrate the vessel hull and in the exact location of the fuel tank.
	  • The fuel tank must be full or at least of volume which is higher than the point of penetration.
		• In the highly unlikely event of a vessel collision causing a release of hydrocarbons, impacts to water quality and marine ecosystems could occur.
		• Modelling of a surface release of marine diesel was undertaken at a location within the Operational Area.
		• Marine diesel is a relatively volatile, non-persistent nature hydrocarbon with up to 35% evaporating within the first 24 hours.
		• Potential impacts across the whole EMBA were assessed including receptors such as plankton, fish, marine mammals, seabirds and migratory shorebirds, tourism, recreation and cultural heritage (for example).
		• Taking into account receptor sensitivity, the receptors were rated as having a potential consequence level of minor or less (slight or negligible).
			Preventing Vessel Collision:
			• Comply with regulatory requirements for the prevention of vessel collisions and safety and emergency arrangements.
			• Consult with relevant persons so that other marine users are informed and aware, reducing the likelihood of a collision.
			• Establish temporary exclusion zones around vessels which are communicated to marine users to reduce the likelihood of collision.
			• Develop a management plan for simultaneous operations to manage rig interactions with other facilities and vessels.
			Spill Response Arrangements:
			• Develop a project specific Oil Pollution Emergency Preparation document (OPEP) including first strike response plan.
			• Arrangements supporting the OPEP will be tested to ensure the OPEP can be implemented as planned.
			• Emergency response activities would be implemented in line with the OPEP.

Unplanned hydrocarbon release – loss of well control	• Accidental loss of hydrocarbons to the marine environment due to loss of well control may occur caused by failure of well barriers.	• Given hydrocarbons of the Scarborough reservoir contain no measurable liquid fraction (predominantly natural gas), there is expected to be no or negligible liquid component in the event of a loss of containment. This means there is no credible hydrocarbon spill scenario in the event of a well blowout. • A loss of well control may temporarily decrease the water quality in the immediate vicinity of the release.	• Wells drilled in compliance with the accepted Wells Operations Management Plan (WOMP) including implementation of barriers to prevent a loss of well control. • Checks completed during well operations to establish a minimum acceptable standard of well integrity. • Implement requirements for permanent well abandonment to reduce likelihood of a spill occurring from a suspended well. • An approved Source Control Emergency Response Plan will be prepared prior to drilling each well including feasibility and specific considerations for relief well. • Subsea BOP specification, installation and testing compliant with internal Woodside Standards and international requirements. • Project-specific mooring design analysis to enable adequate MODU station holding capacity to prevent loss of station keeping and reduce the likelihood of a blowout.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Unplanned hydrocarbon release - bunkering	• Accidental loss of hydrocarbons to the marine environment during planned 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.	• Marine diesel surface release expected to be confined to within several kilometers of the release site, and well within the EMBA identified for the vessel collision scenario. • This unplanned marine diesel release may have the potential to result in changes in water quality and fauna behaviour. Receptors considered in the risk assessment for this unplanned event included marine mammals, marine reptiles, fish, sharks and rays. Taking into account receptor sensitivity, the receptors were rated as having a potential consequence level of minor or less (slight or negligible).	**Preventing unplanned hydrocarbon release due to bunkering:** • Comply with regulatory requirements for the prevention of marine pollution. • Liquid chemical and fuel storage areas bunded or secondarily contained when they are not being handled or temporarily moved. • Appropriate bunkering equipment kept and maintained. • Compliance with Contractor procedures for the management of bunkering/helicopter operations to reduce the likelihood and potential severity of a spill. **Spill Response Arrangements:** • Maintain and locate spill kits in close proximity to hydrocarbon storage and deck areas for use to contain and recover deck spills. • Arrangements supporting the OPEP will be tested to ensure the OPEP can be implemented as planned. • Emergency response activities would be implemented in line with the OPEP.
Unplanned discharge – chemicals and hydrocarbons	• Accidental discharge of hydrocarbons/ chemicals from MODU/project vessels deck activities and equipment and from subsea ROV hydraulic leaks may occur. • Accidental discharge of drilling fluids (WBM/NWBM/base oil) and cement to marine environment due to failure of slip joint packers, bulk transfer hose/ fitting, emergency disconnect system or from routine MODU operations.	• Unplanned discharges of non-process chemicals and hydrocarbons may decrease the water quality in the immediate vicinity of the release. Only small volumes (<50 L) are anticipated, resulting in very short-term impacts to water quality and limited to the immediate release location. • Unplanned discharges of drilling fluids have a worst-case credible spill scenario of up to 8 m^3. Unplanned discharge of cement would typically be <100 litres. These discharges would be to the sea surface and would rapidly dilute through mixing by surface currents and wave action. Given the occasional nature of unplanned chemical discharge, the small volumes, and the offshore location of the Operational Area, the change to water quality resulting from unplanned discharge of chemicals will not be substantial. • If activation of the emergency disconnect sequence is required, a release of base oil could occur. This process is in place to prevent damage to the well or MODU from identified threats, such as loss of MODU station keeping, well blowout or potential collision by a third-party vessel, which could lead to further hydrocarbon release or infrastructure damage. • As a result of a change in water quality, further impacts to receptors may occur including injury or mortality to marine fauna resulting from exposure to toxins in the released chemicals/hydrocarbons. Potential impacts would be highly localised and temporary meaning the predicted impact is considered to be slight.	• Comply with regulatory requirements for the prevention of marine pollution. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/ moved temporarily. • Spill kits positioned in high-risk locations around the vessel (near potential spill points such as transfer stations). • Chemicals will be selected with the lowest practicable environmental impacts and risks subject to technical constraints and approved through the Woodside chemical assessment process. • Liquid chemical and fuel storage areas are bunded or secondarily contained when they are not being handled/ moved temporarily. • Drilling fluid transfers are performed in accordance with the applicable contractor procedures, and associated equipment is functional in preventing the unacceptable use or discharge of NWBM/base oil. • Installation vessels have self-containing hydraulic oil drip tray management system.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Unplanned discharge of solid hazardous/ non-hazardous solid waste/equipment	• Accidental, unplanned loss of hazardous or non-hazardous solid wastes/equipment to the marine environment may occur if dropped or blown overboard.	• The potential impacts of hazardous or non-hazardous solid wastes and equipment accidentally discharged to the marine environment include contamination of the environment as well as secondary impacts relating to potential contact of marine fauna with wastes. The temporary or permanent loss of waste materials/equipment into the marine environment is not likely to have a significant environmental impact, based on the location of the Operational Area, the types, size and frequency of wastes that could occur, and species present.	• Comply with regulatory requirements for the prevention of marine pollution and handling of hazardous wastes. • Implement waste management procedures which provide for safe handling and transportation, segregation and storage and appropriate classification of waste generated. • Solid waste/equipment dropped to the marine environment will be recovered where safe and practicable to do so. • Where retrieval is not practicable and/ or safe, material items (property) lost to the marine environment will undergo an impact assessment and will be added to the inventory for the title.
Unplanned seabed disturbance	• Unplanned disturbance to seabed may occur in the case of failed MODU mooring leading to anchor drag. • Dropped objects may also result in unplanned disturbance of benthic habitat.	• Unplanned seabed disturbance may result in localised changes to water and sediment quality or a localised temporary impact to benthic communities. • Potential impacts to KEFs which intersect the Operational Area of the activity are limited to the footprint of a dropped object or dragged anchor, resulting in potential highly localised and temporary change in habitat.	• MODU/installation vessel inductions include control measures for dropped object prevention. • Dropped objects to be recovered and relocated where safe and practicable to do so. • Where retrieval is not practicable and/ or safe, material items (property) lost to the marine environment will undergo an impact assessment and will be added to the inventory for the title. • Specifications and requirements for mooring systems enforced which require the system to have sufficient capability that a failure of single components will not cause progressive failure of the remaining anchoring arrangement. • Tracking of the MODU will be possible when the MODU is unmanned to ensure the MODU location is tracked at all times. • Project-specific Mooring Design Analysis and mooring system testing undertaken to reduce the likelihood of mooring failure or anchor drag.
Accidental introduction of invasive marine species (IMS)	• MODU/vessels transiting to the Operational Area may be subject to marine fouling whereby organisms attach to the MODU/ vessel hull. • IMS could be present as biofouling on the MODU/vessel hull or on immersible equipment (survey equipment, ROV, etc.) and could be translocated to the Operational Area. • Organisms can also be drawn into ballast tanks during onboarding of ballast water.	• It is not credible for IMS to be introduced and establish on the seabed or subsea structures in the Operational Area as these deep waters are not conducive to the settlement and establishment of IMS. • There is potential for the transfer of IMS between vessels albeit remote likelihood given the limited interaction between vessels in the Operational Area.	• Ballast water and biofouling will be managed according to regulatory requirements, including the Australian Ballast Water Management Requirements, and the Australian Biofouling Management Requirements, as applicable. • Woodside's IMS risk assessment process will be applied to project vessels and immersible equipment entering the Operational Area.

Potential Impact/ Risk	Description of Source of Potential Impact/Risk	Description of Potential Impact/Risk	Preliminary Mitigation and/or Management Measures[1]
Unplanned interaction with marine fauna	• Vessel movements have the potential to result in collisions between MODU/ project vessel (hull and propellers) and marine fauna. • The factors contributing to the frequency and severity of impacts due to collisions vary greatly due to vessel type, vessel operation (specific activity, speed), physical environment (e.g. water depth) and the type of animal potentially present and their behaviours.	• Vessel disturbance presents a potential threat to marine mammals, marine reptiles and fish, sharks and rays. • The risk of vessel collision with marine fauna is present year-round but is elevated seasonally for species during migration periods. Given the short duration of activities within the Operational Area, and the slow speeds at which project vessels operate during installation (if not stationary), collisions are considered highly unlikely.	• Comply with regulatory requirements for interactions with marine fauna to reduce the likelihood of a collision occurring.

Feedback

If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before **17 February 2023** via:

E: Feedback@woodside.com.au
Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities: **www.woodside.com/sustainability/consultation-activities.**

Please note that stakeholder feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) as required under legislation. Woodside will communicate any material changes to the proposed activity to affected stakeholders as they arise.

Please note that your feedback and our response will be included in our Environment Plan for the proposed activity, which will be submitted to NOPSEMA for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth)*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA.

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Woodside Energy

1.26 Simplified Overview Consultation Information Sheet Drilling and Completions (January 2023)

STAKEHOLDER CONSULTATION

Woodside Energy

SUMMARY INFORMATION SHEET

January 2023

SCARBOROUGH DRILLING AND COMPLETIONS

This is a summary of the activity in plain English. More detailed information is included in the WA-61-L Scarborough Drilling and Completions Information Sheet.

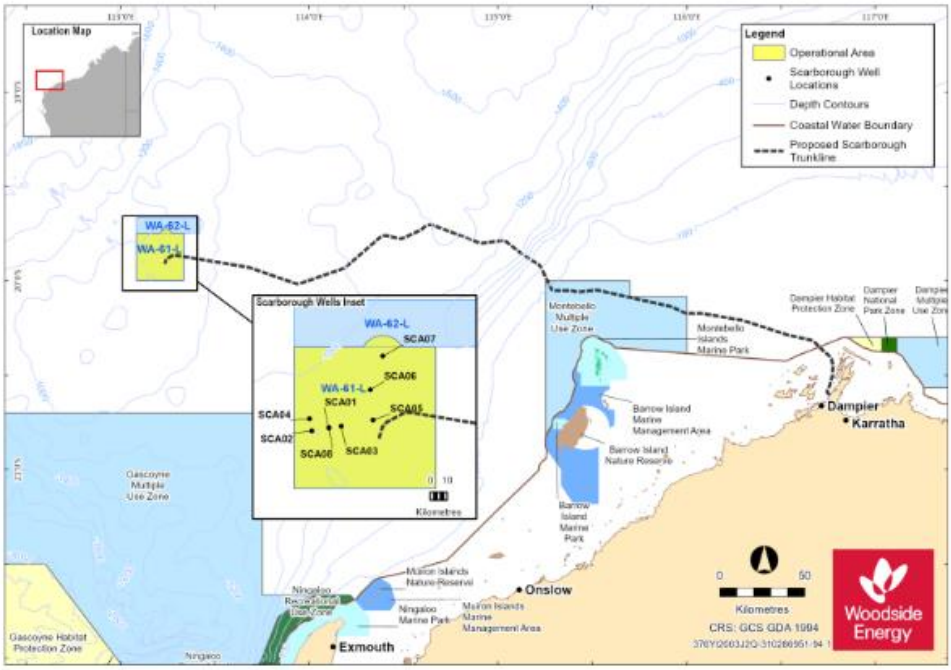
Overview

Woodside plans to drill and install between 8 and 10 subsea gas wells on the sea floor to extract gas from the Scarborough gas field. Equipment called subsea Christmas Trees will also be installed at each gas well location. These Christmas Trees act as 'taps' for each well, controlling the flow of gas.

The gas from these wells will be sent to the proposed Floating Production Unit (FPU) before being transported to the Pluto Gas Plant on Murujuga (Burrup Peninsula) along a pipeline (called a trunkline) which is approximately 430km long. It is intended that this work will take place in the ocean approximately 380km north-west of Karratha and at a water depth of approximately 950m.

Woodside is planning to start the Drilling and Completions work upon the acceptance of the Environment Plan, and the aim is to start work around the second half of 2023. The activity is expected to take up to around 60 days per well to complete.

A map showing the location of this work is below.



Proposed activity

Table 1 – Activity summary

Activity	Details
Earliest commencement date	H2 2023 pending approvals, vessel availability and weather constraints
Estimated duration	50-60 days per well
Operational Area	4,000 m for moored mobile offshore drilling unit (MODU), 500 m for dynamically positioned mobile offshore drilling unit (DPMODU)
Water depth in Operational Area	Approximately 900 m – 955 m
MODU	DPMODU with contingency for moored MODU, depending on availability and suitability for the development well locations and to allow options for relief well drilling.
Project Vessels	• Installation vessels for installing the subsea infrastructure. • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities. • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels.
Distance from Operational Area to nearest port/marina	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier
Distance from Operational Area to nearest marine park	• 83 km north of the Gascoyne Marine Park (Cwlth) • 206 km north-west of Montebello Marine Park (Cwlth) • 208 km north-northwest of Ningaloo Marine Park (Cwlth)

Drilling and completions for the development wells is expected to take approximately 50-60 days per well to complete. Subsea inspection, monitoring, maintenance and repair activities may be conducted intermittently and over short durations in the immediate vicinity of installed subsea infrastructure. Activities will be conducted 24 hours per day, seven days per week. Timing and duration of these activities is subject to change due to project schedule requirements, drill rig and vessel availability, weather and unforeseen circumstances. Technical details are outlined in Table 2.

Project vessels

Woodside is currently considering rig options for drilling of the wells, which include a moored semi-submersible MODU, a dynamically positioned drill ship or a DPMODU. Dynamic positioning is a computer-controlled system to automatically maintain a vessel or rig's position and heading by using its own propellers and thrusters. Typically, two or three vessels will support drilling activities, with at least one vessel in the vicinity to complete standby duties, if required. Supply vessels will visit the selected MODU/drill ship at regular intervals. A subsea installation vessel will be used for the installation of the subsea infrastructure, with support from additional dedicated vessels. Support vessels are also required for inspection, monitoring, maintenance and repair activities.

Communications with mariners

A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The following Operational Areas will also apply:

- DPMODU/drillship – 500 m radius from each well centre
- Moored MODU – 4,000 m radius from each well centre.
- Installation vessel – 1,500 m radius around subsea locations

Marine notices will be issued prior to activity commencement to alert vessels which may be operating in waters nearby.

Proposed locations

Approximate development well locations for the eight planned wells are provided in Table 2. In the event the two additional contingency wells are installed, they will be also be in WA-61-L, with all activities undertaken within the relevant Operational Area.

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 drilling, construction and installation activities. This EP approval 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. A number of mitigation and management measures will be implemented and are summarised in Table 3.

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.

Work Method

To undertake the Drilling and Completions activities, Woodside will conduct inspections and monitor the sea floor, drill the holes, and build the wells using large vessels and support boats. Once the drilling has taken place, completion activities will be carried out which will include installing the Christmas Trees. Woodside will conduct re-drilling and maintenance of the drill holes and wells as necessary.

Environmental Impacts and Management

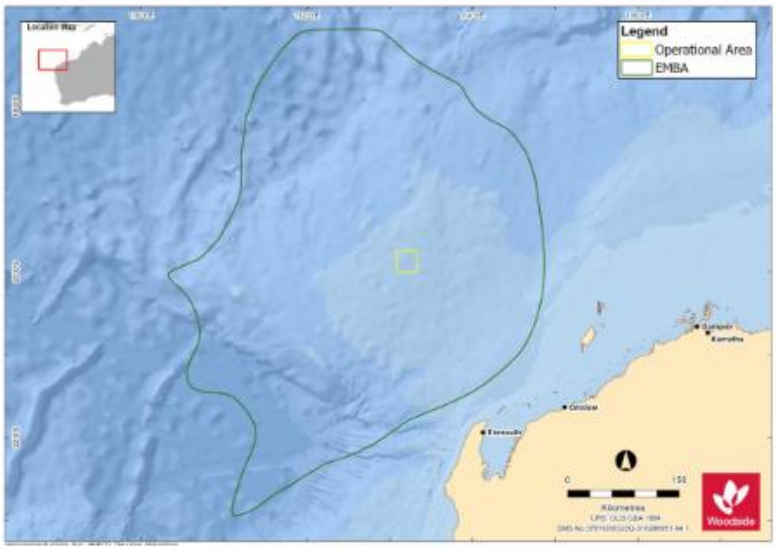
This work program includes Planned Activities but may also result in Unplanned Activities. Both Planned and Unplanned Activities may impact the environment. Woodside manages the work program to reduce impacts and risks to as low as practical.

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 authorised waste from the drill rig and support boats. This work may also disturb the seabed by drilling and installing the wells.

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 gas leaking from the wells, a spill of fuel or oil from a vessel collision, a spill on the deck of a vessel (such as during refuelling), unplanned seabed disturbance, accidental collision with marine animals, waste entering the environment and accidental introduction of invasive species from outside the region.

A table showing all planned and unplanned activities, potential impacts, and management measures for each is included in the attached Information Sheet, Table 3.

The total area over which unplanned events could have environmental impacts is shown in the map below. This is referred to as the environment that may be affected (EMBA). The location in which the Drilling and Completions 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.



Providing feedback

If you have an interest in the area of the "environment that may be affected" (EMBA) by this work program and would like more information or have any concerns, you can tell Woodside by calling **1800 442 977** or sending an email to **feedback@woodside.com.au.** Please contact Woodside before **20th February 2023** so your questions or concerns can be considered during the environmental approval process.

If you would prefer to speak to the government directly, they can be contacted on **+61 (0)8 6188 8700** or send an email to **communications@nopsema.gov.au.**

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.**

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.

Further Information

You can find the details Consultation Information Sheet for proposed activity on our website: **https://www.woodside.com/sustainability/consultation-activities.**

www.woodside.com

Woodside

1.27 Simplified Overview Consultation Information Sheet Scarborough (January 2023)

Woodside Energy

STAKEHOLDER CONSULTATION

OVERVIEW INFORMATION SHEET

January 2023

SCARBOROUGH PROJECT

Introduction

This is a summary of some of the work Woodside will be doing for its Scarborough Project. Most of this work will take place in the ocean approximately 375km northwest of Karratha.

Woodside

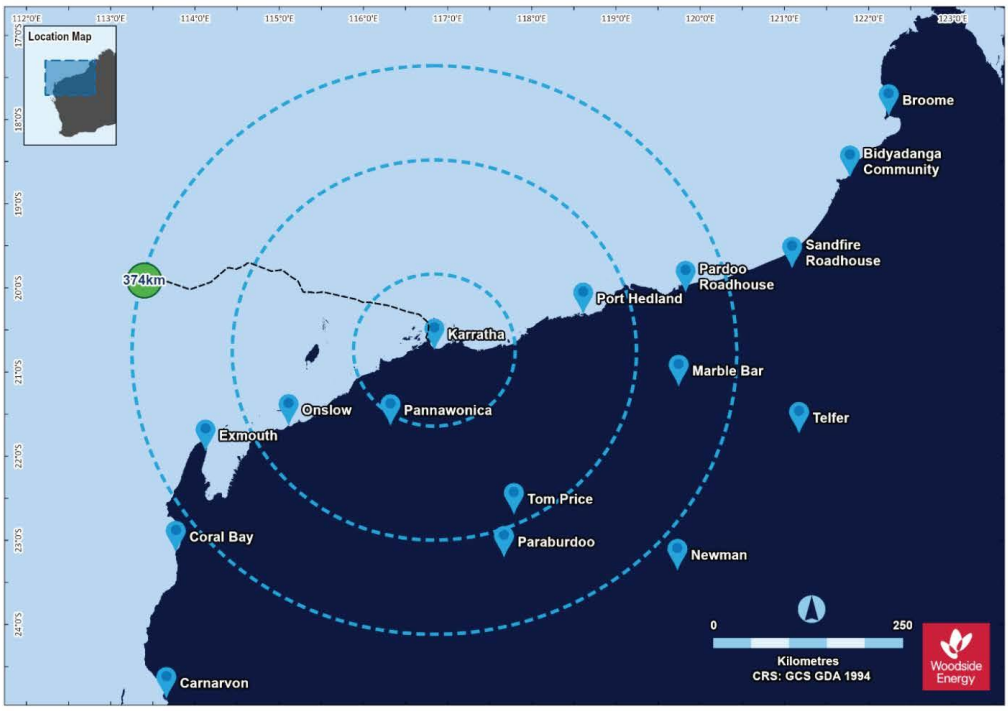
Woodside has been operating safely for over 35 years, delivering gas and oil to customers in Australia and around the world safely, reliably, and without any major environmental incident. Woodside is very proud of this legacy.

You can find more information about Woodside on our website: **www.woodside.com.**

Scarborough Project

Scarborough is a gas field under the sea floor about 375 km northwest of Karratha. Woodside plans to bring this gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline (called a trunkline) that is approximately 430km long, to Woodside's Pluto gas plant.

The map below shows where the Scarborough project, including the trunkline, is located.



You can find more information about the Scarborough project on Woodside's website:

https://www.woodside.com/what-we-do/growth-projects/scarborough

Work for the Scarborough Project

This is an overview of some of the programs which make up the Scarborough project. Woodside is planning to commence work on these programs once the environmental plans have been approved. There will be further work programs that will form part of the Scarborough project.

The current work programs are:

1. Laying the pipeline from the Scarborough gas field to the shore at Murujuga (Burrup Peninsula). The pipeline (called a trunkline) is approximately 430 kilometres long. This is called **Seabed Intervention and Trunkline Installation.**
2. A survey of what is underneath the seafloor. These are called **Seismic Surveys.**
3. Drilling and installing between 8 and 10 subsea gas wells on the sea floor to extract gas from the Scarborough gas field. This is called **Drilling and Completions.**
4. Installing pipes and other equipment on the sea floor so gas can be carried to a proposed Floating Production Unit (FPU). This is called **Subsea Infrastructure Installation.**

Information sheets for these work programs are available on our website:

https://www.woodside.com/sustainability/consultation-activities.

www.woodside.com

Woodside Energy

1.28 Email sent to Ngarluma Aboriginal Corporation (NAC) (20 January 2023)

Good morning [redacted]

In follow up to our phone conversation, please find attached, and following, information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Ngarluma Aboriginal Corporation (NAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that NAC requires to prepare for the meeting, please let me know. In the meantime, I have attached for NAC's review:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

NAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to NAC members as required. Woodside would be pleased to speak with NAC members in addition to the NAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted]
[redacted] First Nations Relations, Corporate Australian Operations

1.29 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:

2. A Summary Overview of the Scarborough project; and
3. Respective Summary Information sheets

NTGAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to NTGAC members as required. Woodside would be pleased to speak with NTGAC members in addition to the NTGAC Board / office holders.

We look forward to hearing from you.

Kind regards
[redacted]

1.30 Email sent to Murujuga Aboriginal Corporation (MAC) (20 January 2023)

Good morning [redacted]

In follow up to your recent conversation with [redacted], please find attached, and following, information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that 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 attached.

I understand that [redacted] will be attending the MAC board meeting on **24 January 2023** to discus this and the previous information we have shared in relation to the Nganhurra Riser Turret Mooring (RTM).

In preparation for the meeting, I have attached for MAC's review:

3. A Summary Overview of the Scarborough project; and
4. Respective Summary Information sheets

MAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to 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] First Nations Relations, Corporate Australian Operations

1.30.1 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.

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 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

[redacted]

1.31 Email sent to Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) (27 January 2023)

Hi [redacted]

I hope your week is travelling nicely.

I tried to call this morning, just to reach out to see if you require any further information at this point, whether you need anything from Woodside to assist with NTGAC's consideration, or whether you need any assistance to prepare for our meeting on 16/2.

Please feel free to call / email if you need any assistance. I would also be more than happy to meet up if you would like.

Have a great weekend.

[redacted]

1.32 Email sent to Wirrawandi Aboriginal Corporation (WAC) (20 January 2023)

Good morning [redacted]

In follow up to previous email correspondence from my colleague [redacted] please find attached, and following, information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Wirrawandi Aboriginal Corporation (Wirrawandi) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

I understand you would like to speak with us, on this and in relation to the Nganhurra Riser Turret Mooring (RTM) information that [redacted] has already shared. I will reach out to you by phone, on **Monday 23 January** to discuss where you, and your board members would like to meet and to discuss the soonest possible date/time to do so.

If there is any support or specific information that Wirrawandi requires to prepare for the meeting, please let me know. In the meantime, I have attached for Wirrawandi's review:

4. A Summary Overview of the Scarborough project; and
5. Respective Summary Information sheets

WAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to Wirrawandi members as required. Woodside would be pleased to speak with Wirrawandi members in addition to the WAC Board / office holders.

I look forward to connecting with you on Monday, to arrange a meeting and to discuss the logistics of such.

Kind regards

[redacted]
[redacted] First Nations Relations, Corporate Australian Operations

1.33 Email sent to Yinggarda Aboriginal Corporation (YAC) via Yamatji Marlpa Aboriginal Corporation (YMAC) (20 January 2023)

Good afternoon [redacted]

Further to recent communications, please find attached information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Yinggarda Aboriginal Corporation (YAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that YAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for YAC's review:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

YAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to YAC members as required. Woodside would be pleased to speak with YAC members in addition to the YAC Board / office holders.

We look forward to hearing from you.

Kind regards [redacted]
Manager First Nations Relations | Corporate Affairs

1.34 Email sent to Yindjibarndi Ngurra Aboriginal Corporation (20 January 2023)

Good morning [redacted]

In follow up to a telephone conversation with my colleague [redacted] on 6 January, and her subsequent email correspondence regarding the Nganhurra Riser Turret Mooring (RTM), North West Cape on 18 January, please find attached, and following, information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Yindjibarndi Aboriginal Corporation (YAC) and its members may have in the 'environment that may be affected' (EMBA) by this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that YAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for YAC's review:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

YAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to YAC members as required. Woodside would be pleased to speak with YAC members in addition to the YAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted]

1.35 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:

5. A Summary Overview of the Scarborough project; and
6. Respective Summary Information sheets

RRKAC can also provide feedback directly to me on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to RRKAC members as required. Woodside would be pleased to speak with RRKAC members in addition to the RRKAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted]

1.36 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (20 January 2023)

Good afternoon [redacted]

I hope this email finds you well. I note your recent communications with [redacted] and attach information in relation to Woodside's proposed Scarborough gas project.

The Scarborough gas field is located in the Carnarvon Basin, approximately 375 km off the coast of Western Australia. Woodside plans to bring gas from Scarborough to Murujuga (the Burrup Peninsula) through a pipeline that is approximately 430km long, to Woodside's Pluto gas plant. The development of the Scarborough project involves different work programs. An overview of those work programs is included in the attached documents**.**

In preparation for this work, Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the Environmental Plan (EP).

We have a number of detailed Consultation Information Sheets, available on our website, which provide further background on the proposed approaches, including a summary of potential key risks and associated management measures for the primary activity and alternative options.

Woodside is seeking to understand the nature of the interests that Buurabalayji Thalanyji Aboriginal Corporation (BTAC) and its members may have in the 'environment that may be affected' (EMBA) by

this activity. The EMBA is the total area over which unplanned events could have environmental impacts, as set out in the Summary Information sheet attached.

If you would like to speak with us, please let us know by **20 February 2023**. Please also let us know how you would like us to engage with you as soon as possible.

If there is any support or specific information that BTAC requires to prepare for a meeting, please let me know. In the meantime, I have attached for BTAC's review:

1. A Summary Overview of the Scarborough project; and
2. Respective Summary Information sheets

BTAC can also provide feedback directly to [redacted] on the details below, to Feedback@woodside.com.au or by calling 1800 442 977, or directly to the Australian Government's National Offshore Petroleum Safety and Environmental Management Authority to communications@nopsema.gov.au or (08) 6188 8700.

Please feel free to forward this email and, the attached documents to BTAC members as required. Woodside would be pleased to speak with BTAC members in addition to the BTAC Board / office holders.

We look forward to hearing from you.

Kind regards

[redacted] on behalf of [redacted]
Consultant to First Nations & Communities | Corporate Affairs

1.37 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (23 January 2023)

Dear [redacted]

I hope this message finds you well.

[redacted] mentioned that I sent the below email to the wrong email address. I am sorry about this.

As always, please don't hesitate to contact me if you have any questions. I'll also reach out this week by phone.

Sincerely
[redacted]

1.38 Email sent to Australian Border Force (ABF), Director of National Parks (DNP), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Department of Transport (DoT), Department of Biosecurity, Conservation and Attractions (DBCA), Department of Industry, Science and Resources (DISR), Department of Mines, Industry Regulation and Safety (DMIRS), Australian Petroleum Production and Exploration Association (APPEA) (27 January 2023)

Dear Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation	Drilling and Completions activities in	4D baseline seismic survey over the	Seabed site surveys and installation of

	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.	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.	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).	subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities

Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels

	• Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels		• Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Woodside Feedback

1.39 Email sent to Australian Hydrographic Office (AHO) and Australian Maritime Safety Authority (AMSA) – Marine Safety (27 January 2023)

Dear AHO and AMSA

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

Woodside will make available a shipping lane figure as soon as possible.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**

Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities

Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels

	• Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels		• Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Woodside Feedback

1.40 Email sent to Department of Climate Change, Energy, the Environment and Water (do) / Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries and Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (3 February 2023)

Dear Department of Climate Change, Energy, the Environment and Water (DCCEEW) and Department of Agriculture, Fisheries and Forestry (DAFF)

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

Woodside advises there are a number of historical shipwrecks which have been recorded within the EMBA for the proposed activities. Please find a list relevant to each EP attached. **Also attached are Commonwealth fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Please note this consultation information is of relevance to both DCCEEW and DAFF.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints.	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

	Trunkline installation activities: Q4 2023 pending successful completion approvals, vessel availability and weather constraints.			occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated

				throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

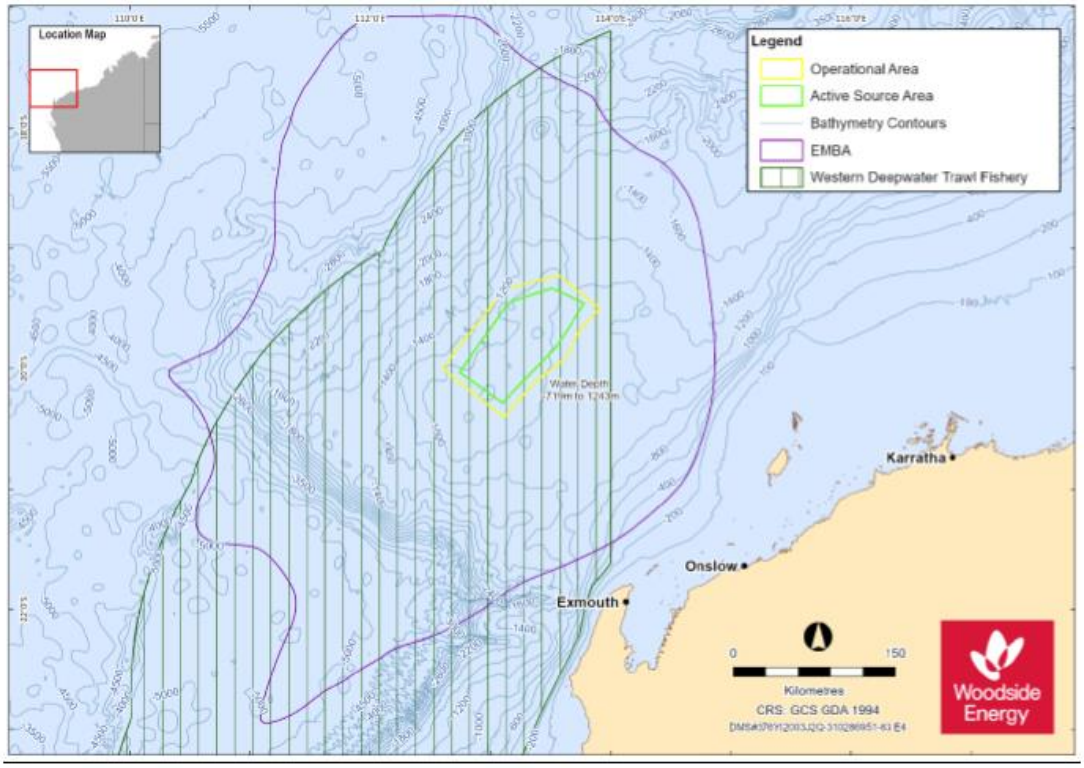
Regards,

APPENDIX A

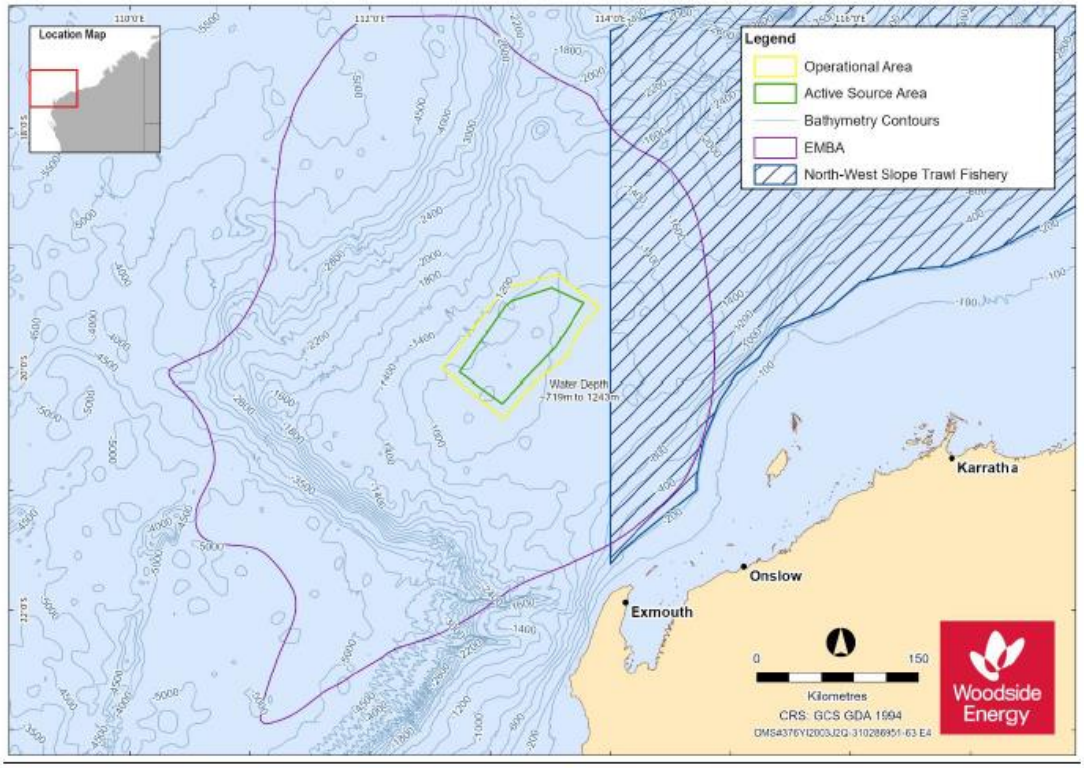
FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

North West Slope and Trawl Fishery



Western Deepwater Trawl Fishery



1.41 Email sent to Department of Defence (DoD) (27 January 2023)

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**); and
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**).

Woodside is also planning to undertake seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

Woodside is also seeking access to sufficient data or a map of Defence Restricted and Prohibited Areas to inform Woodside's development of defence zone maps and figures for DoD's use.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

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Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and	• Light construction vessels • Heavy construction vessels • Heavy lift vessels

	• Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• An additional spotter vessel (May to June)	• Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.42 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). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and	• Light construction vessels • Heavy construction vessels • Heavy lift vessels

	• Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• An additional spotter vessel (May to June)	• Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.43 Email sent to Western Gas, Exxon Mobil Australia Resources Company, Shell Australia, Finder Energy, KUFPEC, Santos, OMV Australia / Sapura OMV Upstream (WA), (27 January 2023)

Dear Titleholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and	• Light construction vessels • Heavy construction vessels • Heavy lift vessels

	• Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• An additional spotter vessel (May to June)	• Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.44 Email sent to Chevron Australia and Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA Gorgon via Chevron Australia (27 January 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**);
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- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

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Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

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More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

We would be grateful if you could please forward this consultation information to your Joint Venture participants Osaka Gas Gorgon, Tokyo Gas Gorgon and JERA Gorgon for feedback.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
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Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and	• Light construction vessels • Heavy construction vessels • Heavy lift vessels

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Feedback:

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Feedback@woodside.com.au or 1800 442 977.

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Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.45 Email sent to Karratha Community Liaison Group (27 January 2023)

Dear Karratha Community Liaison Group

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

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Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and	• Light construction vessels • Heavy construction vessels • Heavy lift vessels

	• Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• An additional spotter vessel (May to June)	• Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.46 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (27 January 2023)

Dear [redacted]

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]

[redacted]
Consultant to First Nations & Communities | Corporate Affairs

1.47 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (27 January 2023)

Hi [redacted]

I hope your week is travelling nicely.

I left a message this morning, just to reach out to see if you require any further information about Scarborough or the RTM at this point, or whether you need anything from Woodside to assist with BTAC's consideration.

As always, please call / email if you need anything. I would also be more than happy to meet up if you would like, to brief you on these matters and to plan together how Woodside should best approach consultation.

Have a great weekend.
[redacted]

1.47.1 Email sent to Buurabalayji Thalanyji Aboriginal Corporation (BTAC) (14 September 2023)

Dear [redacted]

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.

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 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

[redacted]

1.48 Email sent to Exmouth Community Liaison Group (1 February 2023)

Dear Exmouth Community Reference Group

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **3 March 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and	• Light construction vessels • Heavy construction vessels • Heavy lift vessels

	• Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• An additional spotter vessel (May to June)	• Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **3 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.49 Email sent to Commonwealth Fisheries Association (CFA), Australian Southern Bluefin Tuna Industry Association (ASBTIA) and Tuna Australia, North West Slope and Trawl Fishery (4 Licence Holders), Western Deepwater Trawl Fishery (5 Licence Holders) (3 February 2023)

Dear Fishery Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Consultation Information Sheets are attached, which provide background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached are Commonwealth fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
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Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and	• Light construction vessels • Heavy construction vessels • Heavy lift vessels

	• Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• An additional spotter vessel (May to June)	• Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

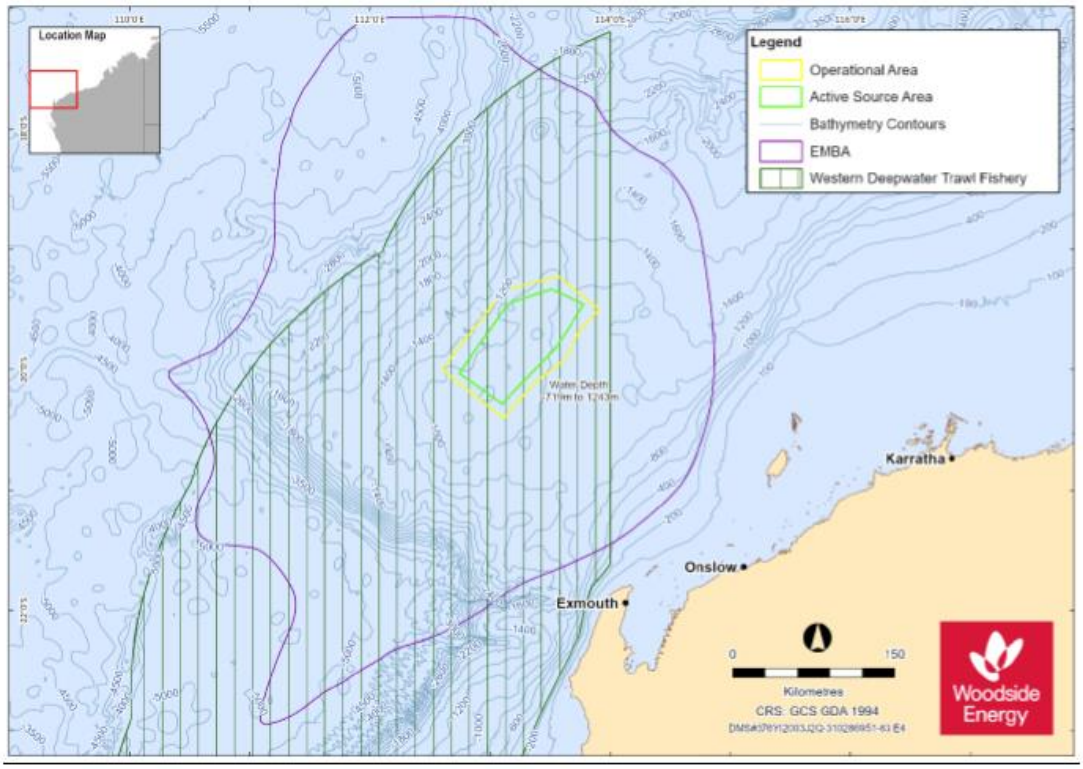
Regards,

APPENDIX A

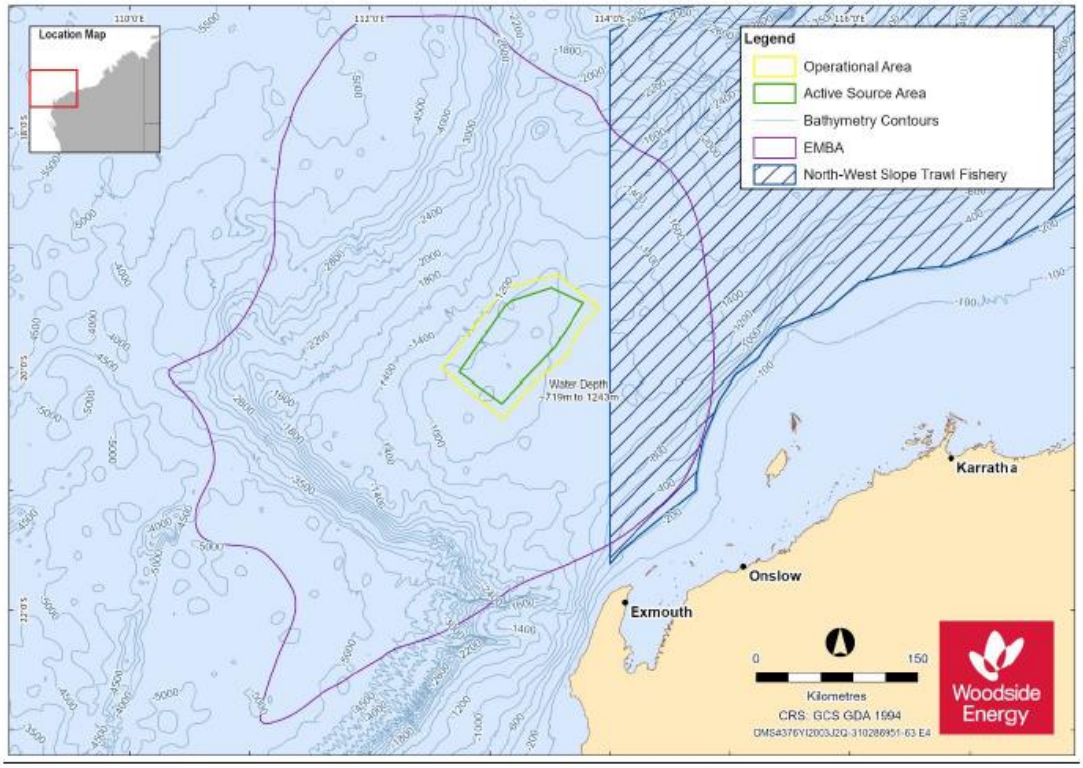
FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

North West Slope and Trawl Fishery



Western Deepwater Trawl Fishery



1.50 Letter sent to Marine Aquarium Managed Fishery (12 Licence Holders), Mackerel Managed Fishery (Area 2 and 3) (43 Licence Holders), West Coast Deep Sea Crustacean Managed Fishery (7 Licence Holders) (3 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

3 February 2023

Dear Fishery Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached are State fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities

Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	vessels		

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

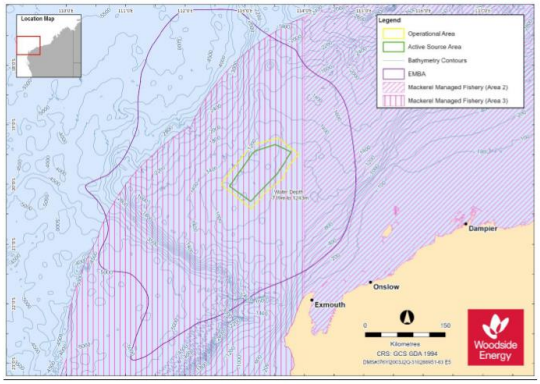
APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

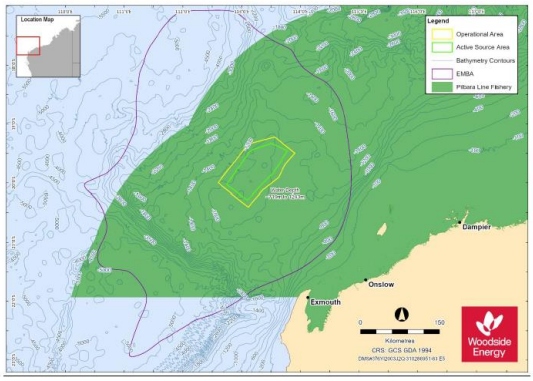
Attached: Consultation Information Sheets for the SITI EP, D&C EP, Seismic EP and Subsea EP, Fishery figures

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

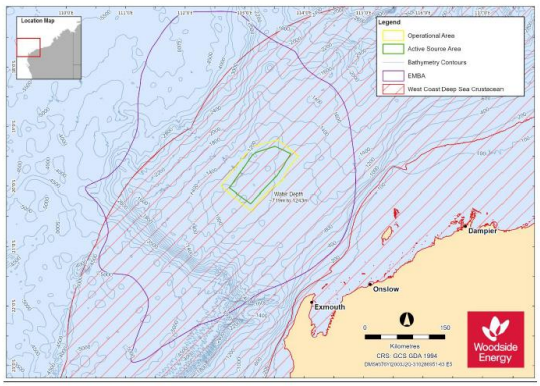
Mackerel Managed Fishery (Area 2 and 3)



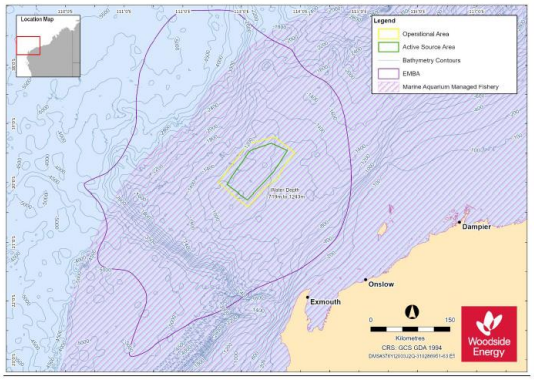
Pilbara Line Fishery



West Coast Deep Sea Crustacean Managed Fishery



Marine Aquarium Managed Fishery



1.51 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.
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Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
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Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
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Operational Area and	Temporary 500 m exclusion zones will apply around applicable seabed	A petroleum safety zone of 500 m will be in place around the MODU and	• Three nautical mile radius safe navigation area around the	The Operational Area for activities includes a radius of:

Exclusion Zones	intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	• 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

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Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

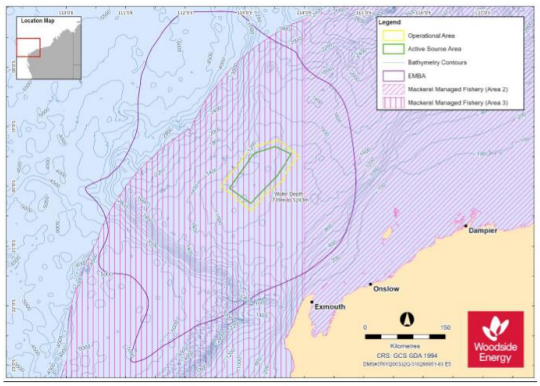
Regards,

APPENDIX A

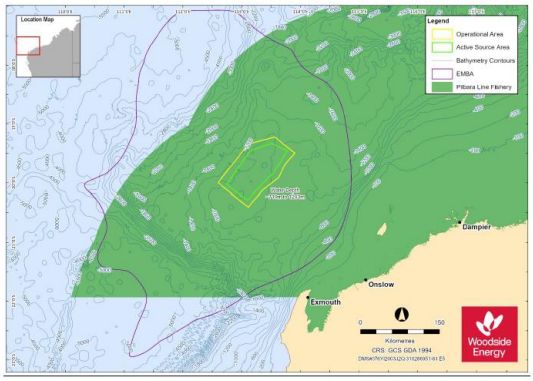
FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

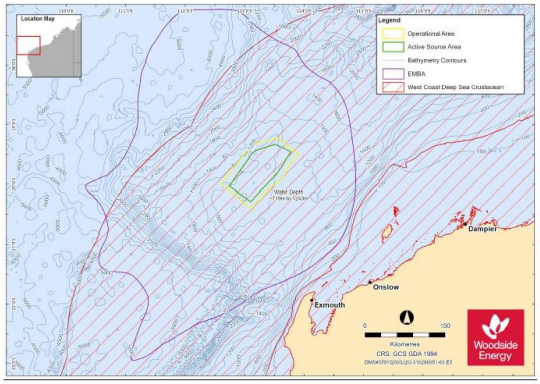
Mackerel Managed Fishery (Area 2 and 3)



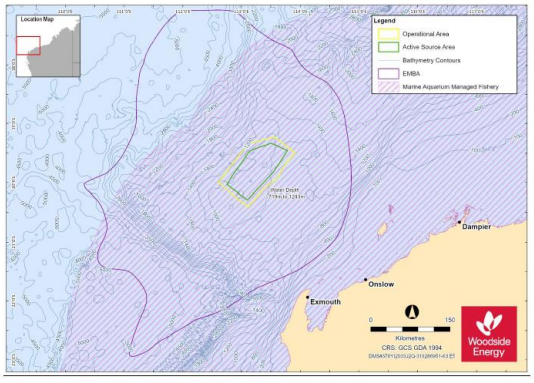
Pilbara Line Fishery



West Coast Deep Sea Crustacean Managed Fishery



Marine Aquarium Managed Fishery



1.52 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). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).

Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and	• Light construction vessels • Heavy construction vessels • Heavy lift vessels

	• Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• An additional spotter vessel (May to June)	• Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

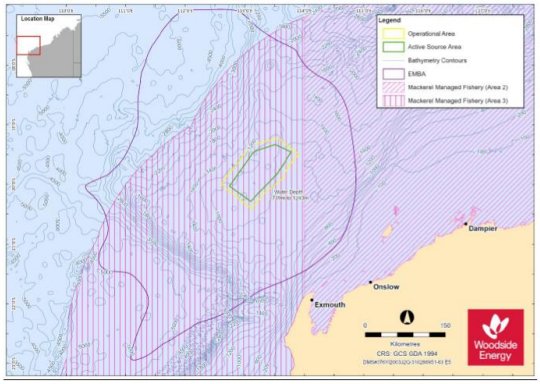
Regards,

APPENDIX A

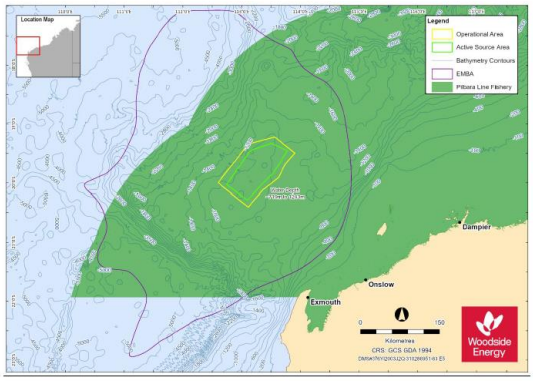
FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Scarborough 4D Baseline Marine Seismic Survey EP (Seismic EP)

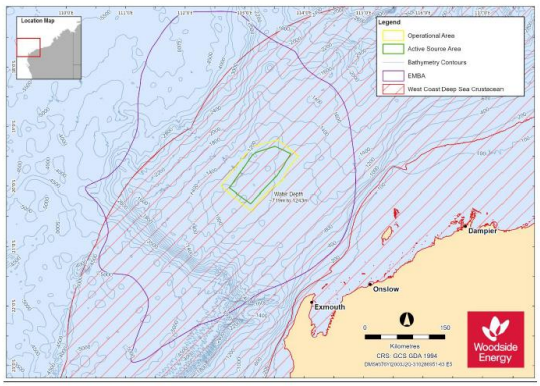
Mackerel Managed Fishery (Area 2 and 3)



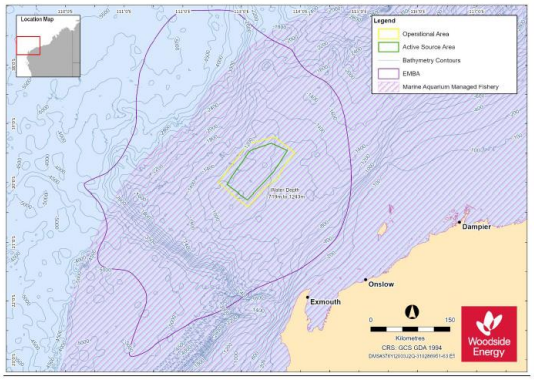
Pilbara Line Fishery



West Coast Deep Sea Crustacean Managed Fishery



Marine Aquarium Managed Fishery



1.53 Email sent to Exmouth Recreational Marine Users (50 Licence Holders) (3 February 2023)

Dear Stakeholder

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also

included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters,	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest

	west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	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.	located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels.	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:	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads.

	The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	• DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	• 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.54 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). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has

been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

Woodside is seeking your advice regarding any research activities that WAMSI may be undertaking that may overlap with our proposed activities.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight	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.

		planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.		
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
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Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth –	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure.

	State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	• Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	• 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,
Woodside Feedback

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.55 Email sent to Australian Fisheries Management Authority (AFMA) (3 February 2023)

Dear AFMA

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. Also attached are Commonwealth fishery figures.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has

been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight	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.

		planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.		
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth –	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure.

	State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	• Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	• 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

Woodside Feedback

1.56 Email sent to Pilbara Line Fishery (8 Licence Holders) (3 February 2023)

Dear Fishery Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. **Also attached are State fishery figures.**

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has

been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the	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.

		attached D&C EP Consultation Information Sheet.		
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre.	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU.

	435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	• Installation vessel – 1,500 m radius around subsea locations	vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	• Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **5 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.57 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.

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been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public). Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP	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.

		Consultation Information Sheet.		
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
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Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre.	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU.

	side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	• Installation vessel – 1,500 m radius around subsea locations	• Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	• Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
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Feedback:

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Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.
Please provide your views by **8 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.58 Letter sent to Gascoyne Recreational Marine Users (65 Licence Holders) (6 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

6 February 2023

Dear Stakeholder

Woodside previously consulted you on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

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The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023 2023**.

Activity:

	SITI EP	D&C EP	Seismic EP	Subsea EP
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities

Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	vessels		

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **8 March 2023**.

Regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

APPENDIX A

FEEDBACK	SITI EP	D&C EP	Seismic EP	Subsea EP

Attached: Consultation Information Sheets for the SITI EP, D&C EP, Seismic EP and Subsea EP

1.59 Email sent to UWA (6 February 2023)

Dear [redacted]

Woodside appreciated the opportunity to meet with you in December to discuss the Scarborough development and related Environment Plans (Scarborough EPs).

We understand from our meeting in December 2022 that the proposed Scarborough activities are predominantly outside the scope of interest for UWA. For awareness, Woodside wanted to bring to your attention that it has updated its consultation Information Sheets for the Scarborough EPs, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are attached and are also available on our website.

As Woodside will soon be submitting the proposed EP's, should UWA have any additional feedback on the proposed activities, please let us know by **8 March 2023**.
More information on the Scarborough Project can be found here.

Your feedback and our response will be included in the Scarborough EPs which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Regards,
Woodside Feedback

1.60 Email sent to The Australian Institute of Marine Science (AIMS) (6 February 2023)

Dear [redacted]

Woodside has submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.
Woodside is seeking your advice regarding any research activities that AIMS may be undertaking that may overlap with our proposed activities.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Activity:

	D&C EP	**Seismic EP**	**Subsea EP**
Summary:	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.
Location:	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m

Earliest commencement date:	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and Exclusion Zones	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	The Operational Area for activities includes a radius of: • 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

	• Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels		

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by 8 **March 2023**.

Regards,
Woodside Feedback

1.61 Email sent to Commonwealth Scientific and Industrial Research Organisation (CSIRO) (6 February 2023)

Dear CSIRO Enquiries Team, [redacted] and [redacted]

Woodside previously noted (see email below) that there will be a number of opportunities to provide feedback on its proposed activities.

Woodside previously consulted you on its submitted Environment Plan (EPs) to undertake seabed intervention and trunkline installation activities under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP –** Commonwealth and State components).

As part of its ongoing consultation with the CSIRO, Woodside is also seeking your advice regarding any research activities that CSIRO may be undertaking that may overlap with our proposed activities regarding:

- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

Updated consultation Information Sheets are attached, which provide additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are also available on our website. Also attached are Commonwealth fishery figures.

As we are inviting consultation with you on each of the EPs above, for ease of reference, we have attached the information in this one email. In an effort to simplify feedback, we have also included a feedback template (Appendix A) which you may wish to use to provide your feedback specific to the proposed EPs.

Woodside has previously submitted Revision 1 of the **SITI EP** to NOPSEMA which has been available on the NOPSEMA website since January 2022 (https://info.nopsema.gov.au/environment_plans/575/show_public). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).
Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes. The Subsea EP has not yet been submitted to NOPSEMA.

The SITI EP, D&C EP and Subsea EP fall under the primary environmental approval of the Scarborough Offshore Project Proposal (OPP). The OPP includes a detailed description of activities, an assessment of the potential impacts and risks and includes management measures to demonstrate that the potential impacts and risks will be of an acceptable level. It was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

More information on the Scarborough Project can be found here.

If you have additional feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**	**Subsea EP**
Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).	Seabed site surveys and installation of subsea production infrastructure. Activities include visual pre- and post-installation surveys, and installation of flowlines, umbilicals and risers and ancillary infrastructure, required for the flow and control of hydrocarbons and produced water to the Scarborough Floating Production Unit (FPU). Mooring legs and suction piles will also be installed and a gravimentry survey is also planned.

Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.	Activities are located in permit Areas WA-61-L and WA-62-L, around 374 km west-northwest of Dampier, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m	~ 900 m – 1000 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 (and estimated to be completed in 18 months with activities occurring in multiple campaigns).
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days	~18 months (cumulative) for the survey and installation activities
Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.	~ 244 km north-northwest of Exmouth, ~ 374 km west-northwest of Dampier.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone	• ~ 77 km north of the Gascoyne Marine Park (Cwlth) • ~ 201 km north-west of Montebello Marine Park (Cwlth) • ~ 180 km north-northwest of Ningaloo Marine Park (Cwlth)
Operational Area and	Temporary 500 m exclusion zones will apply around applicable seabed	A petroleum safety zone of 500 m will be in place around the MODU and	• Three nautical mile radius safe navigation area around the	The Operational Area for activities includes a radius of:

Exclusion Zones	intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points	• 1,000 m around location of the outermost concrete pads. • 1,500 m around location of subsea infrastructure. • 2,000 m around future location of FPU. • Temporary 500 m exclusion zone around vessels to manage vessel movements • An interactive map showing the location of the proposed activities will be available on the Woodside website and will be updated throughout the proposed activities
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation • Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)	• Light construction vessels • Heavy construction vessels • Heavy lift vessels • Derrick lay vessel • Reel-lay vessels • Survey vessels • Support vessels

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.
Please provide your views by **8 March 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**	**Subsea EP**

1.62 Email sent to Australian Border Force (ABF), Director of National Parks (DNP), Australian Maritime Safety Authority (AMSA) – Marine Pollution, Department of Industry, Science and Resources (DISR), Department of Mines, Industry Regulation and Safety (DMIRS), Australian Petroleum Production and Exploration Association (APPEA) (22 February 2023)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.63 Email sent to Australian Fisheries Management Authority (AFMA) (22 February 2023)

Dear AFMA

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.64 Email sent to Western Australian Fishing Industry Council (WAFIC) (22 February 2023)

Dear [redacted]
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.65 Email sent to Exmouth Recreational Marine Users (50 Licence Holders) (22 February 2023)

Dear Stakeholder
Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.
We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,

1.66 Email sent to Yinggarda Aboriginal Corporation (YAC) via Yamatji Marlpa Aboriginal Corporation (YMAC) (22 February 2023)

Dear [redacted]

I hope this message finds you well.

Further to my correspondence of 18 January regarding Woodside's plan to remove the Nganhurra Riser Turret Mooring (RTM), and [redacted] correspondence of 20 January regarding Woodside's Scarborough project, please find attached information about Woodside's decommissioning and drilling activities that we are seeking to consult with Yinggarda Aboriginal Corporation (YAC) about.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking YAC's feedback as soon as possible, Woodside is seeking YAC's feedback on these decommissioning and drilling activities by 17 March. The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Removal of the Nganhurra Riser Turret Mooring (RTM). Information about the RTM was previously emailed on 18 January. For ease of reference, the summary information is attached and the consultation information sheet for the RTM can be found at the link below.
    - consultation-information-sheet---nganhurra-operations-cessation-environment-plan-revision.pdf (woodside.com)
- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
    - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)
    - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.

- consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.
  - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
  - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.
  - Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

In providing this information and requests for feedback, I acknowledge [redacted] correspondence of 6 February and my response of 10 February in which we discussed arrangements for a meeting between YAC and Woodside. Woodside would be most grateful for the opportunity to meet with YAC, at YAC's earliest convenience, and at a location suitable to YAC. Woodside would also be pleased to provide the resources necessary to hold this meeting and we look forward to receiving a budget for consideration. If there is anything else, we can do at this time to facilitate consultation about these planned work activities please let me know.

Thank you, [redacted] for yours, YAC's and YMAC's consideration of these matters and work to progress these important consultations.

As always, please feel free to contact me on the details below if you require further information or assistance.

Yours sincerely
[redacted]

1.66.1 Email sent to Yinggarda Aboriginal Corporation via Banks-Smith & Assoc (BSA) (14 September 2023)

Dear [redacted]

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.

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 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

[redacted]

1.67 Email sent to Pilbara Line Fishery (8 Licence Holders) (22 February 2023)

Dear Fishery Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.68 Letter sent to Marine Aquarium Managed Fishery (12 Licence Holders), Mackerel Managed Fishery (Area 2 and 3) (43 Licence Holders), West Coast

Deep Sea Crustacean Managed Fishery (7 Licence Holders) (22 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

22 February 2023

Dear Fishery Stakeholder

Woodside previously consulted you (correspondence dated 3 February 2023) on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

This correspondence included updated Consultation Information Sheets, which are also available on our website, providing additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **5 March 2023 2023**.

Kind regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

1.69 Letter sent to Gascoyne Recreational Marine Users (65 Licence Holders) (22 February 2023)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Group Ltd
ACN 004 898 962
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T: +61 8 9348 4000
www.woodside.com

22 February 2023

Dear Stakeholder

Woodside previously consulted you (correspondence dated 6 February 2023) on its submitted Environment Plans (EPs) to undertake the following activities in Commonwealth waters for the Scarborough development:

- seabed intervention and trunkline installation activities for the section of the Trunkline in Commonwealth waters under the Scarborough Seabed Intervention and Trunkline Installation EP (**SITI EP**);
- drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells under the WA-61-L Scarborough Drilling and Completions EP (**D&C EP**);
- 4D baseline marine seismic survey (MSS) activities over the Scarborough and Jupiter field under the Scarborough 4D Baseline Marine Seismic Survey EP (**Seismic EP**); and
- seabed site surveys and installation of subsea production infrastructure under the Subsea Infrastructure Installation EP (**Subsea EP**).

This correspondence included updated Consultation Information Sheets, which are also available on our website, providing additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures.

If you have feedback specific to each of the proposed activities described under the relevant EPs, please respond to Woodside at Feedback@woodside.com.au or 1800 442 977 by **8 March 2023 2023**.

Kind regards,

Woodside Feedback

Woodside Energy
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com

1.70 Email sent to WAMSI (22 February 2023)

Dear [redacted]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.
Kind regards,
Woodside Feedback

1.71 Email sent to Commonwealth Fisheries Association (CFA), Australian Southern Bluefin Tuna Industry Association (ASBTIA), North West Slope and Trawl Fishery, Western Deepwater Trawl Fishery (22 February 2023)

Dear Fishery Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.72 Email sent to Recfishwest, Marine Tourism WA and WA Game Fishing Association (22 February 2023)

Dear Stakeholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.73 Email sent to Chevron Australia and Osaka Gas Gorgon, Tokyo Gas Gorgon, JERA Gorgon via Chevron Australia (22 February 2023)

Dear [redacted]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.74 Email sent to Western Gas, Exxon Mobil Australia Resources Company, Finder Energy, KUFPEC, Santos, OMV Australia / Sapura OMV Upstream (WA) (22 February 2023)

Dear Titleholder

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.75 Email sent to National Energy Resource Australia (NERA) Collaborative Seismic Environment Plan Project (CSEP) (22 February 2023)

Dear [redacted]

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project.

Woodside wanted to bring to your attention that it has updated its consultation Information Sheet for the Scarborough SITI EP, D&C EP and Subsea EP, which provides additional background on the proposed activities, including summaries of potential key impacts and risks, and associated management measures. These are attached and also available on our website.

We would appreciate any feedback you may have by **8 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.76 Email sent to Karratha Community Liaison Group (22 February 2023)

Dear Karratha Community Liaison Group

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **26 February 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.77 Email sent to Department of Climate Change, Energy, the Environment and Water (DCCEEW) / Department of Agriculture, Fisheries and Forestry (DAFF) – Fisheries and Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity (22 February 2023)

Dear Department of Climate Change, Energy, the Environment and Water (DCCEEW) and Department of Agriculture, Fisheries and Forestry (DAFF)

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **5 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.78 Email sent to Exmouth Community Liaison Group (22 February 2023)

Dear Exmouth Community Reference Group

Woodside is sending this email by way of a reminder that the consultation period is closing soon to provide feedback on Woodside's proposed activities for the Scarborough project. Please see our consultation information below and attached.

We would appreciate any feedback you may have by **3 March 2023** to support our development of the proposed Environment Plan.

Kind regards,

1.79 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,

1.80 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,

Woodside Feedback

1.81 Email sent to Ngarluma Aboriginal Corporation (NAC) (24 February 2023)

Good morning [redacted]

I mentioned I would be sharing more information when we met on Friday 17 February, to discuss the Environmental Plan (EP) information shared with you to date for Scarborough and Nganghurra RTM. This is the email with further information for NAC to consider if they have any interests in the EMBA (Environment that may be affected) relative to the attached information sheets.

It would be greatly appreciated if you could please acknowledge receipt and confirm the opportunity to meet with the NAC board when they are next due to meet on 29 or 30 March. We welcome the opportunity to spend a whole day with the board on a different day if that works.

This email provides information on Woodside's decommissioning and drilling activities that we are seeking to consult with NAC about.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking NAC's feedback as soon as possible, Woodside is seeking NAC's feedback on these decommissioning and drilling activities by **17 March** 2023. The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Removal of the Nganhurra Riser Turret Mooring (RTM). Information about the RTM was previously emailed on 20 January. For ease of reference, the summary information is attached and the consultation information sheet for the RTM can be found at the link below.
    - consultation-information-sheet---nganhurra-operations-cessation-environment-plan-revision.pdf (woodside.com)
- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
    - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)
    - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.
    - consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.
    - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
    - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.
    - Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

In providing this information and requests for feedback, I acknowledge that we are working towards presenting to the NAC board at their next board meeting in March. Woodside would be most grateful for the opportunity to meet with NAC, at NAC's earliest convenience, and at a location suitable to NAC. Woodside would also be pleased to provide the resources necessary to hold this meeting and we look forward to receiving a budget for consideration. If there is anything else, we can do at this time to facilitate consultation about these planned work activities please let me know.

Thank you, [redacted] 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]
[redacted] First Nations Relations, Corporate Australian Operations

1.81.1 Email sent to Ngarluma Aboriginal Corporation (NAC) 15 September 2023

Hello [redacted]
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]) 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

[redacted]

1.82 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 Nganghurra RTM. This is the email with further information for Wirrawandi to consider if they have any interests in the Environment that may be affected (EMBA) relative to the attached information sheets.

It would be greatly appreciated if you could please acknowledge receipt and confirm the opportunity to meet with the Wirrawandi board when they are next due to meet in Perth in March.

This email provides information on Woodside's decommissioning and drilling activities that we are seeking to consult with Wirrawandi about.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside is seeking Wirrawandi's feedback as soon as possible, Woodside is seeking Wirrawandi's feedback on these decommissioning and drilling activities by **17 March** 2023. The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Removal of the Nganhurra Riser Turret Mooring (RTM). Information about the RTM was previously emailed on 18 January. For ease of reference, the summary information is attached and the consultation information sheet for the RTM can be found at the link below.
    - consultation-information-sheet---nganhurra-operations-cessation-environment-plan-revision.pdf (woodside.com)
- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
    - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)
    - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.
    - consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.
    - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
    - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.
    - Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

In providing this information and requests for feedback, I acknowledge that we are working towards presenting to the Wirrawandi board at their next board meeting in March. Woodside would be most grateful for the opportunity to meet at Wirrawandi's earliest convenience, and at a location suitable to Wirrawandi. Woodside would also be pleased to provide the resources necessary to hold this meeting

and we look forward to receiving a budget for consideration. If there is anything else, we can do at this time to facilitate consultation about these planned work activities please let me know.

Thank you, [redacted] for consideration of these matters and work to progress these important consultations.

Please feel free to contact me on the details below if you require further information or assistance.

Kind regards

[redacted]
[redacted], Corporate Australian Operations

1.82.1 Email sent to Wirrawandi Aboriginal Corporation (WAC) (18 September 2023)

Hi [redacted]

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,

[redacted]

1.83 Email sent to Yindjibarndi Aboriginal Corporation (24 February 2023)

Hello [redacted]

I understand you last spoke with [redacted] on 25 January regarding the Environmental Plan (EP) information shared with YAC for the Scarborough project activity and Nganghurra RTM.

This email provides further information on Woodside's decommissioning and drilling activities that we are seeking to understand if YAC has any interests in the Environment that may be affected (EMBA) relative to the attached information sheets and if YAC would like us to consult further on these EPs.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which I understand YAC has verbally advised they have no interests, Woodside is also seeking YAC's feedback on these decommissioning and drilling activities by **17 March 2023**.

The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
    - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)

    - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.
    - consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.
    - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
    - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.
    - Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

Thank you for your time in considering these matters. We look forward to hearing from you.

Please feel free to contact me on the details below if you require further information or assistance.

Kind regards

[redacted]
[redacted] Corporate Australian Operations

1.84 Email sent to Robe River Kuruma Aboriginal Corporation (RRKAC) (24 February 2023)

Hello [redacted]

I understand you met with [redacted] on 31 January regarding the Environmental Plan (EP) information shared with Robe River Kuruma Aboriginal Corporation (RRKAC) for the Scarborough project activity and Nganghurra RTM and that this information was to be presented at the RRKAC Board meeting this week 21-22 February. [redacted] advised we have a number of EPs we will reach out to RRKAC on.

This email provides further information on Woodside's decommissioning and drilling activities that we are seeking to understand if RRKAC has any interests in the Environment that may be affected (EMBA) relative to the attached information sheets and if RRKAC would like us to consult further on these EPs.

With the exception of removing the Nganhurra RTM and the Scarborough project, for which Woodside would appreciate feedback on as soon as possible, Woodside is also seeking RRKAC's feedback on these decommissioning and drilling activities by **17 March 2023**.

The plain English summary of each of these activities is attached, and I have provided a link to the more detailed consultation information sheets below. These activities are:

Decommissioning Activities:

- Stybarrow. This involves two work activities that are subject to separate environment plans; plug and abandonment (P&A) of the wells and decommissioning the infrastructure.
    - consultation-information-sheet---stybarrow-plug-and-abandonment-environment-plan.pdf (woodside.com)
    - Consultation Information Sheet - Stybarrow Decommissioning Environment Plans (woodside.com)
- Griffin decommissioning.
    - consultation-information-sheet---griffin-decommissioning-environment-plans.pdf (woodside.com)

Drilling Activities:

- TPA03 Well Intervention.
    - Consultation Information Sheet - TPA03 Well Intervention Environment Plan (woodside.com)
- WA-34-L Pyxis Drilling and Subsea Installation.
    - Consultation Information Sheet - WA-34-L Pyxis Drilling and Subsea Installation Environment Plan (woodside.com)
- Julimar Appraisal Drilling.
    - Consultation Information Sheet - Julimar Appraisal Drilling and Survey Environment Plan (woodside.com)

Thank you for your time in considering these matters. We look forward to hearing from you.

Please feel free to contact me on the details below if you require further information or assistance.

Kind regards

[redacted]

1.84.1 Email sent to Robe River Kuruma Aboriginal Corporation (RRKAC) (15 September 2023)

Dear [redacted]

We have previously consulted you 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	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).

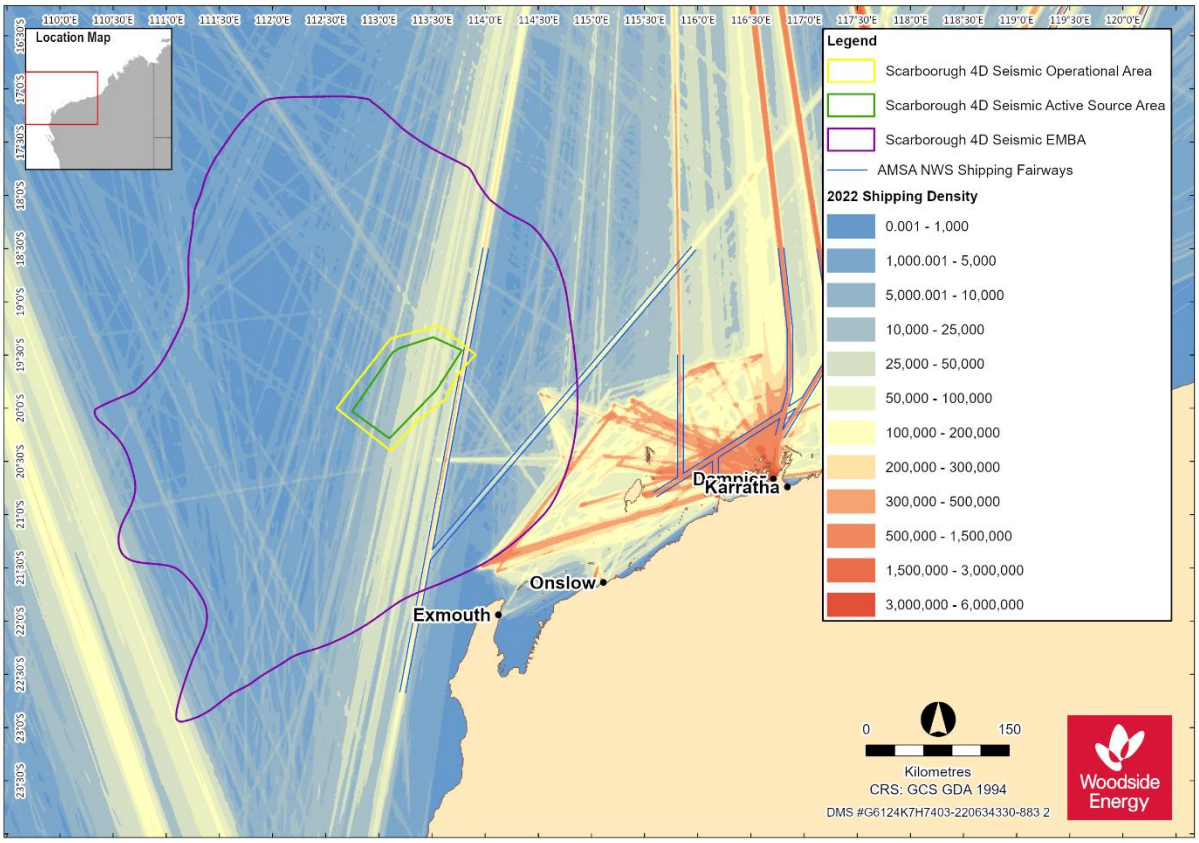
As you will see from the Guideline (link above), the purpose of consultation is to ensure that authorities, persons or organisations which are potentially affected by activities are consulted and their input is considered in the development of the environment plans. Consultation gives the titleholder 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

1.85 Updated Shipping lanes map sent to AHO and AMSA (28 February 2023, corrected and resent 8/9 March 2023)



1.86 Email sent to DNP (8 March 2023)

Dear DNP,

Thank you for your feedback on the proposed Scarborough EPs. We note and acknowledge 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 your previous responses have been received and have been addressed where relevant within each of the proposed EPs.

In response to your request for clarification on the OAs for each activity, please see the following information below:

Scarborough 4D B1 Marine Seismic Survey EP:

The Operational Area includes both the Active Source Area and a surrounding buffer for the purpose of vessel line turns and other vessel manoeuvres. The seismic source will not be discharged within this buffer.

Scarborough Seabed Intervention and Trunkline Installation EP:

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.

WA-61-L Scarborough Drilling and Completions EP:

For the purposes of this EP, the following Operational Areas will apply:

- For a dynamically positioned (DP) MODU, the Operational Area encompasses a radius of 500 metre (m) from each well centre, in which drilling related petroleum activities will take place and will be managed under this EP.
- For a moored MODU, the Operational Area encompasses a radius of 4000 m from each well centre, in which drilling related petroleum activities will take place and will be managed under this EP. This increased Operational Area allows for temporary installation of moorings. Noting that the Operational Area will be limited to the western boundary of Permit Area WA-61-L.
- For the installation activities, the Operational Area encompasses a radius of 1500 m around subsea locations, in which subsea installation activities will take place and will be managed under this EP. The 1500 m (radius) Operational Area around subsea installation allows for the movement and positioning of large vessels.

The Operational Area for drilling activities includes a 500 m petroleum safety zone around the MODU to manage vessel movements. The 500 m petroleum safety zone is under the control of the MODU Person in Charge.

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

For the purposes of this EP, the following Operational Area will apply:

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

Please let us know should you have any questions regarding the above or require further information relating to any of the Scarborough activities.

Kind Regards,

Woodside Feedback

1.87 Email sent to AMSA (8 March 2023)

Dear AMSA,

The Scarborough FPU shall be located in the Scarborough Field Petroleum Activity Area (PAA) in approximately 952 m of water (refer to coordinates in below table).

Location and Water Depth of Scarborough FPU

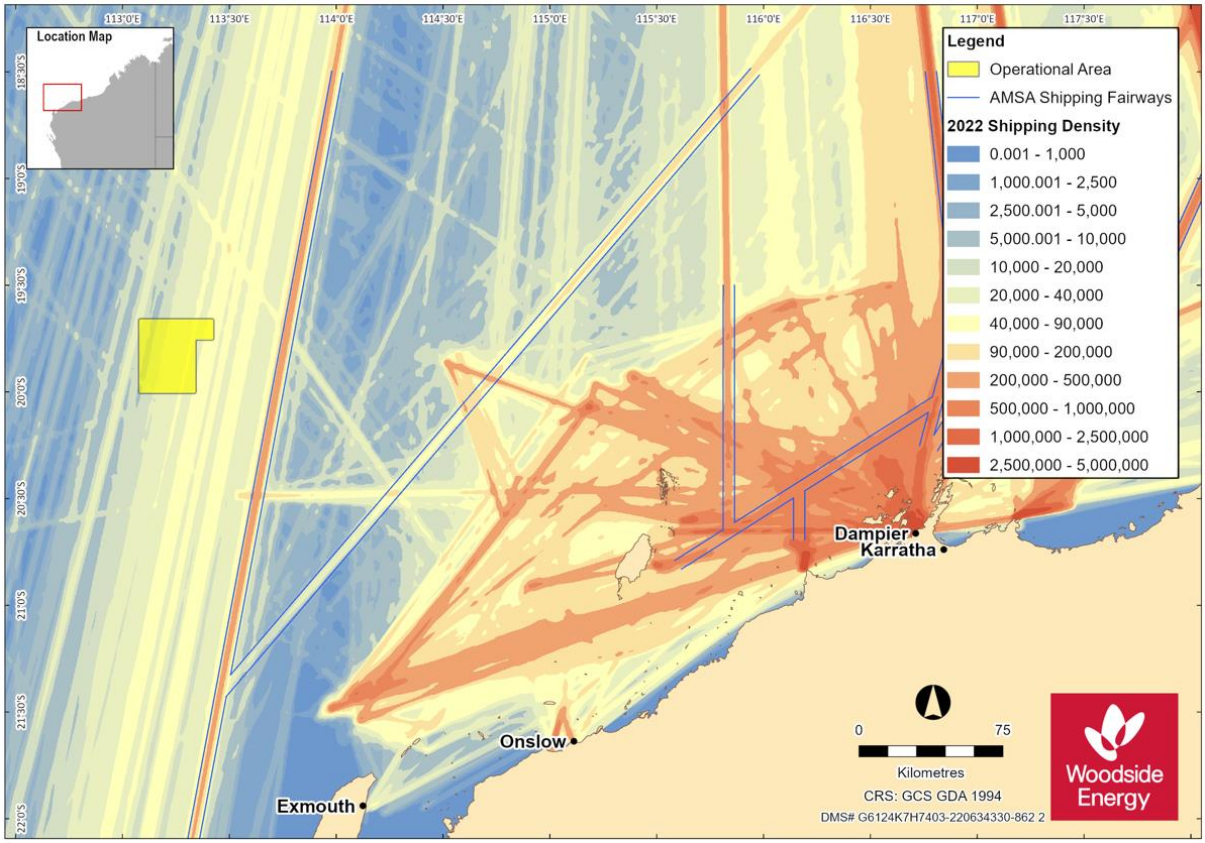
Water Depth (m below MSL)	Northing/ Latitude	Easting/ Longitude	Ref. Grid
952	7,792,300 m N	106.450 m E	MGA94 Grid 50K, 117°E
Cartesian: 19°55'33.7" South 113°14'29.8" East			

The FPU comprises a semi-submersible hull and integrated topsides with the following key components:

- Semi-submersible hull with integrated storage tanks, ballast and bilge systems;
- Risers, umbilicals and mooring system (20 mooring chains connected to suction piles on the seabed); and
- An integrated topsides supporting gas processing systems and equipment, flare systems, utilities, cranes, laydown and storage areas, Utility Building (UB), Living Quarters (LQ) and helideck.

AMSA has introduced a network of marine fairways across the NWMR off WA to reduce the risk of vessel collisions with offshore infrastructure. It is noted that none of these fairways intersect with the PAA; the nearest fairway is approximately 38 km east of the PAA (figure below). Vessel tracking data suggest the majority of shipping is concentrated to the east of the PAA.

Vessel density map for the PAA, derived from AMSA satellite tracking system data (vessels include cargo, LNG tanker, passenger vessels, support vessels, and others/unnamed vessels)



The environment that may be affected (EMBA) is the largest spatial extent where the Petroleum Activities Program could potentially have an environmental consequence (direct or indirect impact). The broadest extent of the EMBA takes into consideration planned and unplanned activities, and for this Environment Plan (EP) is determined by a highly unlikely release of marine diesel to the environment as a result of vessel collision. The EMBA does not represent the extent of predicted impact of the highly unlikely marine diesel release. Rather, the EMBA represents the merged area of many possible paths a highly unlikely hydrocarbon release could travel depending on the weather and ocean conditions at the time of the release. This means in the highly unlikely event a hydrocarbon release does occur, the entire EMBA will not be affected and the specific and minimal part of the EMBA that is affected will only be known at the time of the release.

In addition to the above responses, please find attached an updated Shipping Density map for the Scarborough Seismic EP showing the correct EMBA profile. Please disregard the previous version of this map provided on 28 February 2023.

Please let us know should you have any questions regarding the above or require further information relating to any of the Scarborough activities.

Kind Regards,

Woodside Feedback

1.88 Email sent to Ngarluma Yindjibarndi Foundation Limited – 15 September 2023

Hi [redacted]

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:

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- **Guideline:** Guideline: Consultation in the course of preparing an environment plan (nopsema.gov.au); and
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Kind regards,

[redacted]

1.89 Newspaper advertisements – EP Notices – Oct 2022 & Jan 2023

EP Notices – The Australian, The West Australian, Pilbara News − 19 October 2022

The Australian – 19 October 2022

8 THE AUSTRALIAN, WEDNESDAY, OCTOBER 19, 2022
theaustralian.com.au

THE NATION

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 13, 2019, there was no medical evidence supporting whether the bruise would have remained 11 days later.

"Our contention is it [alleged rape] didn't happen," he said.

Mr Whybrow suggested Ms Higgins was trying to cover up what happened because it "would be pretty embarrassing" to be found passed out in a minister's suite after "getting hammered".

"That's not good for your CV," he said.

"Is there a reasonable possibility this complaint is being made because her 'dream job' is, from her perspective, in jeopardy?"

Mr Whybrow said the "kindest" interpretation of Ms Higgins' actions was that she simply "didn't know" what happened that night, given her level of inebriation.

"She doesn't know what happened. You can't be satisfied beyond reasonable doubt that she knows what happened," he said.

However, Mr Drumgold said Ms Higgins was an "inherently credible witness" and if her allegations had been a "fabrication", she was "quite the actor" who had managed to fool her own mother while remaining consistent in her story over the past 31/2 years.

"When she couldn't recall something, she said so ... when she didn't know an answer, she made it plain," he told the jury.

"Ms Higgins didn't seem to embellish her account of rape at all, she didn't say it went for hours but just two to three minutes."

Mr Drumgold said Ms Higgins faced significant "political forces" in the wake of 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 in the middle of strong political forces and we say she was right to be scared, we say she was right to be cautious and we say she was right to move forward slowly and carefully in handing her life over to police," he said.

'Right to be scared': Higgins

'It's clear to say that this is a young lady who was in the middle of strong political forces'

SHANE DRUMGOLD
CROWN PROSECUTOR

Mr Drumgold pointed to evidence given by Senator Reynolds to the court on Monday, where it was revealed she texted one of Mr Lehrmann's lawyers asking, "Hi, do you have the daily transcripts?"

during Ms Higgins' evidence before advising the defence counsel to check her former staffer's text messages.

Mr Drumgold stressed that the defence was in no way involved in such "political forces" influencing the case.

He said the case before the jury wasn't about political parties, parliamentary culture or the #MeToo movement", but rather "what happened between Ms Higgins and Bruce Lehrmann on a couch in room on Saturday the 23rd of March, 2019".

While Mr Drumgold said Ms Higgins was a "genuine, upfront and honest" witness whom the jury could be "comfortable" believing, the same was not true for Mr Lehrmann.

He said Mr Lehrmann told numerous people different reasons for why he went to parliament with Ms Higgins about 1am on March 23, 2019, including that he was going to "drink whisky", pick up his keys and work on a question time document.

Mr Whybrow in his closing statement showed the jury CCTV vision that captured Mr Lehrmann going through parliamentary security appearing not to have keys with him.

Mr Drumgold, however, said Mr Lehrmann had told numerous people, including security and police, that he had been "requested to pick up documents" and "work on questions time documents".

"Parliament was not sitting the entire week that followed; this was clearly not true," Mr Drumgold said.

"We say this (parliament) was the most convenient place to get her (Ms Higgins) alone, not a sudden need to do some work in the middle of the night."

Mr Drumgold also raised questions over Mr Lehrmann turning the lights of the office off and leaving Ms Higgins alone in the dark before being seen by security "hurrying" out the building.

Mr Lehrmann said he left because his Uber ride home had already arrived, which Mr Drumgold said was not strictly true and the Uber was still three minutes away when he exited the building.

The prosecution also argued Mr Lehrmann had an "attraction" to Ms Higgins, harking back to evidence of an alleged incident where he attempted to kiss her weeks prior to March 23 and to comments made to colleagues where he called Ms Higgins "good looking".

Mr Drumgold said nothing that happened in 2021, such as media interviews and book deals, should impact the jury's view of whether or not the alleged rape in 2019 took place.

'No onus to prove anything': Bruce Lehrmann arrives at court during the trial

MICK TSIKAS/AAP, NEWSWIRE

'At wit's end': rape accused knew his political career over

Rape accused Bruce Lehrmann 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 Lehrmann's interview with the Australian Federal Police – recorded on April 19, 2021 – after it was played to the jury last week.

Mr Lehrmann is on trial for the rape of former ministerial adviser Brittany Higgins, to which he has pleaded not guilty, and the transcript is the only direct account of his version of events made available.

The former staffer told AFP detectives Emma Frizzell and Marcus Boorman he knew he was "done" when Ms Higgins' allegations were published and said a journalist filmed him trying to obtain mental health support.

"I understand [a reporter] has got footage of me trying to access mental health for the first time because I'm at my wit's end," he said.

"Because I know politics.

Mr Drumgold said the essence of the case was "whether Brittany Higgins made up the allegation of what happened to her on the couch alone with Bruce Lehrmann".

"If she did, it was elaborate," he said.

"She told everybody ... the same story. She has done so consistently for 31/2 years."

He added that there was no way Ms Higgins could have consented to sexual intercourse after having had about 11 drinks and falling asleep on the couch in Senator Reynolds' office.

"How can something that occurred two years later ... make something that happened unhappen?" he said.

When something like this happens and you've shut off from everyone, you're done from like a PR perspective."

Ms Higgins has alleged Mr Lehrmann raped her on a couch in the ministerial office of then defence industry minister Linda Reynolds on March 23 after a night out drinking with colleagues. He denies charges of sexual intercourse without consent and recklessness towards whether Ms Higgins was consenting and will not appear as a witness in the trial.

During the AFP interview, Mr Lehrmann said he went through a "tough fortnight" and didn't know who he could talk to or trust and he hadn't even spoken to his defence counsel for weeks because "nothing happened".

He said he was "mentally scarred" after working in Parliament House and had started working out an exit plan after Malcolm Turnbull was rolled in August 2018. "At that point I was with Bridget McKenzie and ... ministers treat their staff in a way I've not seen after leaving politics," he said.

"It's very mentally scarring. (She) was one minister who was notorious for treating her staff poorly, me included."

RENY VARGA, SARAH ISON

"You cannot consent to something if you're passed out," he said.

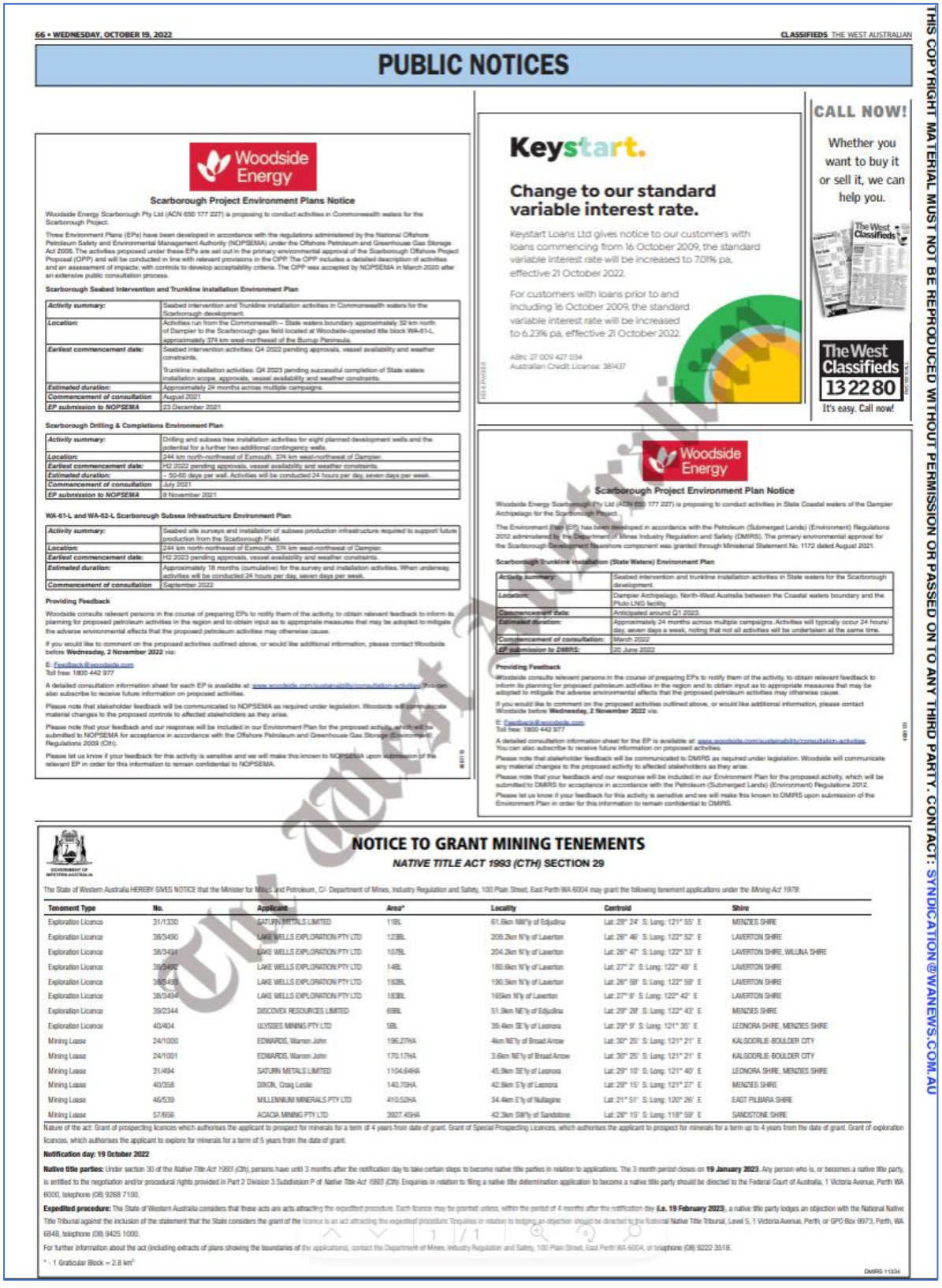
Mr Whybrow reminded the jury Mr Lehrmann had "no onus to prove anything".

"That's very, very important in a case like this where we know there's already been a fair bit of trial by media," he said.

"We are here for due process, we are here for presumption of innocence."

ACT Chief Justice Lucy McCallum is expected to give her summary to the court on Wednesday and then release the jury for its deliberation.

The West Australian – 19 October 2022



66 • WEDNESDAY, OCTOBER 19, 2022 CLASSIFIEDS THE WEST AUSTRALIAN

PUBLIC NOTICES

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 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 develop acceptability criteria. The OPP was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

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 374 km west-northwest of the Burrup Peninsula.
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.
Commencement of consultation	August 2021
EP submission to NOPSEMA	23 December 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Earliest commencement date:	H2 2022 pending approvals, vessel availability and weather constraints.
Estimated duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Commencement of consultation	July 2021
EP submission to NOPSEMA	8 November 2021

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

Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Earliest commencement date:	H2 2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Commencement of consultation	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
Toll free: 1800 442 977

A detailed consultation information sheet for each EP is available at: www.woodside.com/sustainability/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 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 relevant EP in order for this information to remain confidential to NOPSEMA.

Keystart.

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.

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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

Activity summary:	Seabed intervention and trunkline installation activities in State waters for the Scarborough development.
Location:	Dampier Archipelago, North-West Australia between the Coastal waters boundary and the Pluto LNG facility.
Commencement date:	Anticipated around Q1 2023.
Estimated duration:	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.
Commencement of consultation:	March 2022
EP submission to DMIRS:	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
Toll free: 1800 442 977

A detailed consultation information sheet for the EP is available at: www.woodside.com/sustainability/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.

NOTICE TO GRANT MINING TENEMENTS

NATIVE TITLE ACT 1993 (CTH) SECTION 29

GOVERNMENT OF WESTERN AUSTRALIA

The State of Western Australia HEREBY GIVES NOTICE that the Minister for Mines and Petroleum, C/- Department of Mines, Industry Regulation and Safety, 100 Plain Street, East Perth WA 6004 may grant the following tenement applications under the *Mining Act 1978*.

Tenement Type	No.	Applicant	Area*	Locality	Centroid	Shire
Exploration Licence	31/1330	SATURN METALS LIMITED	11BL	61.6km NW'ly of Edjudina	Lat: 29° 24' S; Long: 121° 55' E	MENZIES SHIRE
Exploration Licence	38/3490	LAKE WELLS EXPLORATION PTY LTD	123BL	209.2km N'ly of Laverton	Lat: 26° 46' S; Long: 122° 52' E	LAVERTON SHIRE
Exploration Licence	38/3491	LAKE WELLS EXPLORATION PTY LTD	107BL	204.2km N'ly of Laverton	Lat: 26° 47' S; Long: 122° 33' E	LAVERTON SHIRE, WILUNA SHIRE
Exploration Licence	38/3492	LAKE WELLS EXPLORATION PTY LTD	14BL	180.6km N'ly of Laverton	Lat: 27° 2' S; Long: 122° 49' E	LAVERTON SHIRE
Exploration Licence	38/3493	LAKE WELLS EXPLORATION PTY LTD	192BL	190.5km N'ly of Laverton	Lat: 26° 59' S; Long: 122° 59' E	LAVERTON SHIRE
Exploration Licence	38/3494	LAKE WELLS EXPLORATION PTY LTD	183BL	165km N'ly of Laverton	Lat: 27° 9' S; Long: 122° 42' E	LAVERTON SHIRE
Exploration Licence	39/2344	DISCOVEX RESOURCES LIMITED	69BL	51.9km NE'ly of Edjudina	Lat: 29° 28' S; Long: 122° 43' E	MENZIES SHIRE
Exploration Licence	40/404	ULYSSES MINING PTY LTD	5BL	39.4km SE'ly of Leonora	Lat: 29° 9' S; Long: 121° 35' E	LEONORA SHIRE, MENZIES SHIRE
Mining Lease	24/1000	EDWARDS, Warren John	196.27HA	4km NE'ly of Broad Arrow	Lat: 30° 25' S; Long: 121° 21' E	KALGOORLIE-BOULDER CITY
Mining Lease	24/1001	EDWARDS, Warren John	170.17HA	3.6km NE'ly of Broad Arrow	Lat: 30° 25' S; Long: 121° 21' E	KALGOORLIE-BOULDER CITY
Mining Lease	31/494	SATURN METALS LIMITED	1104.64HA	45.9km SE'ly of Leonora	Lat: 29° 10' S; Long: 121° 40' E	LEONORA SHIRE, MENZIES SHIRE
Mining Lease	40/358	DIXON, Craig Leslie	142.70HA	42.6km S'ly of Leonora	Lat: 29° 15' S; Long: 121° 27' E	MENZIES SHIRE
Mining Lease	46/539	MILLENNIUM MINERALS PTY LTD	410.52HA	34.4km E'ly of Nullagine	Lat: 21° 51' S; Long: 120° 26' E	EAST PILBARA SHIRE
Mining Lease	57/656	ACACIA MINING PTY LTD	3927.45HA	42.3km SW'ly of Sandstone	Lat: 28° 15' S; Long: 118° 59' E	SANDSTONE SHIRE

Nature of the act: Grant of prospecting licences which authorises the applicant to prospect for minerals for a term of 4 years from date of grant. Grant of Special Prospecting Licences, which authorises the applicant to prospect for minerals for a term up to 4 years from the date of grant. Grant of exploration licences, which authorises the applicant to explore for minerals for a term of 5 years from the date of grant.

Notification day: 19 October 2022

Native title parties: Under section 30 of the *Native Title Act 1993 (Cth)*, persons have until 3 months after the notification day to take certain steps to become native title parties in relation to applications. The 3 month period closes on **19 January 2023**. Any person who is, or becomes a native title party, is entitled to the negotiation and/or procedural rights provided in Part 2 Division 3 Subdivision P of *Native Title Act 1993 (Cth)*. Enquiries in relation to filing a native title determination application to become a native title party should be directed to the Federal Court of Australia, 1 Victoria Avenue, Perth WA 6000, telephone (08) 9268 7100.

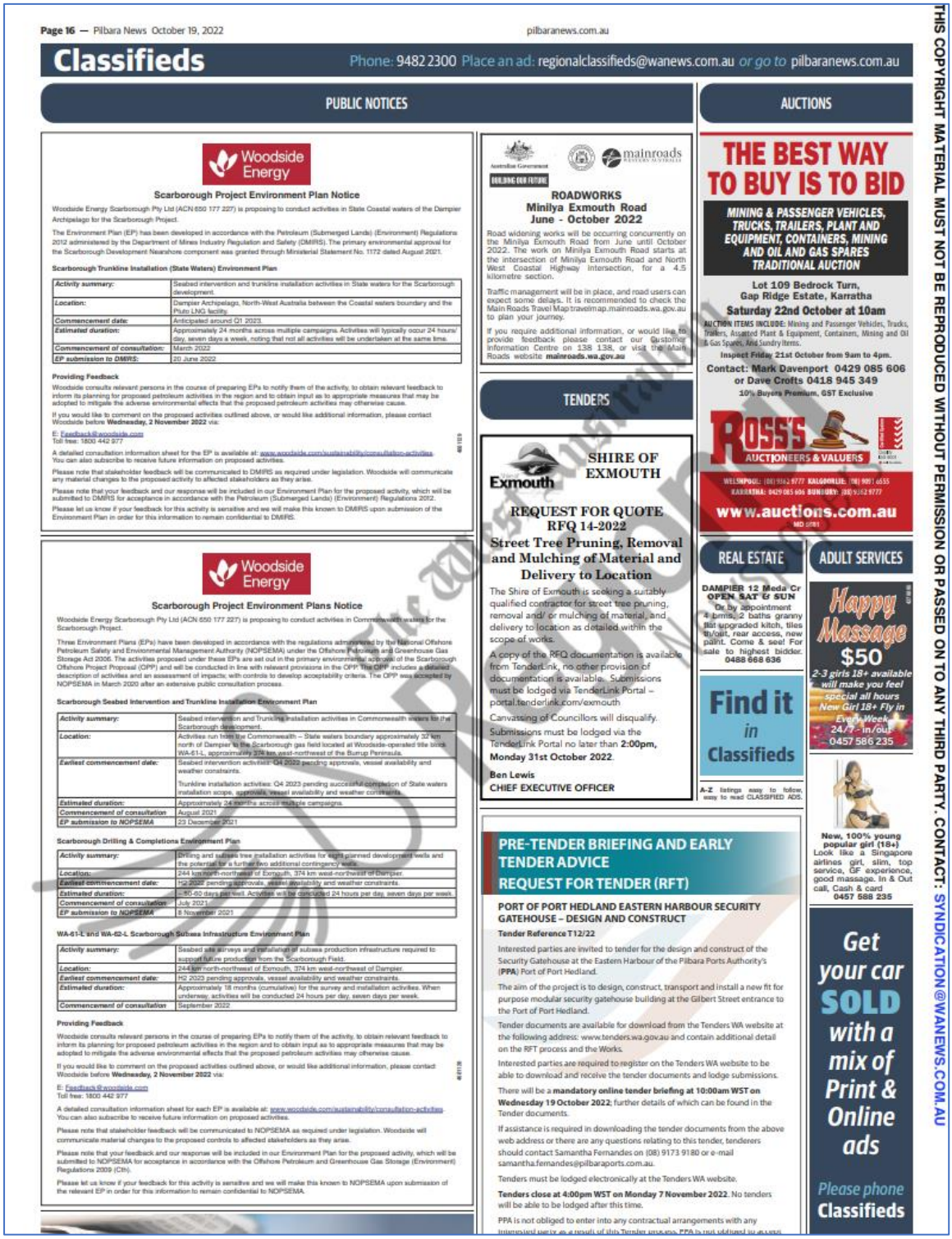
Expedited procedure: The State of Western Australia considers that these acts are acts attracting the expedited procedure. Each licence may be granted unless, within the period of 4 months after the notification day **i.e. 19 February 2023**, a native title party lodges an objection with the National Native Title Tribunal against the inclusion of the statement that the State considers the grant of the licence is an act attracting the expedited procedure. Enquiries in relation to lodging an objection should be directed to the National Native Title Tribunal, Level 5, 1 Victoria Avenue, Perth, or GPO Box 9973, Perth, WA 6848, telephone (08) 9425 1000.

For further information about the act (including extracts of plans showing the boundaries of the applications), contact the Department of Mines, Industry Regulation and Safety, 100 Plain Street, East Perth WA 6004, or telephone (08) 9222 3518.

* - 1 Graticular Block = 2.8 km²

DMIRS 11334

The Pilbara News – 19 October 2022



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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

Activity summary:	Seabed intervention and trunkline installation activities in State waters for the Scarborough development.
Location:	Dampier Archipelago, North-West Australia between the Coastal waters boundary and the Pluto LNG facility.
Commencement date:	Anticipated around Q1 2023.
Estimated duration:	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.
Commencement of consultation:	March 2022
EP submission to DMIRS:	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
Toll free: 1800 442 977

A detailed consultation information sheet for the EP is available at: www.woodside.com/sustainability/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 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 develop acceptability criteria. The OPP was accepted by NOPSEMA in March 2020 after an extensive public consultation process.

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

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 374 km west-northwest of the Burrup Peninsula.
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.
Commencement of consultation	August 2021
EP submission to NOPSEMA	23 December 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Earliest commencement date:	H2 2022 pending approvals, vessel availability and weather constraints.
Estimated duration:	1 – 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.
Commencement of consultation	July 2021
EP submission to NOPSEMA	8 November 2021

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

Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.
Earliest commencement date:	H2 2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.
Commencement of consultation	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
Toll free: 1800 442 977

A detailed consultation information sheet for each EP is available at: www.woodside.com/sustainability/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 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 relevant EP in order for this information to remain confidential to NOPSEMA.

mainroads

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 to plan your journey.

If you require additional information, or would like to provide feedback please contact our Customer Information Centre on 138 138, or visit the Main Roads website **mainroads.wa.gov.au**

TENDERS

Exmouth

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 TenderLink, no other provision of documentation is available. Submissions must be lodged via TenderLink Portal – portal.tenderlink.com/exmouth

Canvassing of Councillors will disqualify.

Submissions must be lodged via the TenderLink Portal no later than **2:00pm, 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 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.

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

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EP Notices − The Australian, The West Australian, Pilbara News, Midwest Times, North West Times, Geraldton Guardian − 18 January 2023

The Australian – 18 January 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (ACN 650 377 277) is proposing to conduct four activities in Commonwealth waters of the West Australian ocean for the Scarborough Project, as described below.

Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough field to provide the baseline for future time lapse reservoir surveillance.	
Location:	214 km north-west of Exmouth, size of operational area ~8,200 km²	
Commencement timing:	4Q 2023 pending approvals, vessel availability and weather constraints.	
Estimated duration:	~ 55-70 days per well. Activities will be conducted 24 hours per day, seven days per week.	
Consultation commenced	May 2021	**First EP submission to NOPSEMA** November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.	
Location:	244 km north-north-west of Exmouth, 374 km west-north-west of Dampier.	
Commencement timing:	1Q 2023 pending approvals, vessel availability and weather constraints.	
Estimated duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.	
Consultation commenced	July 2021	**First EP submission to NOPSEMA** November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities	
Location:	Activities within or near the Commonwealth – State waters boundary approximately 52 km north of Dampier to the Scarborough gas field, located at Woodside-operated title WA-61-L, approximately 374 km west-north-west of the Burrup Peninsula.	
Commencement timing:	4Q 2023 pending approvals, vessel availability and weather constraints.	
Estimated duration:	Approximately 24 months across multiple campaigns.	
Consultation commenced	August 2021	**First EP submission to NOPSEMA** December 2021

Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed site survey and installation of subsea production infrastructure required to support future production from the Scarborough Field.	
Location:	244 km north-north-west of Exmouth, 374 km west-north-west of Dampier.	
Commencement timing:	4Q 2023 pending approvals, vessel availability and weather constraints.	
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When undertaken, activities will be conducted 24 hours per day, seven days per week.	
Consultation commenced	September 2022	**First EP submission to NOPSEMA** Not yet submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a highly unlikely, unplanned event could have an impact based on weather and ocean conditions.

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP.

Impacts associated with the planned activities include physical presence of vessels and interaction with other marine users, seabed disturbance (such as trenching, spoil disposal, dredging and backfill and infrastructure placement) and other vessel, drilling, seismic and construction impacts (such as noise, light, air, discharges and emissions).

Impacts that could occur due to an unplanned event include liquid hydrocarbon releases (marine diesel or other vessel fuels), gas release during drilling, vessel collisions with marine fauna, additional seabed disturbance, introduced marine species, accidental loss of waste or other discharges.

Consultation Participation and Feedback

Woodside is seeking to consult with relevant persons to inform the preparation of Environment Plans (EPs) for these activities. Consultation is designed to notify and obtain input from relevant persons to assist Woodside to identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment.

Consultation will inform the drafting of the EPs in accordance with the regulations administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth).

If you would like additional information, detailed consultation information sheets are available at: **www.woodside.com/sustainability/consultation-activities**. You can also subscribe to receive future information on proposed activities.

If you would like to comment on the proposed activities outlined above, please contact Woodside before Friday, 17 February 2023 via:

✉ **Feedback@woodside.com** | Toll free: **1800 442 977**

Please note your feedback and our response will be included in our EPs for the proposed activity, which will be submitted to NOPSEMA as required under legislation.

Please let us know if your feedback is sensitive and we will make this known to NOPSEMA upon submission of the relevant EP in order for this information to remain confidential to NOPSEMA.

Iran raids coffers to help fight protesters

MELANIE SWAN

The security forces violently suppressing protests across Iran have been allocated $US3bn in the latest budget, despite the country's collapsing economy.

Announced several weeks late by the government, the budget for the Islamic Revolutionary Guard Corps (IRGC) has been raised by 28 per cent. However, experts estimate the actual income of the militia could be as high as $US17bn ($24bn).

The secretive IRGC also receives income from illicit oil sales and is known to fund terrorist groups across the region, including Hezbollah in Lebanon and the Houthis in Yemen.

Jason Brodsky, policy director of United Against Nuclear Iran, said "leaked audio tapes some months ago revealed (supreme leader Ayatollah Ali) Khamenei directed 50 per cent of the revenue generated by Yas Holding, an IRGC-linked company, be given to the IRGC's Quds Force, so they are not solely dependent on the national budget."

Last year Hamas leader Ismail Haniyeh revealed that Iran had given $US70m to the militant Palestinian group, proscribed by Britain as a terrorist organisation.

British politicians are calling for the IRGC to be designated as a terrorist group. Foreign Secretary James Cleverly announced last month that sanctions had been imposed on the force after it emerged that it was planning attacks on Iranian dissidents in the UK.

The budget of Iran's regular army has also been increased by 36 per cent to more than $US2.5bn and the police budget will rise 44 per cent to $US1.9bn.

Since protests began in September, triggered by the death in custody of Mahsa Amini, 22, an estimated 19,401 Iranians have been detained. This includes 713 students and 168 children, while 524 people have been killed, according to Iran's Human Rights Activists News Agency. At least four protesters have been executed.

Iranian journalist Roonash Zaibari said the "militarisation of the budget" ignores the needs of the population. "Despite the budget being drafted for a year of austerity, the outlays for propaganda organisations, including the Islamic Republic of Iran Broadcasting (whose budget rose 49 per cent or about $US200m) and religious and cultural entities that usually have little benefit for the general public, have been augmented exponentially," he said.

Many Iranians are unable to afford food and to pay their electricity bills as the country's currency continues to plummet. Prices have risen so rapidly that consumption halved last year. In the once bustling marketplace of the northern city of Rasht, fruit sellers and bakers can no longer make ends meet.

Inflation is at over 50 per cent, and more than half the population is being pushed below the poverty line, according to the Statistical Centre of Iran. Iranian economist Mardo Soghoni and Iran was selling its oil at heavily discounted prices as Western sanctions crippled the country's energy revenues. He said it was being sold to China for $US37 a barrel, which meant only $US7 profit per barrel.

THE TIMES

UK vows payback after execution

Britain has vowed more reprisals against what it said was Tehran's "weakened and isolated regime" after it executed a UK-Iranian dual national.

Following the killing of Alireza Akbari for allegedly spying, Britain summoned Iran's most senior diplomat and recalled its ambassador. But despite slapping sanctions on Iran's prosecutor general it stopped short of demanded to ban the Islamic Revolutionary Guard Corps. The government is wrestling with the fate of other dual nationals held by the Islamic regime, and with the strategic aim of restoring an international nuclear pact with Iran.

AFP

Italy mourns golden screen goddess

ELLA IDE
ROME

One of the last stars of the golden age of Hollywood, Italy's Gina Lollobrigida, who has died at the age of 95, was famed for her biting wit and sensual beauty.

Bringing much-needed glamour and pizzazz to the post-war period, she stirred hearts whether as an onscreen gypsy, queen or single mother.

Humphrey Bogart, who she starred opposite in her breakthrough movie Beat the Devil in 1953, said Lollobrigida made "Marilyn Monroe look like Shirley Temple".

Best known for Luigi Comencini's 1953 classic Bread, Love and Dreams, and Jean Delannoy's 1956 The Hunchback of Notre Dame, Lollobrigida starred with many of the leading men of the time, including Errol Flynn and Burt Lancaster.

While she had a "crazy good time" with a playful Bogart, not all the shoots were as fun.

Her co-star in the wartime romance Never So Few, Frank Sinatra, had "zero sense of humour", she told Variety in 2018.

Luigia "Gina" Lollobrigida was born on July 4, 1927 in Subiaco, a mountain village 50 kilometres (30 miles) east of Rome.

Luigia "Gina" Lollobrigida began to study sculpture after her family moved to Rome, from the mountain village of Subiaco. Soon anyway. She supported herself by singing and modelling before attracting the attention of Italian film producers.

"I refused when they offered me my first role. They insisted again ... So I told them my price was one million lire, thinking that would put a stop to the whole thing. But they said 'yes!' she told Vanity Fair.

Italians then dubbed her their answer to Elizabeth Taylor after her signature movie La Donna Più Bella del Mondo (The Most Beautiful Woman in the World) in 1955.

She had an infamous long-standing rivalry with fellow Italian diva Sophia Loren. When Loren claimed she was the "busier" one, Lollobrigida hit back, saying Loren could play a peasant, but never a lady, according to the Hollywood Reporter.

Affectionately dubbed La Lollo by fans, she played the queen in Solomon and Sheba in 1959 and a single mother in Buona Sera, Mrs Campbell, garnering her a Golden Globe nomination.

She was pursued for years by US tycoon Howard Hughes, who brought her to Hollywood, and by Prince Rainier of Monaco, at the time married to Princess Grace.

"I've had many lovers and still have romances," she was quoted by several British newspapers as saying in 2000. "I am very spoiled." She was married in her early 20s to Slovenian doctor Miko Skofic, with whom she had a son but they divorced in 1971.

In 2006, aged 79, she announced plans to marry Spanish long-time partner Javier Rigau Rafols, 34 years her junior, but they split up a year later.

Lollobrigida accused him in 2013 of having tricked her into signing documents allowing him to marry her by proxy, with a fraudulent civil ceremony in Spain.

Gina Lollobrigida was said to have made Marilyn Monroe 'look like Shirley Temple' AFP

Lollobrigida with Marcello Mastroianni in the 1960 film Where The Hot Wind Blows; and meeting Princess Margaret at London's new National Film Theatre in 1957

"My experience has been that, when I have found the right person, he has run away from me," she told Vanity Fair in 2015. "I am too strong, too popular."

The marriage was annulled by a Vatican court in 2019.

Lollobrigida won seven David di Donatello awards during her career, Italy's Oscar equivalent. But by the 1970s she had turned from acting to sculpture and photojournalism, including getting a scoop interview and photo shoot with Cuban leader Fidel Castro.

She travelled the world, snapping celebrities from Henry Kissinger to Indira Gandhi, Maria Callas, Liza Minnelli, Salvador Dali, Audrey Hepburn and Ella Fitzgerald.

She also nurtured political ambitions in 1999 she ran, unsuccessfully, for a seat in the European parliament.

She was back in the spotlight in 2021, amid a bitter legal battle with her son over her fortune.

Italy's Supreme Court ruled that she needed a legal guardian to stop people preying on her wealth, because of a "weakening" in her perception of reality.

Despite that, last year she attempted once more to enter politics with a failed bid for a seat in the Italian parliament.

In a 2019 interview with AGI news agency, Lollobrigida said she wanted to be remembered for more than just her work in cinema.

"For my sculptures and above all for my photography," she said.

AFP

The West Australian – 18 January 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct four activities in Commonwealth waters off the West Australian coast for the Scarborough Project, as described below.

Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough field to provide the baseline for future 'time lapse' reservoir surveillance.		
Location:	21? km north-west of Exmouth, size of operational area ~9,200 km²		
Commencement timing:	H1 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	~56-70 days per well. Activities will be conducted 24 hours per day, seven days per week		
Consultation commenced	May 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	~50-60 days per well. Activities will be conducted 24 hours per day, seven days per week		
Consultation commenced	July 2021	**First EP submission to NOPSEMA**	November 202[illegible]

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities.		
Location:	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside operated title WA-61-L, approximately 374 km west-northwest of the Burrup Peninsula.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	Approximately 24 months across multiple campaigns.		
Consultation commenced	August 2021	**First EP submission to NOPSEMA**	December 202[illegible]

Scarborough Subsea Infrastructure Environment Plan

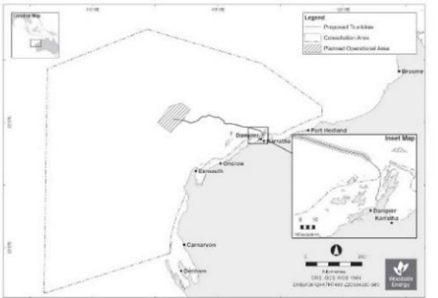
Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day seven days per week.		
Consultation commenced	September 2022	**First EP submission to NOPSEMA**	Not yet submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a highly unlikely, unplanned event could have an impact based on weather and ocean conditions.

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP.

Impacts associated with the planned activities include physical presence of vessels and interaction with other marine users, seabed disturbance (such as trenching, spoil disposal, dredging and backfill and infrastructure placement) and other vessel, drilling, seismic and construction impacts (such as noise, light, air, discharges and emissions).

Impacts that could occur due to an unplanned event include liquid hydrocarbon releases (marine diesel or other vessel fuels), gas release during drilling, vessel collisions with marine fauna, additional seabed disturbance, introduced marine species, accidental loss of waste or other discharges.



Consultation Participation and Feedback

Woodside is seeking to consult with relevant persons to inform the preparation of Environment Plans (EPs) for these activities. Consultation is designed to notify and obtain input from relevant persons to assist Woodside to identify measures to lessen or avoid potential adverse effects of the proposed activity on the environment.

Consultation will inform the drafting of the EPs in accordance with the regulations administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth).

If you would like additional information, detailed consultation information sheets are available at: **www.woodside.com/sustainability/consultation-activities**. You can also subscribe to receive future information on proposed activities.

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Please note your feedback and our response will be included in our EPs for the proposed activity, which will be submitted to NOPSEMA as required under legislation.

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Pilbara News – 18 January 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (ACN 650 737 227) is proposing to conduct five activities in Commonwealth waters off the West Australian coast for the Scarborough Project, as described below:

Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough field to provide the baseline for future time-lapse reservoir surveillance.		
Location:	214 km north-west of Exmouth, size of operations area ~3 200 km²		
Commencement timing:	H1 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	~55–70 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	May 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.		
Location:	244 km north-north-west of Exmouth, 374 km west-north-west of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	~50–60 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	July 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and trunkline installation activities		
Location:	Activities run from the Commonwealth – State waters boundary approximately 82 km north of Dampier to the Scarborough gas field located at Woodside-operated title WA-61-L, approximately 374 km west-north-west of the Burrup Peninsula.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 24 months across multiple campaigns		
Consultation commenced	August 2021	**First EP submission to NOPSEMA**	December 2021

Scarborough Subsea Infrastructure Environment Plan

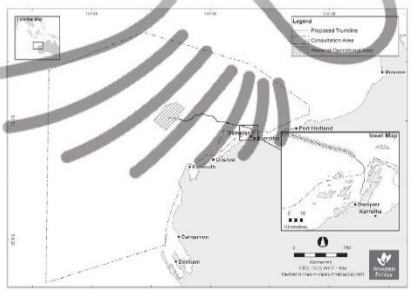
Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future tie-back production from the Scarborough Field		
Location:	244 km north-north-west of Exmouth, 374 km west-north-west of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	September 2022	**First EP submission to NOPSEMA**	Yet to be submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a high consequence event could have an impact based on weather and ocean conditions.

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP.

Impacts associated with the planned activities include physical presence of vessels and interaction with other marine users, seabed disturbance (such as trenching, spoil disposal, dredging and cable and infrastructure placement) and other vessel, drilling, seismic and construction impacts (such as noise, light, air discharges and emissions).

Impacts that could occur due to an unplanned event include hydrocarbon release (marine diesel or other vessel fuels), gas release during drilling, vessel collisions with marine fauna, additional seabed disturbance, introduced marine species, additional loss of waste or other objects.



Consultation Participation and Feedback

Woodside is seeking to consult with relevant persons to inform the preparation of Environment Plans (EPs) for these activities. Consultation is designed to notify and obtain input from relevant persons to assist Woodside to identify measures to lessen and avoid potential adverse effects of the proposed activity on the environment.

Consultation will inform the drafting of the EPs in accordance with the regulations administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA), under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth).

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PUBLIC NOTICES

SHIRE OF EXMOUTH

RFQ 05/2023 Supply of Solid Waste Management Services (2023 Total Solar Eclipse)

The Shire of Exmouth is seeking a suitably qualified and experienced supplier to provide the hire of fire mitigation products to Welch Street Campsite during the Total Solar Eclipse Project.

A copy of the RFQ documentation is available from TenderLink, no other provision of documentation is available. Submissions must be lodged via TenderLink Portal - portal.tenderlink.com/exmouth

Canvassing of Councillors will disqualify.

Submissions must be lodged via the TenderLink Portal no later than 2:00pm, **Wednesday 1st February 2023.**

Ben Lewis
CHIEF EXECUTIVE OFFICER

SHIRE OF EXMOUTH

REQUEST FOR QUOTE RFQ 03-2023 Supply of Firefighting Equipment (2023 Total Solar Eclipse)

The Shire of Exmouth is seeking a suitably qualified and experienced supplier to provide the hire of fire mitigation products to Welch Street Campsite during the Total Solar Eclipse Project.

A copy of the RFQ documentation is available from TenderLink, no other provision of documentation is available. Submissions must be lodged via TenderLink Portal - portal.tenderlink.com/exmouth

Canvassing of Councillors will disqualify.

Submissions must be lodged via the TenderLink Portal no later than **2:00pm, Monday 30th January 2023.**

Ben Lewis
CHIEF EXECUTIVE OFFICER

SHIRE OF EXMOUTH

NOTICE OF ANNUAL GENERAL MEETING OF ELECTORS

In accordance with s5.29 of the *Local Government Act 1995*, the Shire of Exmouth hereby gives public notice of a General Meeting of Electors.

The meeting will be held on **Thursday 2 February 2023** at **6:00 pm** in the Mandu Mandu Function Centre, Ningaloo Centre, 2 Truscott Crescent Exmouth.

The purpose of this meeting is to:

1. Confirm the minutes of the previous General Meeting of Electors meeting held on the 3 February 2022;
2. Receival of the 2021/2022 Annual Report; and
3. General Business.

Shire of Exmouth electors are invited to submit in writing to the Chief Executive Officer, questions relating to the general meeting no later than Wednesday, 1 Feburary 2023 to enable adequate answers to be provided at the meeting.

The Shire of Exmouth 2021/2022 Annual report is available for viewing at the Shire Administration Office, the Exmouth Library and on the Shire's website www.exmouth.wa.gov.au

Ben Lewis
CHIEF EXECUTIVE OFFICER

Proposed Local Laws

Notice is hereby given, pursuant to section 3.12 of the *Local Government Act 1995*, it is intended to make the following local laws:

Cats Local Law

The purpose of the proposed local law is to set a standard number of cats that may be kept on premises and deal with cats that may be a nuisance as defined in the local law. The effect is that persons must not keep more than the standard number of cats unless provided for by the local law, the *Cat Act 2011* or its associated Regulations, or be a nuisance as defined in the local law to persons in the district.

Public Places and Local Government Property Local Law

The purpose of the proposed local law is to regulate the care, control, and management of property of and under the care, control and management of the Shire including thoroughfares. The effect is that some Shire property is set aside for particular uses, some activities are allowed only under a permit or under a determination, and others are restricted or prohibited. The local law also establishes offences for inappropriate behaviour in or on Shire property.

Extractive Industries Repeal Local Law

The purpose of the proposed local law is to repeal the Shire of *Ashburton Extractive Industries Local Law 2013*. The effect is that the Shire of *Ashburton Extractive Industries Local Law 2013* is no longer in effect.

The proposed local laws may be inspected at the Shire of Ashburton offices or on the Shire's website www.ashburton.wa.gov.au

Public submissions are invited and may be made by 4.30pm on Friday 10 March 2023, as follows:

- Online at www.ashburton.wa.gov.au
- Email to soa@ashburton.wa.gov.au
- In person at any Shire of Ashburton office
- Mail to Shire of Ashburton, PO Box 567, Tom Price WA 8751

For more information, please contact the Jasmine Bray, Manager Governance on 9188 4444.

Chantelle McGurk
Acting Chief Executive Officer

www.ashburton.wa.gov.au

EMPLOYMENT

Government of **Western Australia**
Department of **Justice**

Clinical Nurse Manager

Corrective Services

Web Search No: 011872

Level/Award/Salary: Level 3 SRN $118,070 Per Annum + Super (DCSNA)

Location: West Kimberley Regional Prison

About the role

The Department of Justice is offering an ideal opportunity for a suitably experienced and enthusiastic manager who is looking for a new experience in a primary care setting based at West Kimberley Regional Prison which is situated nine kilometres South East of the regional town of Derby. We deliver a comprehensive health care service to the prisoners of West Kimberley Regional Prison within a busy team focused environment.

Visit: jobs.wa.gov.au and key in the Web Search No. **011872** to access detailed information.

For Specific Job Related Information: Please contact **Mel Peet on (08) 9334 6096**

Closing Date: Friday 27th of January 2023.

DOJ 12827

Share the important moments *with* Classifieds

Midwest Times – 18 January 2023

ENVIRONMENT PLANS NOTICE

Woodside Energy Scarborough Pty Ltd (ACN 650 177 227) is proposing to conduct four activities in Commonwealth waters off the West Australian coast for the Scarborough Project, as described below.

Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough field to provide the baseline for future 'time lapse' reservoir surveillance.		
Location:	214 km north-west of Exmouth, size of operational area ~9,200 km²		
Commencement timing:	H1 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	~ 55-70 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	May 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	~ 50-60 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	July 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities.		
Location:	Activities run from the Commonwealth – State waters boundary approximately 92 km north of Dampier to the Scarborough gas field located at Woodside-operated title WA-61-L, approximately 374 km west-northwest of the Burrup Peninsula.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 24 months across multiple campaigns.		
Consultation commenced	August 2021	**First EP submission to NOPSEMA**	December 2021

Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	September 2022	**First EP submission to NOPSEMA**	Not yet submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a highly unlikely unplanned event could have an impact based on weather and ocean conditions.

Woodside has undertaken an assessment to identify potential impacts and risks to the environment arising from both planned and unplanned activities. Mitigation and management measures have been developed for each of the risks identified and will be outlined in the relevant EP.

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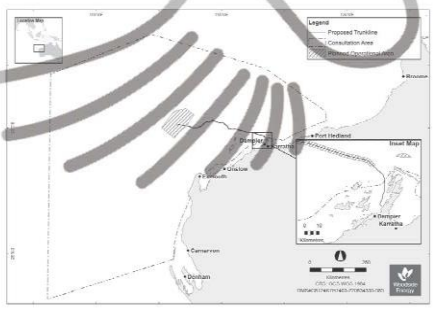

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North West Telegraph – 18 January 2023

ENVIRONMENT PLANS NOTICE

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Scarborough 4D Baseline Marine Seismic Survey Environment Plan

Activity summary:	Seismic survey over the Scarborough field to provide the baseline for future 'time lapse' reservoir surveillance.		
Location:	214 km north-west of Exmouth; size of operational area ~9,200 km²		
Commencement timing:	H1 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	~55-70 days per well. Activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	May 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Drilling & Completions Environment Plan

Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	~50-60 days per well. Activities will be conducted 24 hours per day, seven days per week		
Consultation commenced	July 2021	**First EP submission to NOPSEMA**	November 2021

Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities.		
Location:	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title WA-61-L, approximately 374 km west-northwest of the Burrup Peninsula		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	Approximately 24 months across multiple campaigns		
Consultation commenced	August 2021	**First EP submission to NOPSEMA**	December 2021

Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	September 2022	**First EP submission to NOPSEMA**	Not yet submitted

Figure 1: Describes the operational area and the environment that may be affected based on a composite of many different paths and furthest distance where a highly unlikely unplanned event could have an impact based on weather and ocean conditions.

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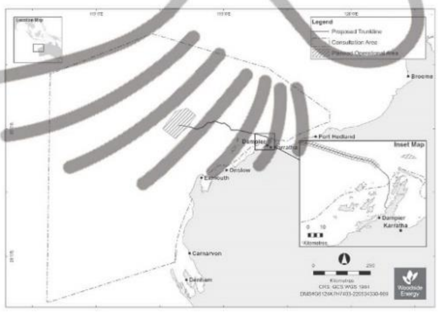

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PUBLIC NOTICES

Hedland Sporting Shooters Club AGM Saturday 28th Jan, 6:30pm at the club house.

Geraldton Guardian – 20 January 2023

30 GERALDTON GUARDIAN geraldtonguardian.com.au FRIDAY, JANUARY 20, 2023

ENVIRONMENT PLANS NOTICE

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Activity summary:	Drilling and subsea tree installation activities for eight planned development wells and the potential for a further two additional contingency wells.		
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Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
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Scarborough Seabed Intervention and Trunkline Installation Environment Plan

Activity summary:	Seabed intervention and Trunkline installation activities.		
Location:	Activities run from the Commonwealth – State waters boundary approximately 32 km north of Dampier to the Scarborough gas field located at Woodside-operated title WA-61-L, approximately 374 km west-northwest of the Burrup Peninsula.		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints.		
Estimated duration:	Approximately 24 months across multiple campaigns.		
Consultation commenced	August 2021	**First EP submission to NOPSEMA**	December 2021

Scarborough Subsea Infrastructure Environment Plan

Activity summary:	Seabed site surveys and installation of subsea production infrastructure required to support future production from the Scarborough Field.		
Location:	244 km north-northwest of Exmouth, 374 km west-northwest of Dampier		
Commencement timing:	H2 2023 pending approvals, vessel availability and weather constraints		
Estimated duration:	Approximately 18 months (cumulative) for the survey and installation activities. When underway, activities will be conducted 24 hours per day, seven days per week.		
Consultation commenced	September 2022	**First EP submission to NOPSEMA**	Not yet submitted

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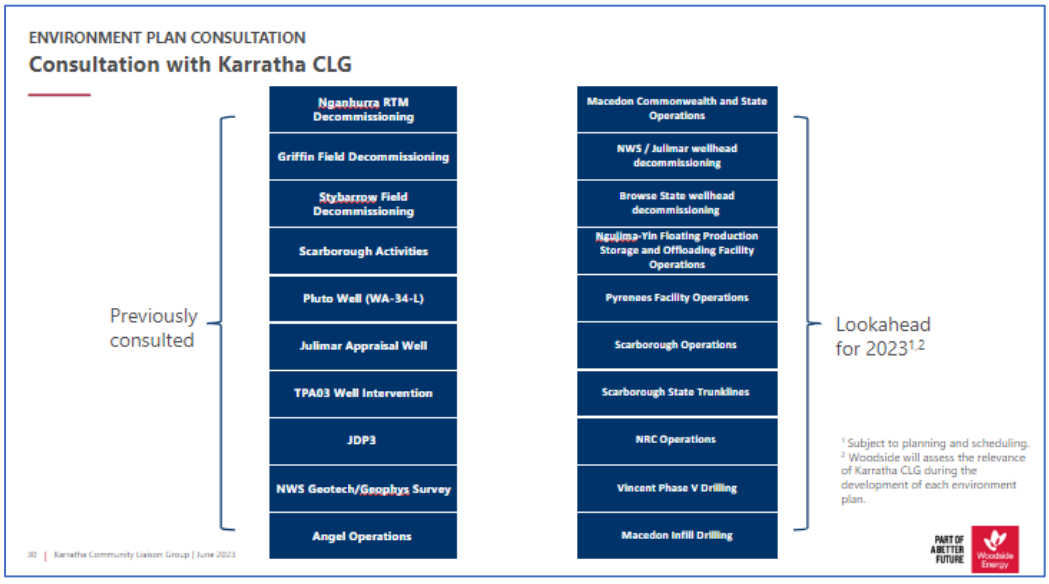
1.90 Presentation to Karratha Community Liaison Group – 29 June 2023



1.91 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)
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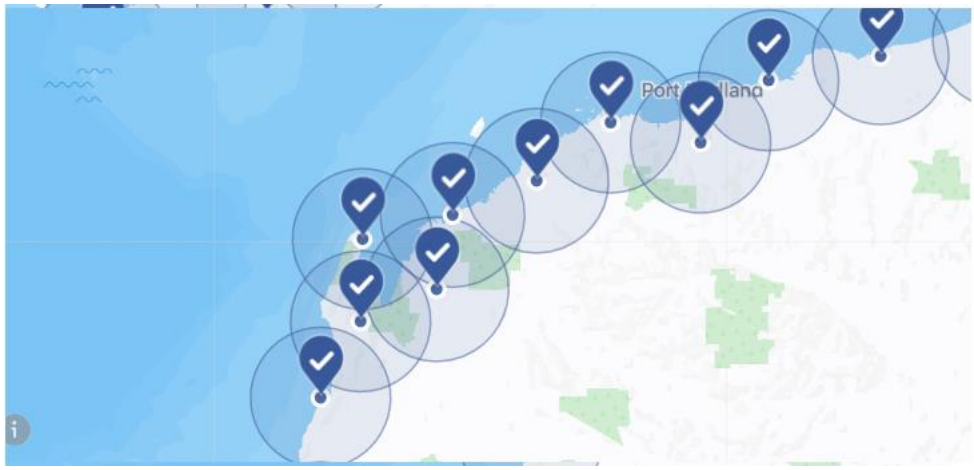
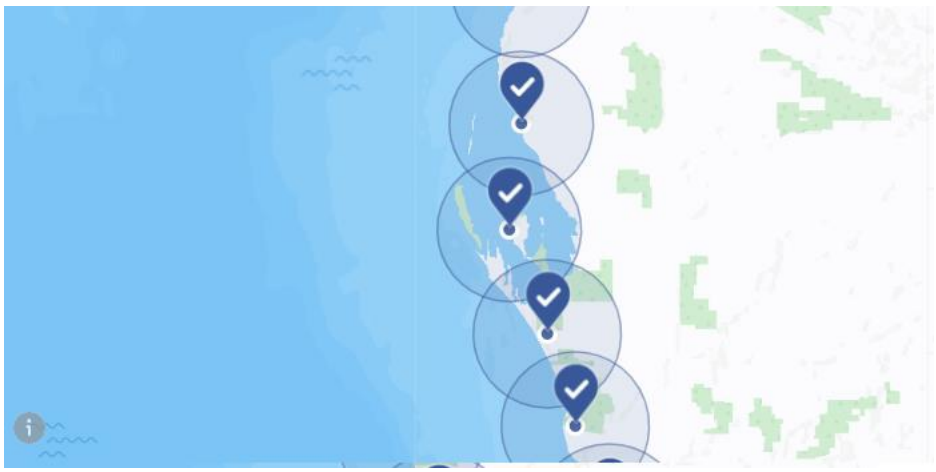
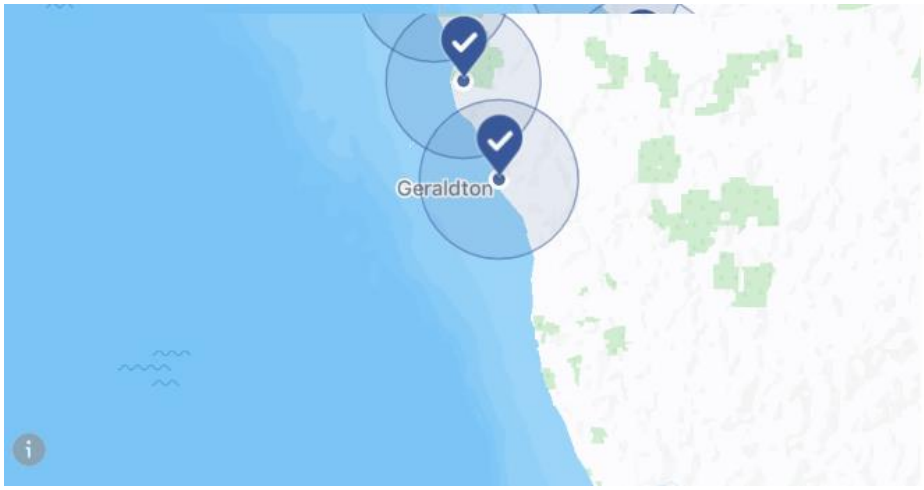
- Latitude -22.43 Longitude 114.93 Yannarie (+80 km)







Facebook Campaign – June 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 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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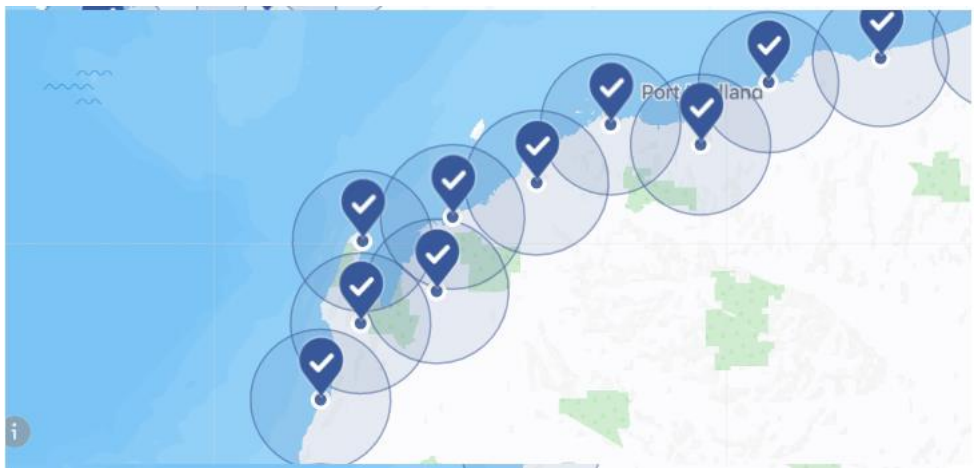
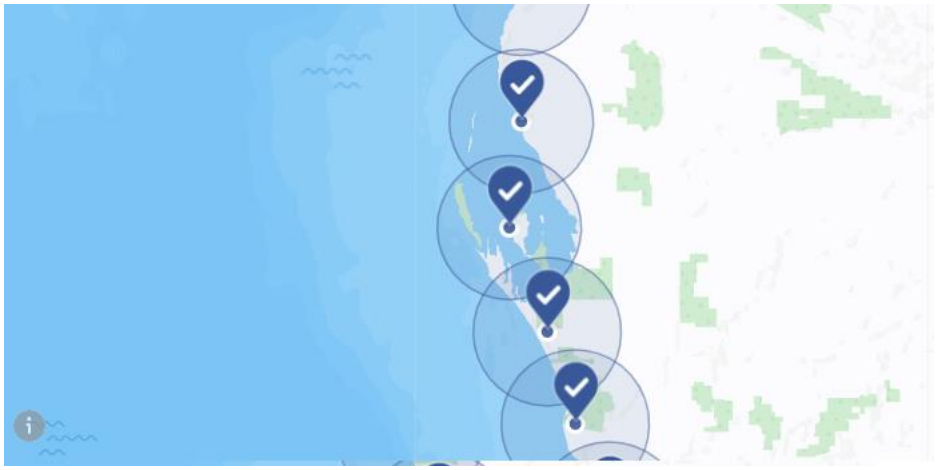
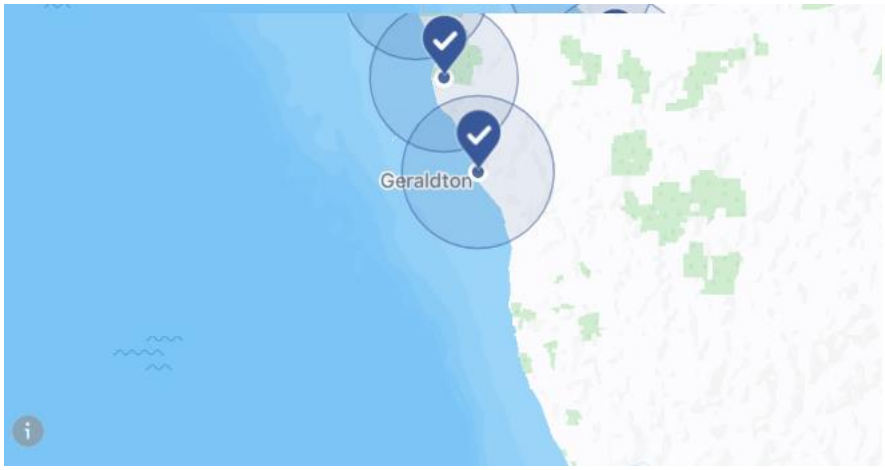
- Latitude -17.52 Longitude 123.56 Willare (+80 km)
- Latitude -22.43 Longitude 114.93 Yannarie (+80 km)







1.92 Kimberley region community activities

1.92.1 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

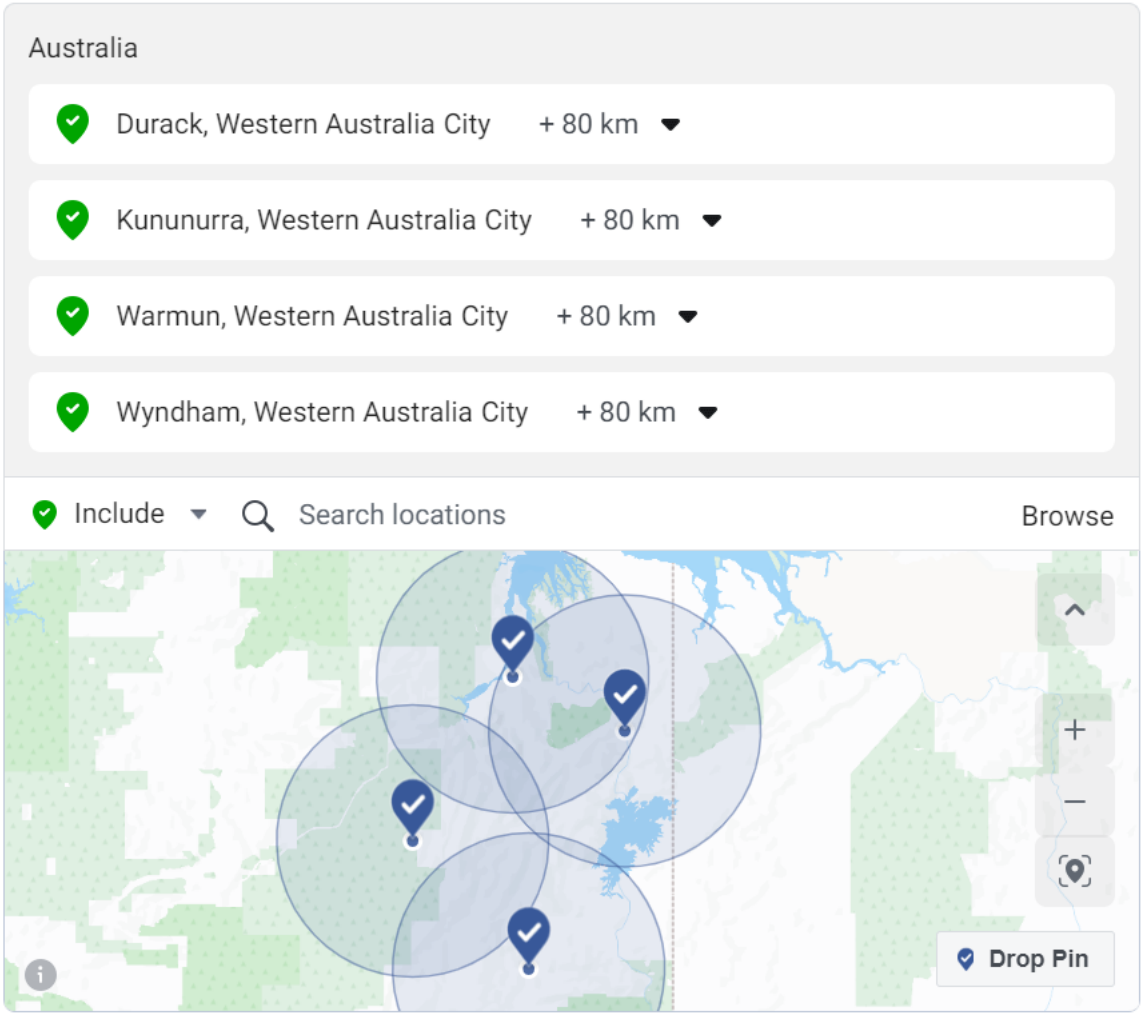
Kununurra:

Dates: 8 June 2023 – 14 June 2023
Total reach: 12,228
Total impressions: 14,486
Geotargeting locations:

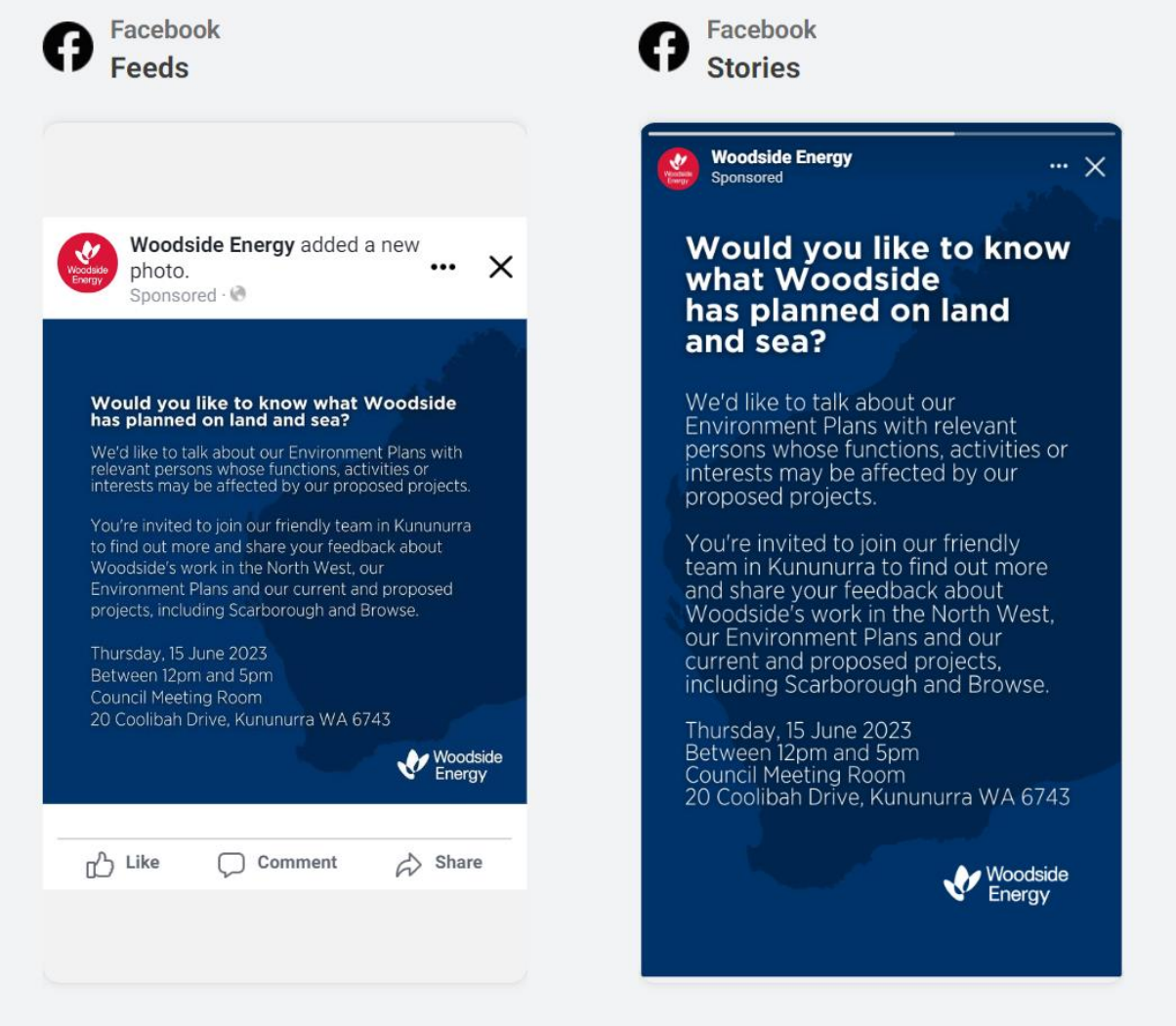
- 80km radius around Kununurra
- 80km radius around Durack
- 80km radius around Warmun
- 80km radius around Wyndham

*** Locations**

Reach people living in or recently in this location.



Add locations in bulk



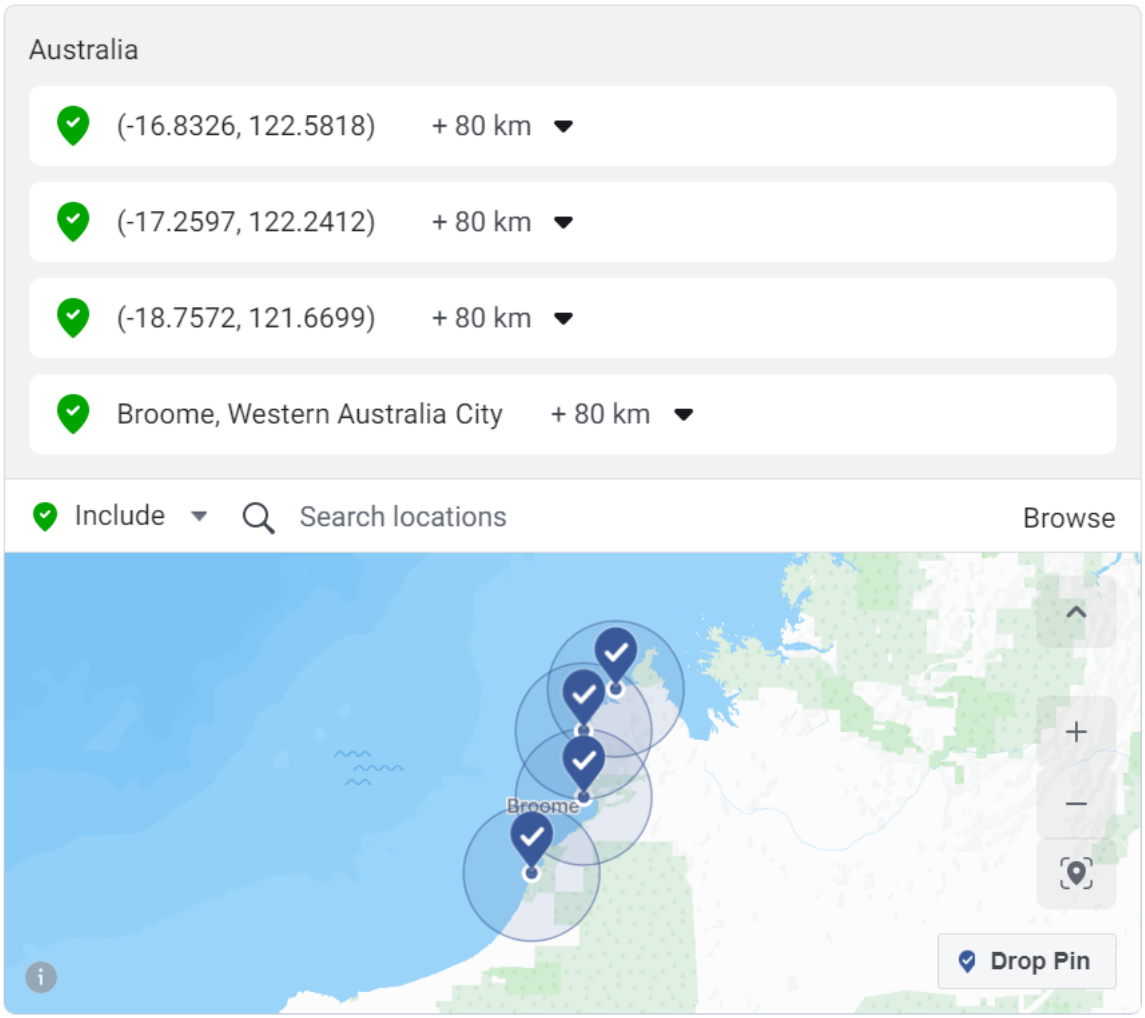
Broome:

Dates: 8 June 2023 – 12 June 2023
Total reach: 19,220
Total impressions: 22,665
Geotargeting locations:

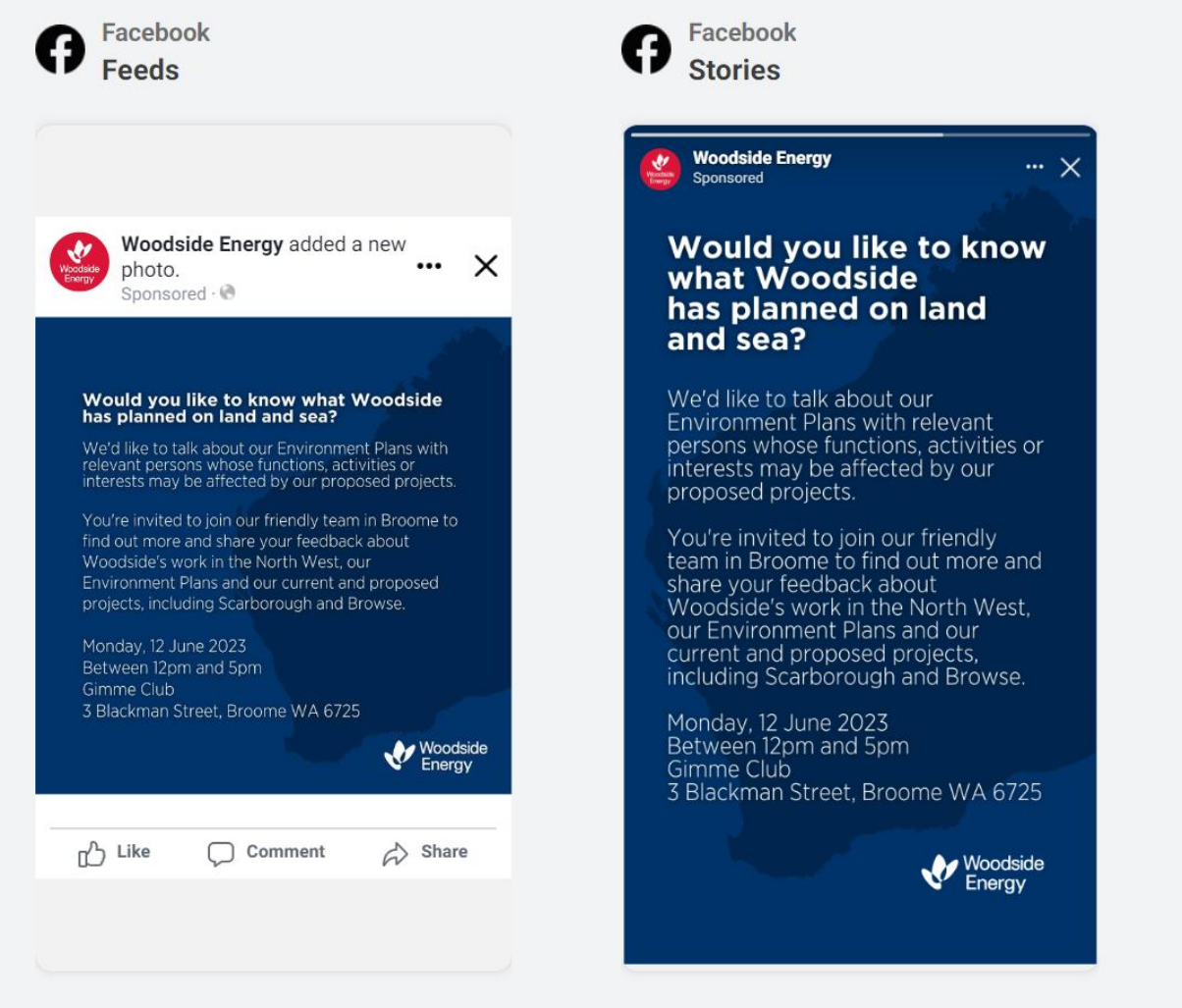
- 80km radius around Broome
- 80km radius around Dampier Peninsula
- 80km radius around area between Broome and Dampier Peninsula (Waterbank area)
- 80km radius around area south of Broome (Lagrange area)

*** Locations**

Reach people living in or recently in this location.



Add locations in bulk



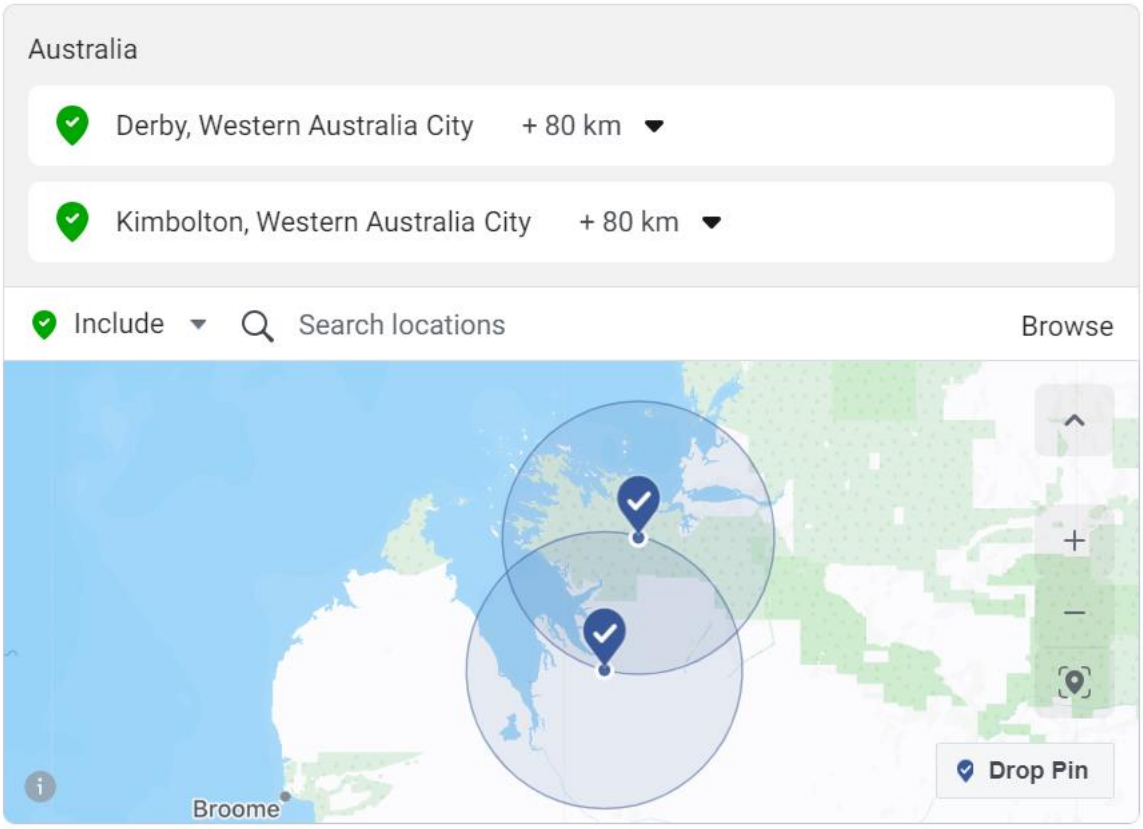
Derby:

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

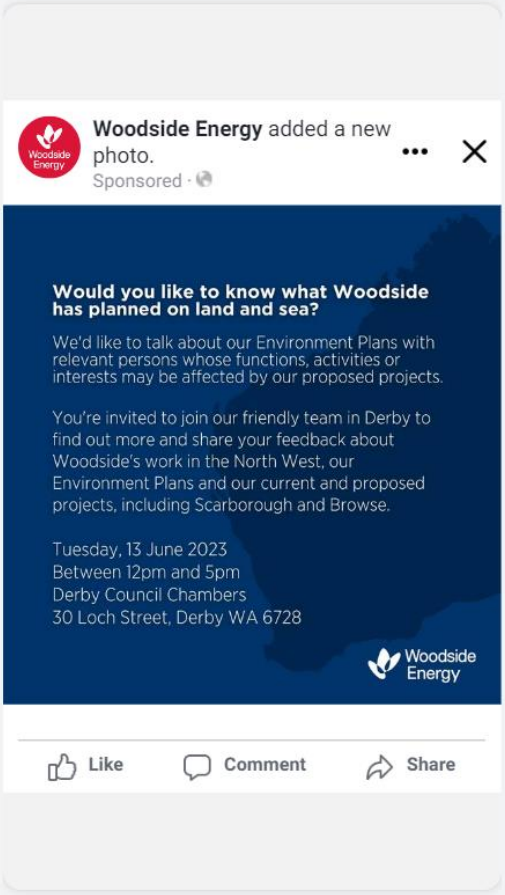
*** Locations**

Reach people living in or recently in this location.



Add locations in bulk

Facebook
Feeds

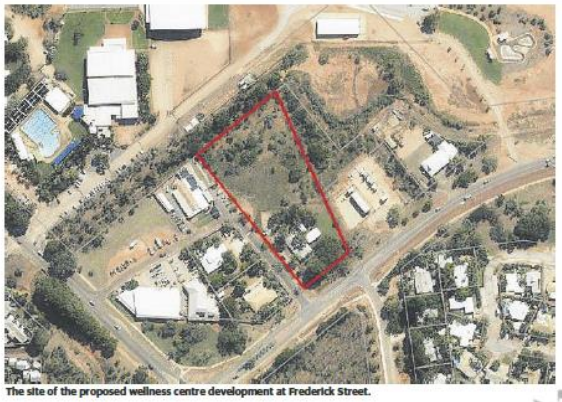


Facebook
Stories

Community information sessions - Newspaper advertisements

Broome Advertiser − 1 June 2023

Broome Advertiser
Thursday, June 1, 2023
broomead.com.au



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 $61m.

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-engagment 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 planning, environmental approvals and consultation to occur — including with First Nations communities."

The spokeswoman said work on the first portion of the 313km track was expected to start in the middle of the year. The project — jointly funded with the WA Government — is expected to cost $542 million.

"The WA Government is currently developing a delivery strategy which will inform the project's rollout for upgrading and sealing the road," she said.

"Both governments are working together to ensure construction can start as soon as possible on the project, which will improve road safety, connectivity as well as freight access and productivity."

Broome Advertiser − 8 June 2023

Surf club rides crest of wave

CAIN 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 Aristei 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 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 nippers 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 Aristei 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

Bar manager Chris Andrzejaczek, BSLC chairperson Bec Famlunga, BSLSC Education director Carrie Selten, BSLSC Building director Rob Aristei, Broome Surf Life Saving Club manager Lauren Henderson. Picture: Cain Andrews

Man jailed for robberies on hotels

KATYA MINNS

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.

Kimberley Echo – 1 June 2023

6 NEWS

kimberleyecho.com.au

Thursday, June 1, 2023

Muster ends with Party in the Park

Max & Claire Hogg, with granddaughters Cassidy & Ruthie Cunningham.

Jimmy Lannigan, 5, of Halls Creek.

River Alford, 5, of Kununurra.

CALLY 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 Sorby 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.

John & Julie Petry. Pics: Cally Dupe

Sandy Griffiths & Tammy Cavlovic

Allirah Rivers, 10, & Jaz Nayah, 8.

Halle, 1, and Simeon McGinness, of Kununurra.

Rob & Cooper Cox, 13.

Zoe Sass, 8, and Nikki Cavlovic, 11.

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.

The laughs just kept coming at Comedy in the Park show

CALLY 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 Metals 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 hailing 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 plugger 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 Noongar Yamatji man, Woods had the crowd chuckling with funny tales of traditional names and dances.

Bold, brassy and brutally honest, Killick had everyone shedding tears of laughter with her rough talking, schoolmum jokes about pilates loving joggy mothers and grotty teenage boys.

Tisdell ended the show with her self-deprecating humour that kept audiences chuckling.

The crowd at this year's Comedy in the Park at the Ord Valley Muster. Picture: Ben Broadwith

Kimberley Echo – 8 June 2023

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 regional NSW town where she grew up.

Linda Burney

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 [illegible] strength to keep prosecuting the case for a Voice to Parliament.

"This referendum is a 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 Newspoll showed fewer than half of voters intended to support the constitutional change.

Yes campaign director Dean Parkin said the "tightening in the numbers" was understandable after recent 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 and get some more cut through on that conversation that's starting to grow significantly in communities."

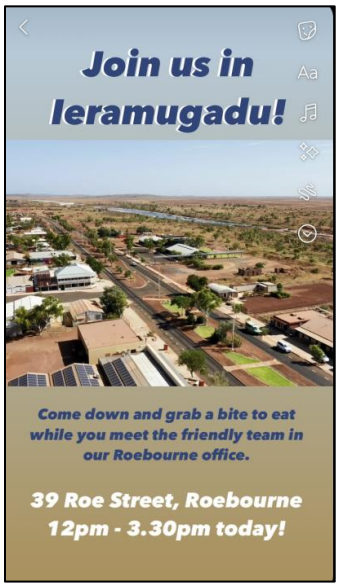
1.93 Pilbara region community activities

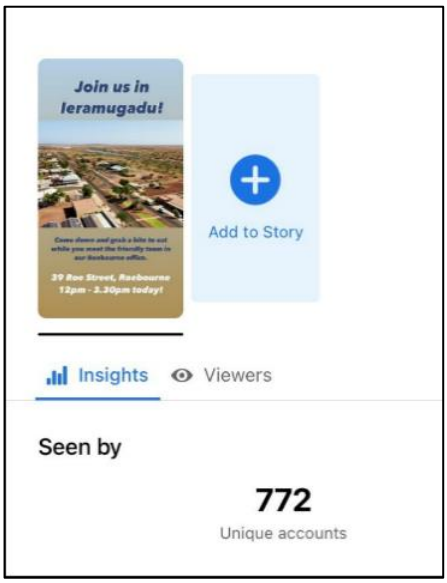
1.93.1 Community information sessions – Roebourne – 5, 10, 19, 24 May 2023

Woodside Facebook Stories – May 2023

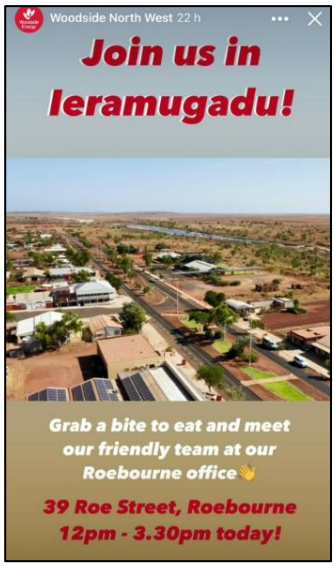
Facebook stories on Friday 5/5/2023 seen by 772 people (attachment #1 & #2) and another Facebook story on Wednesday 10/5/2023 seen by 1,400 people (attachment #3 & #4).

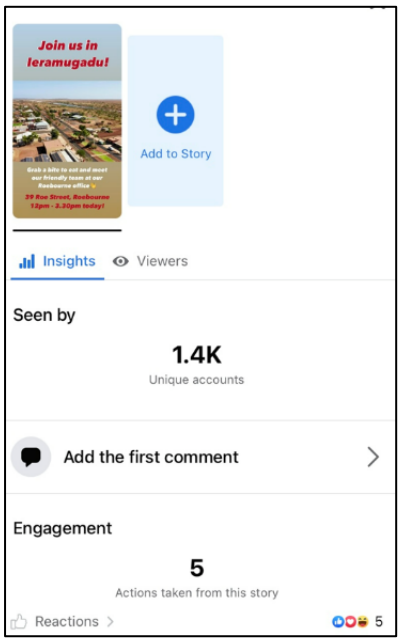
#1 & #2



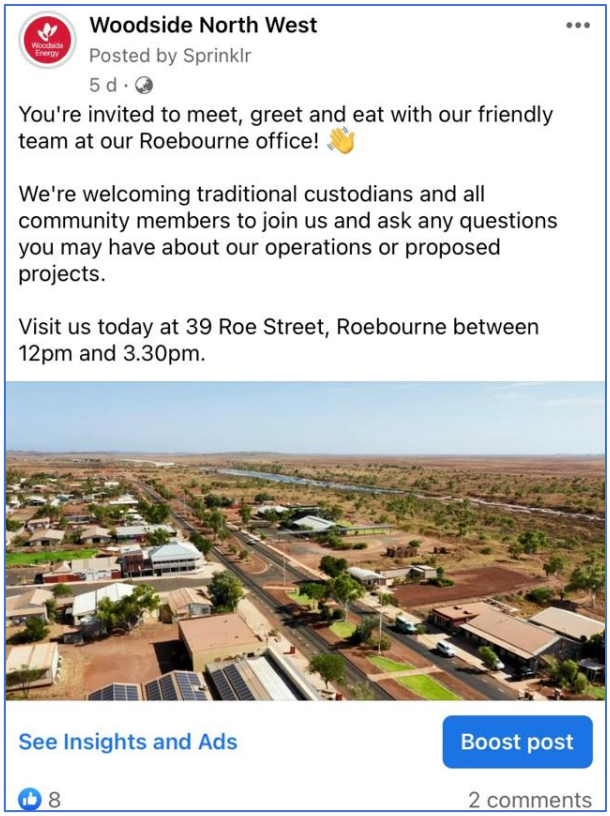


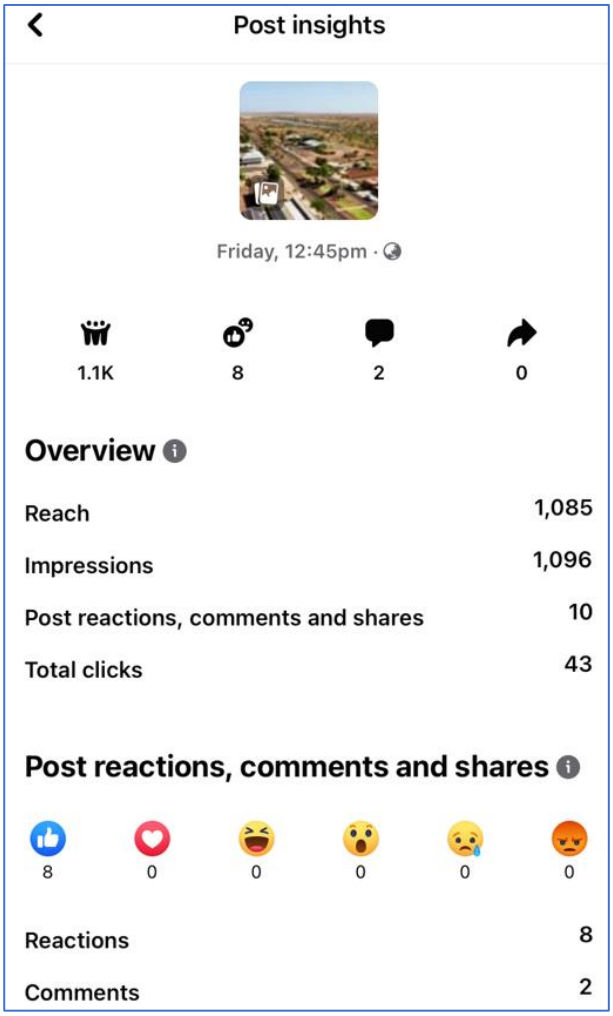
#3 & #4





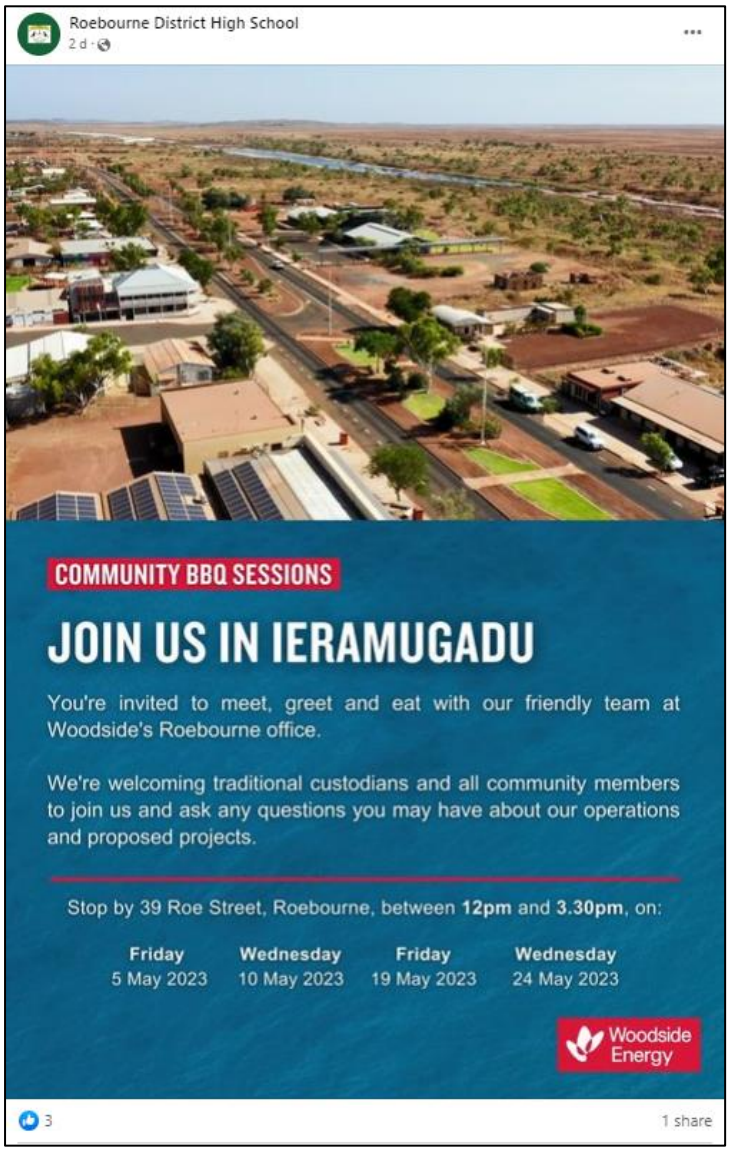
Woodside Facebook Post





Third-party Facebook posts

Roebourne District High School Facebook page (23/5/23 and 18/5/23)



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

----- Forwarded message -----
[redacted]
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]

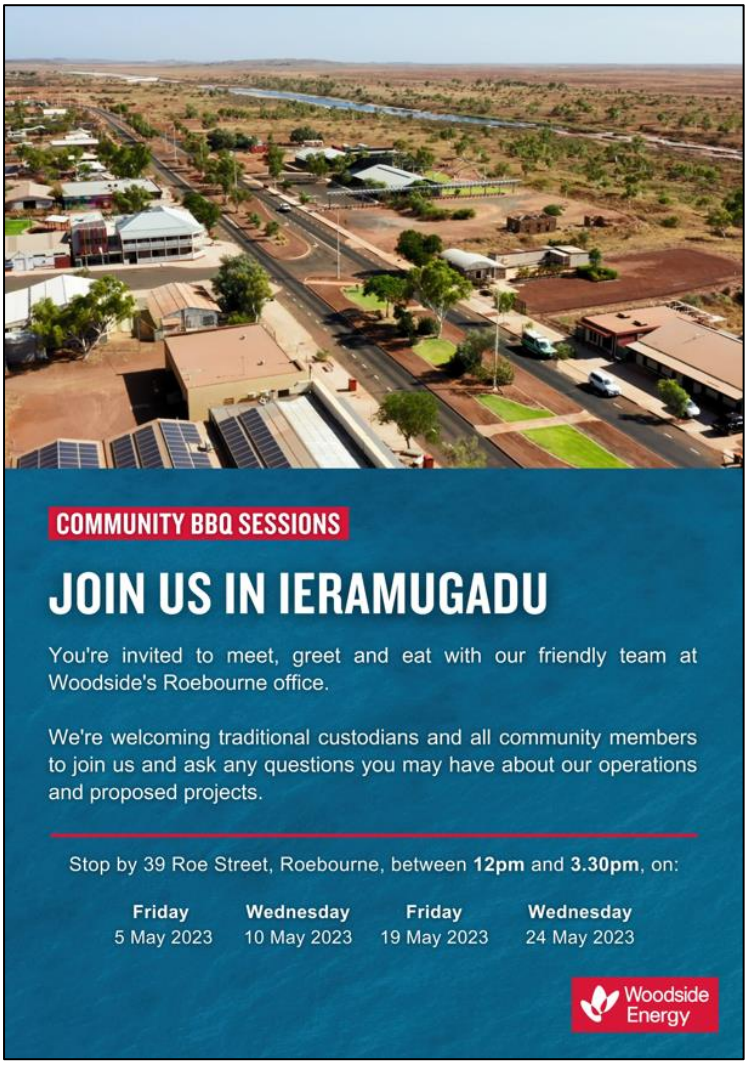
Posters for Community Information Sessions, Roebourne – 5, 10, 19 and 24 May 2023

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



1.93.2 Community information sessions – Roebourne – 22 June and 19 July

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:

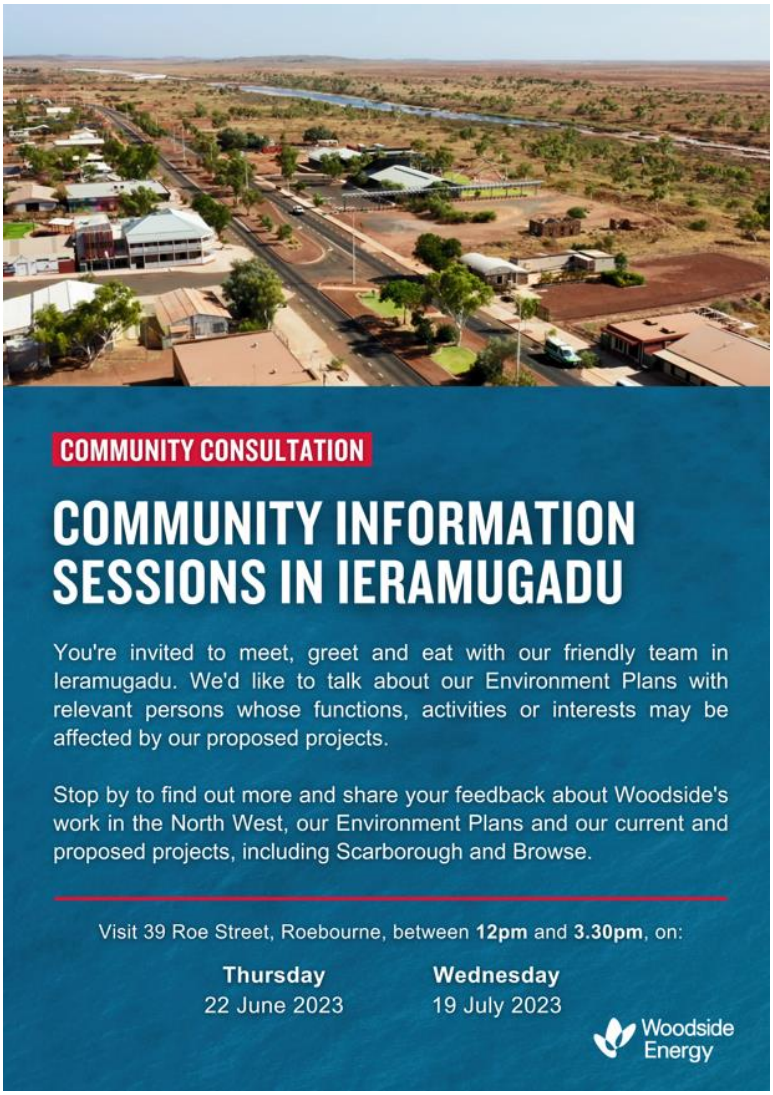
- Ngarluma and Yindjibarndi Foundation Ltd (NYFL)
- Yinjaai-Barni Art Group
- Yandi for Change
- NYFL
- WY Program
- Roebourne Library
- Yindjibarndi Ranger office
- Ashburton Aboriginal Corporation
- A poster was also put up at Cossack.

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.

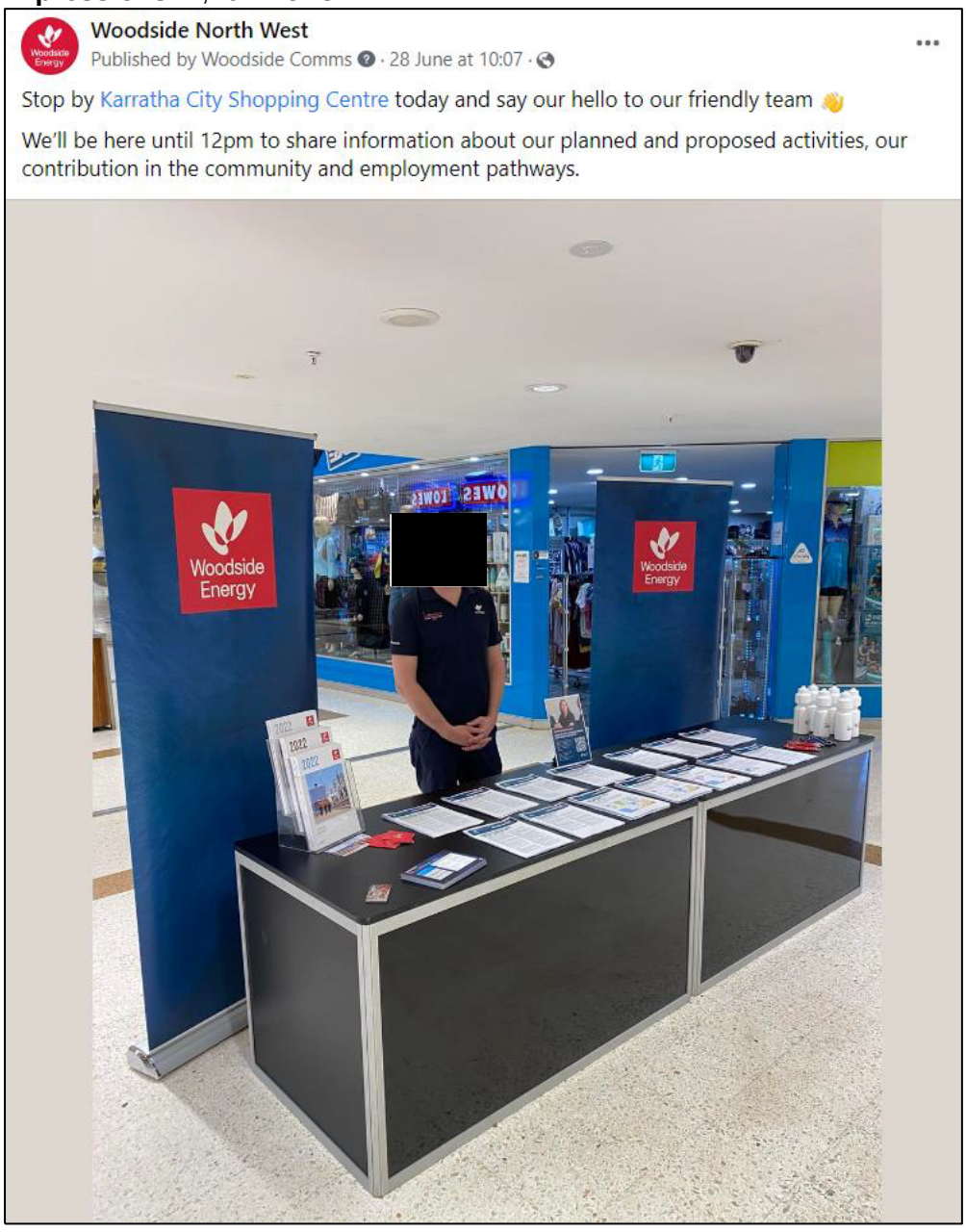


1.93.3 Community information sessions – Karratha – 28 and 29 June 2023

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.

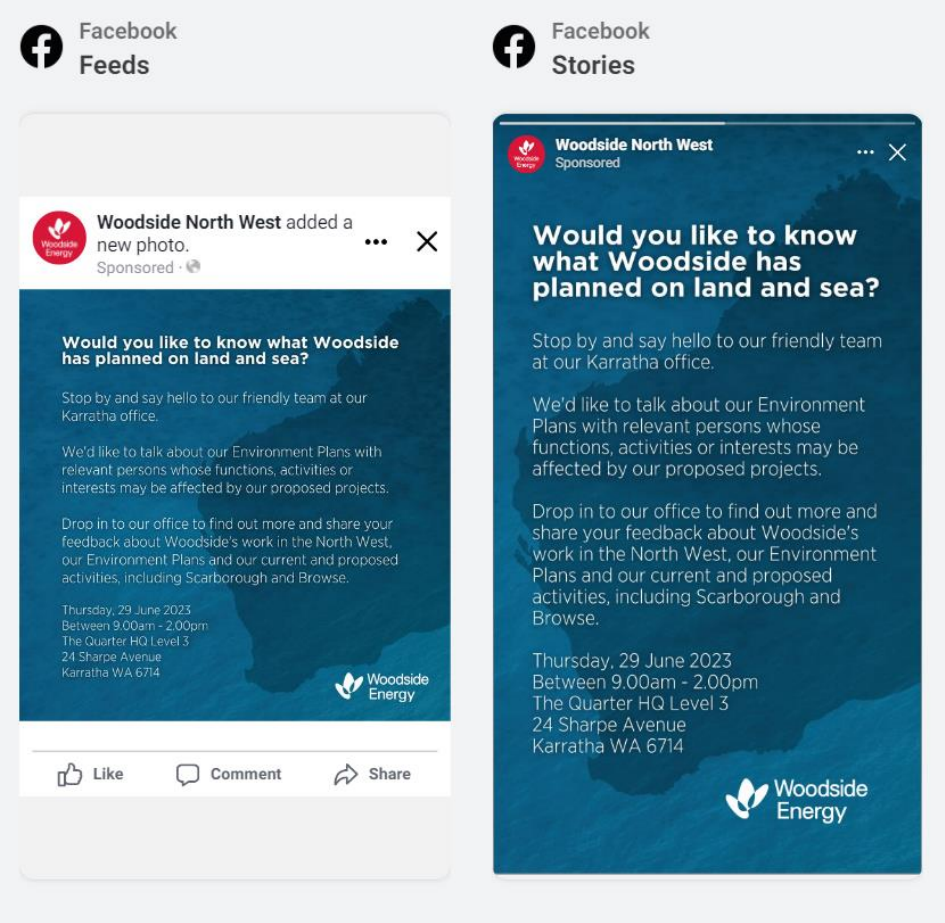
Platform/channel: Woodside North West (Facebook)
Date: 28 June 2023
Reach: 1,464 viewers
Impressions: 1,464 views



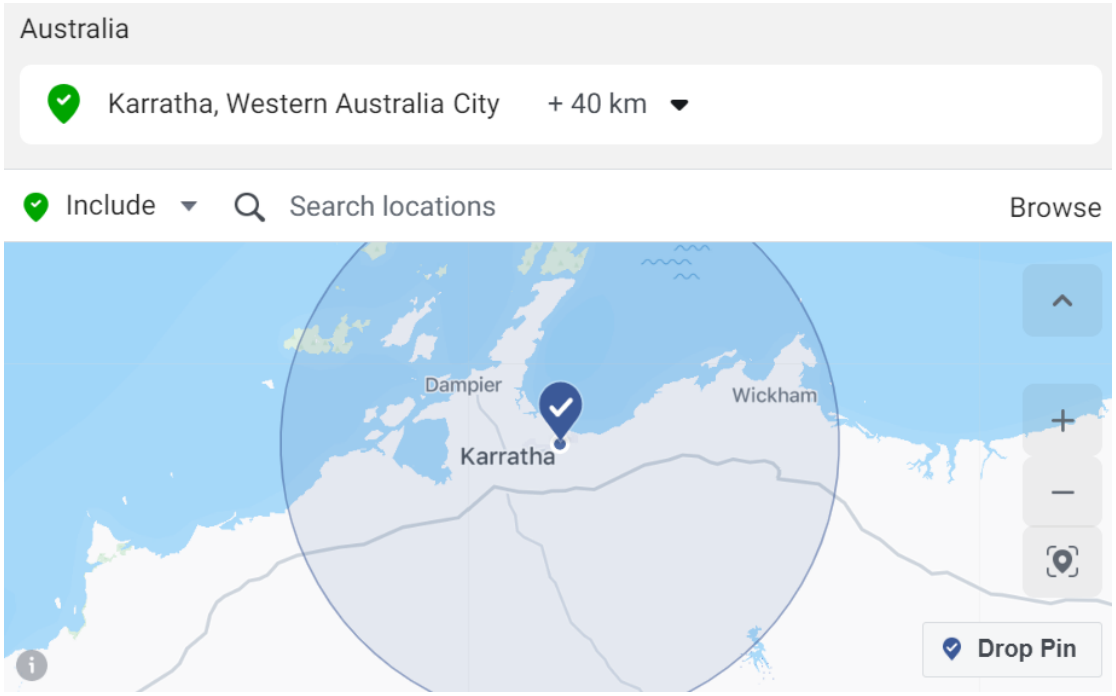
Karratha Community Information Session Facebook Post – 29 June 2023

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

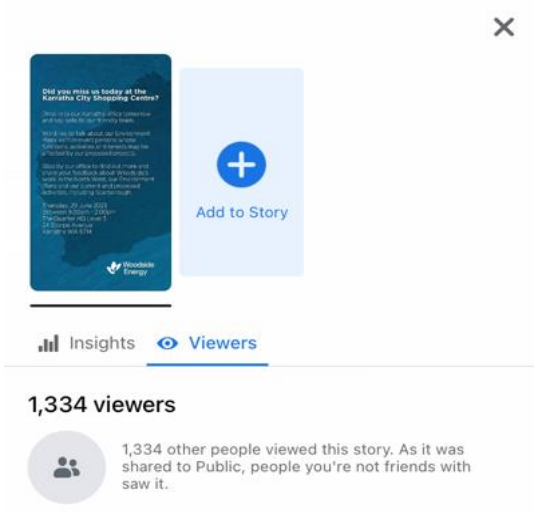


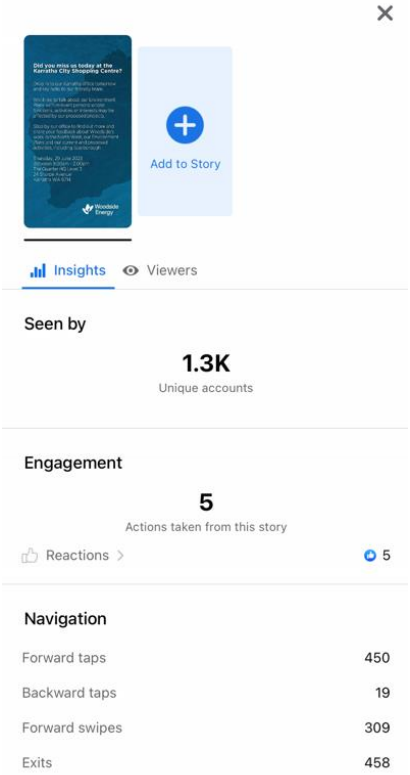
Geotargeting: 40 km radius around Karratha



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





Karratha Community Information Session – Newspaper advertisement

Pilbara News − 28 June 2023

Pilbara NEWS
Wednesday, June 28, 2023
pilbaranews.com.au

Rio reaches $1b Range milestone


Rio Tinto iron ore chief executive Simon Trott and China Baowu vice-president Hou Angui.

CHEYANNE ENCISO

Rio Tinto has spent $1 billion with WA businesses as it progresses the development of its Western Range joint venture with China Baowu Steel Group.

Simon Trott, iron ore chief executive of Rio Tinto, said the $1b spend marked a considerable milestone.

"Rio Tinto spends billions of dollars with local suppliers across Western Australia and the Pilbara every year, helping support thriving communities across the State by providing local jobs for local people," he said.

The 25 million tonnes-a-year Western Range project will help sustain production of Rio's flagship Pilbara blend product from its existing Paraburdoo mining hub as the Eastern Range project depletes. China Baowu said it was pleased to see the Western Range project progressing smoothly.

Premier Roger Cook said significant projects such as the Western Range reinforced WA as an attractive and secure destination for business and investment.

"I want to commend Rio Tinto and Baowu on this latest project milestone and acknowledge their efforts in investing in WA to ensure WA businesses and workers benefit most," he said.

Rio in March reported it had spent $8.6b with more than 2400 WA and Indigenous businesses in 2022 as part of its local buying program.

The figure included $618m with Pilbara-based businesses, $504m with Indigenous companies across WA, and $439m with businesses run by traditional owners.

1.93.4 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:
  a. Update of Woodside activities, and employment and contracting opportunities;
  b. 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

Environment Plan Banner

Pilbara News Advertisement – 2 August 2023

1.93.5 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. 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:

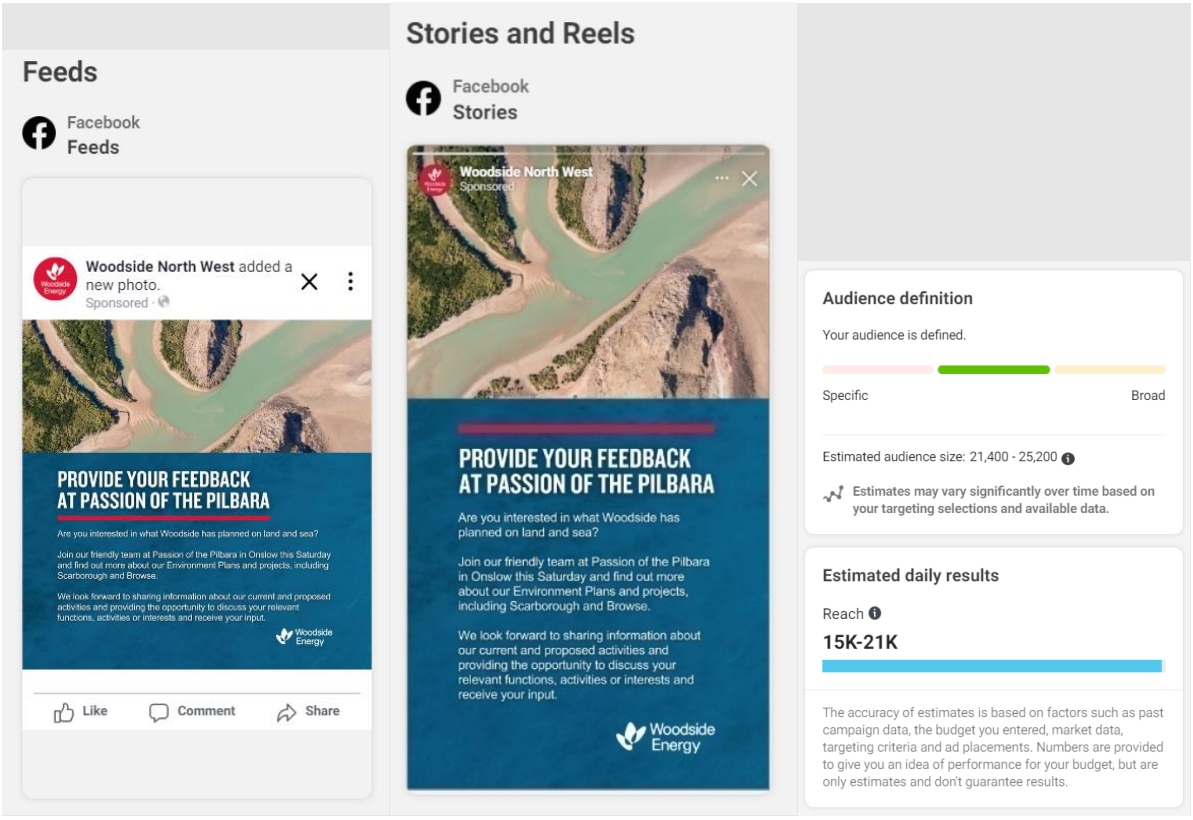
     - Support for the project and dissatisfaction about protester activity against the project
     - Number of jobs during construction
     - Location of activities (noting activity was not off the coast of Onslow).

  - 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

Woodside North West Facebook Page −17 August 2023

Woodside Facebook Post and Story – 17 August 2023



Woodside Marquee

Woodside Information Sheets

1.93.6 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

Pilbara NEWS
Wednesday, September 13, 2023
pilbaranews.com.au
NEWS 5

Mayor runs again as candidates put forward pitches

City of Karratha Mayor Peter Long. Picture: Tom Zaunmayr

DANIEL SPENCE

Nominations have closed for the 2023 Karratha mayoral and councillor elections, with the list of candidates running to be the city's next mayor being released.

Peter Long — who has been in the position since 2011 — will be running again and said, if re-elected, he would continue to provide Karratha with intelligent, safe and inclusive leadership.

"I am a full-time mayor, always able to receive you and your ideas," he said. "I love the Pilbara and our community."

Regional Development Australia Pilbara chief executive and former local government minister Tony Simpson is also running for mayor.

His vision is to join forces with State and Federal entities to progress childcare, health and housing solutions.

"I would work to draw major brand investments in retail and leisure to provide more options for residents. Identify land for a foreshore entertainment hub and infuse Karratha with festivals and quality entertainment," he said.

Brenton Johannsen — who ran for the seat of Durack at the recent Federal election under One Nation — said he would donate the entire mayoral allowance to charity.

"I will be a committed full-time mayor, my goal is to visit all businesses and resident groups on a regular basis to touch base and discuss any new issues," he said.

Mr Johannsen said his aims would be neighbourhood safety, more opportunities for locals, ratepayer discounts for local facilities, moving airport smokers' areas, and eco-friendly weed management.

As a sitting councillor, radio announcer, parent and former local business owner mayoral candidate Pablo Miller said he had got to know the people of Karratha.

"As your mayor, I will continue to not only listen but be a strong advocate for our community," he said. Mr Johannsen said he was interested in expanding opportunities for young people and families, growing local and cultural tourism, supporting businesses and bolstering mental health services.

The owner of the North West Brewing Co Daniel Scott has a vision as mayor to grow Karratha's economy.

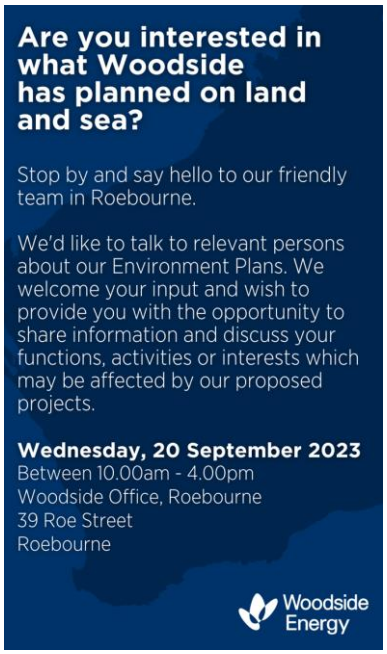
His plan is to create an education and sporting precinct between the TAFE and St Luke's College, with accommodation for secondary and tertiary students.

His plans also include a new home for the Pilbara Universities Centre, and a sporting hub for rugby, soccer, hockey and gymnastics.

Those running for council include Daniel Scott, Kieran Dart, Wayne Mothershaw, Mr Johannsen, Sarah Roots, George Levissianos, Bradley Davey, Mr Simpson, James Corea, Joseph Almonte and Geoff Harris.

Elections will be held for the four vacancies on October 21st.

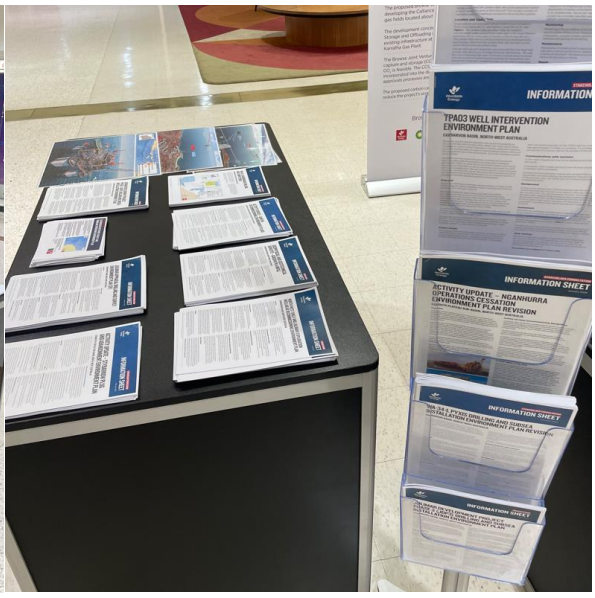
Social Media – 6 to 16 September 2023

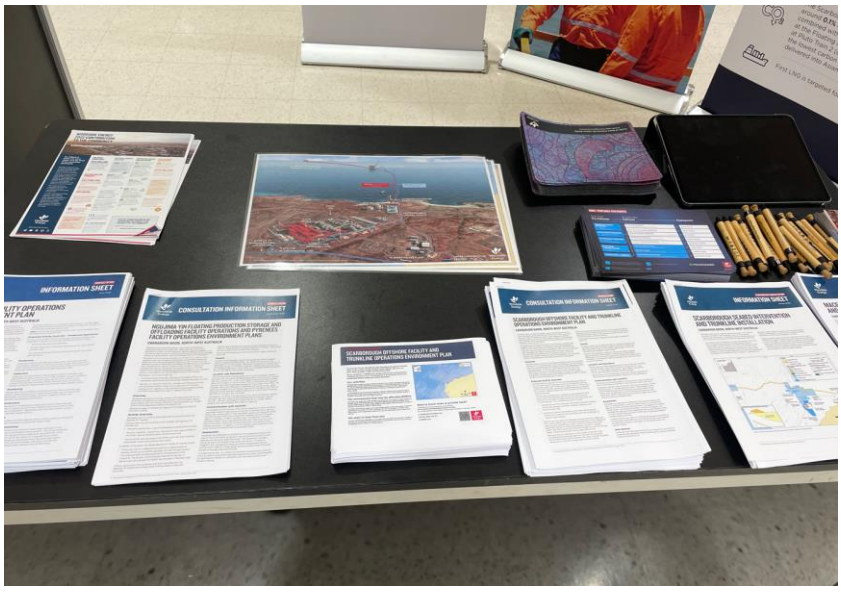


Social media reach:

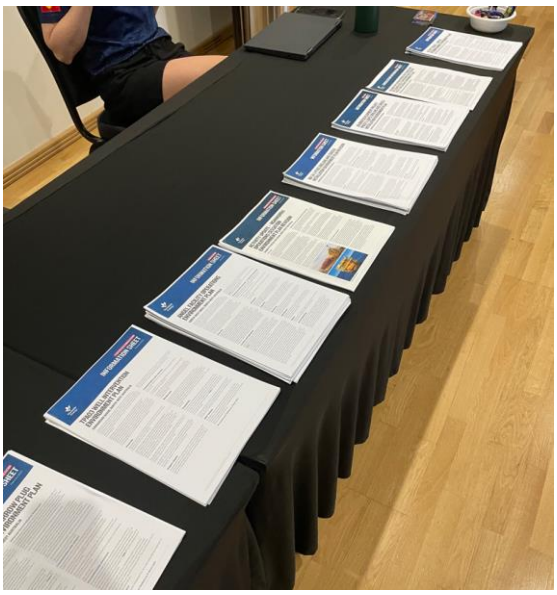
Location	Reach
Karratha	22,095
Port Hedland	26, 487
Roebourne	22,134

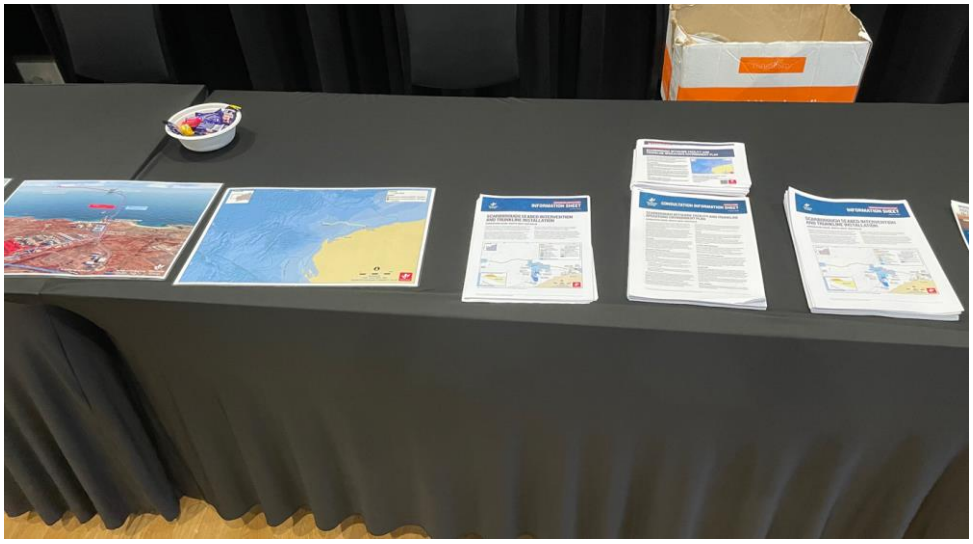
Karratha Shopping Centre, Karratha – 18 September 2023



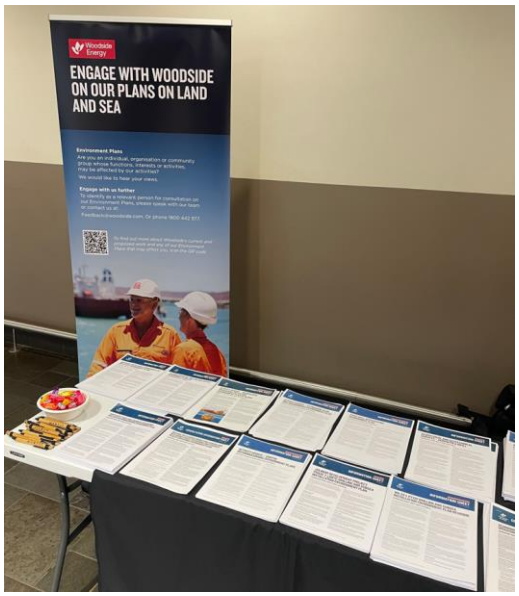


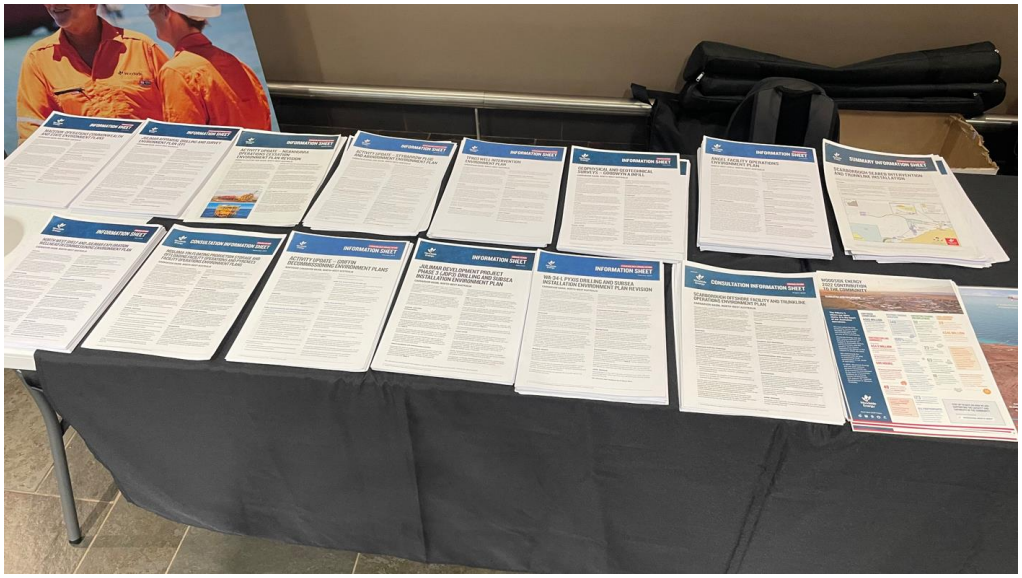
Red Earth Arts Precinct, Karratha – 18 September 2023



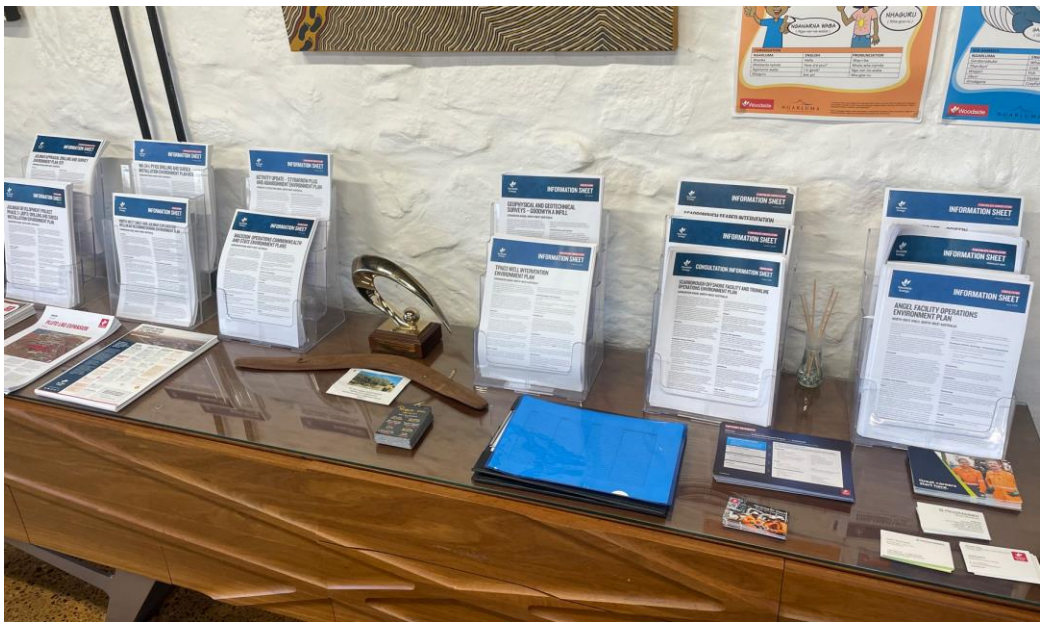


South Hedland Square, Port Hedland – 19 September 2023



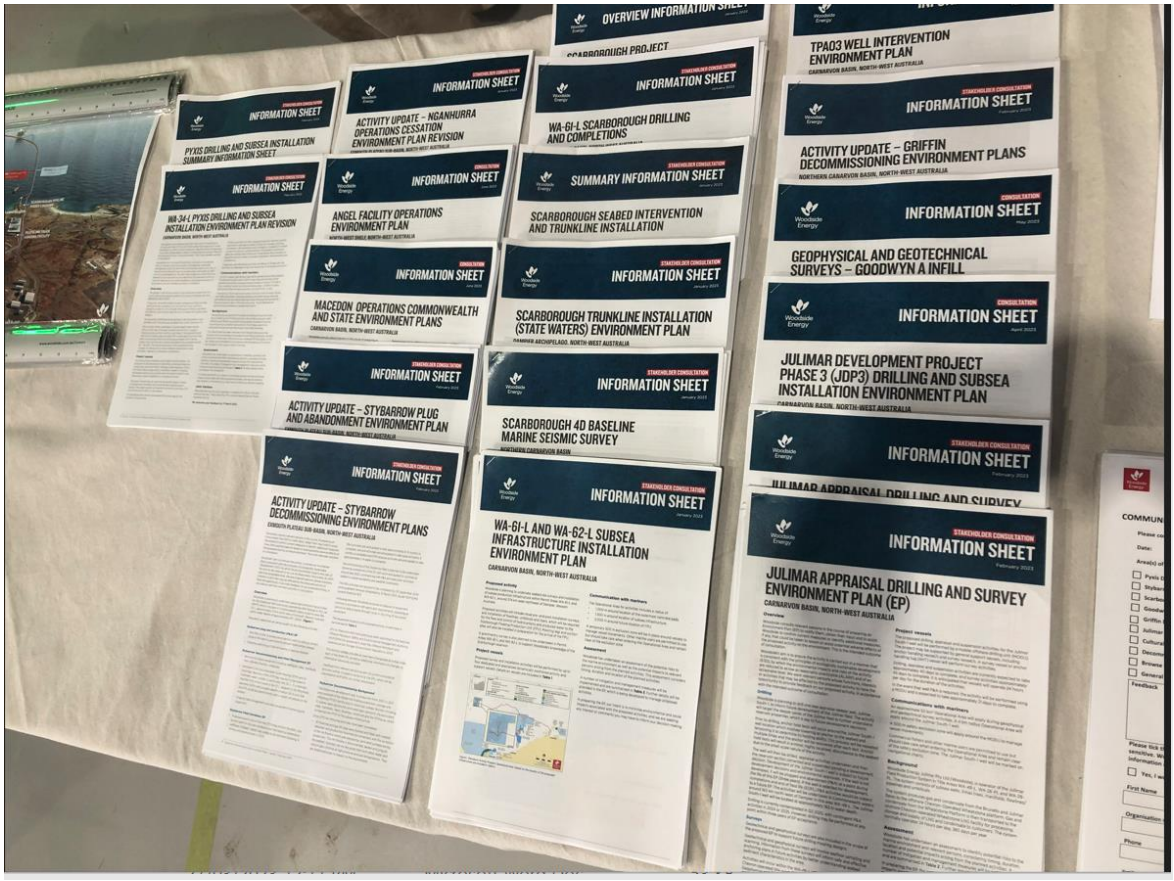


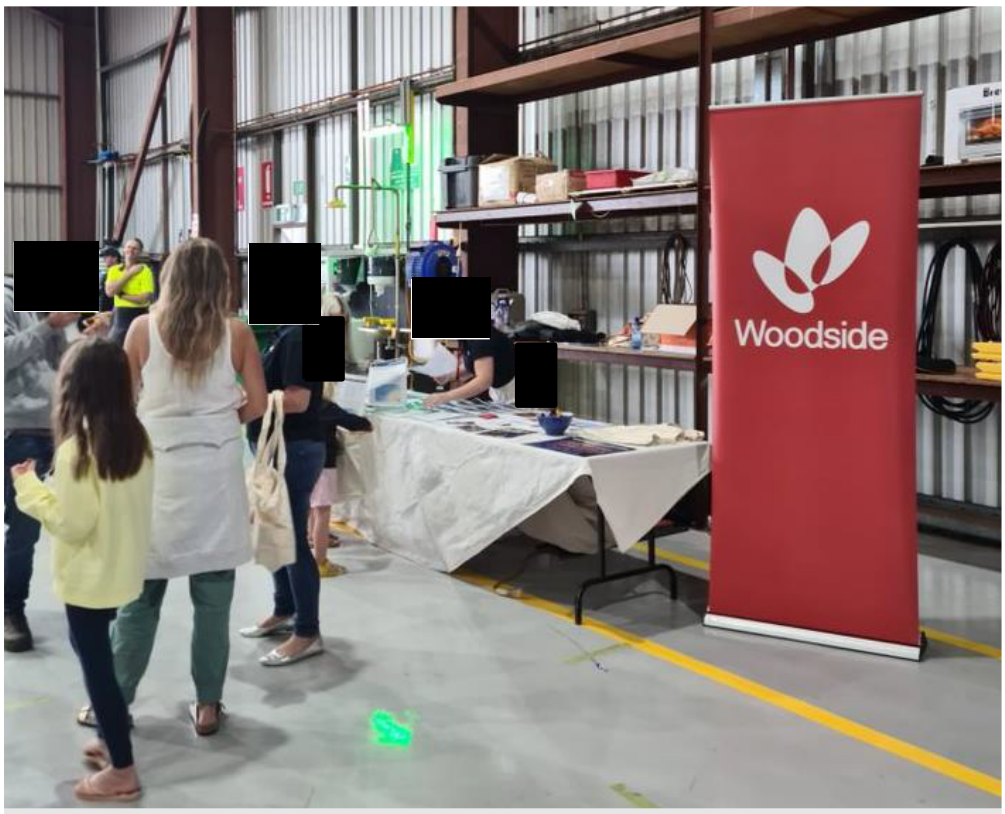
Woodside Office, Roebourne – 20 September 2023



1.94 Gascoyne region community activities

1.94.1 Community information session – Exmouth – 17 June 2023





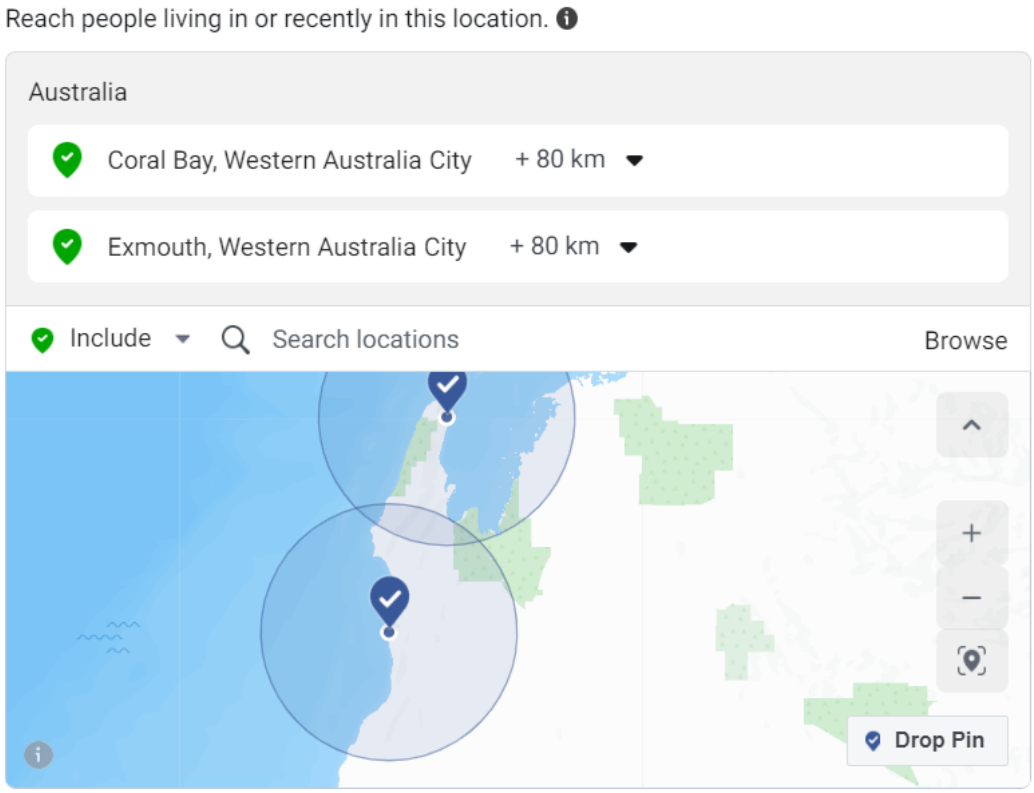
- Woodside supported the PHI Helicopters community open day at the Exmouth Aerodrome on Saturday 17 June (10am – 1pm).
- Members of Woodside's Corporate Affairs, Environment and Scarborough Project teams actively engaged the community to discuss proposed EPs.
- Approximately 300 community people attended 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



1.95 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). Revision 0 of the **D&C EP** has been available on the NOPSEMA website since November 2021 (https://info.nopsema.gov.au/environment_plans/565/show_public). Revision 0 of the **Seismic EP** has been available on the NOPSEMA website since 18 October 2021 (https://info.nopsema.gov.au/environment_plans/559/show_public).

Woodside is preparing to submit a further revision of the SITI EP, D&C EP and Seismic EP to NOPSEMA with recent changes. We confirm the activities, location and duration described in these revisions remain the same, with no material changes.

The 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 or 1800 442 977 by **26 February 2023**.

Activity:

	SITI EP	**D&C EP**	**Seismic EP**

Summary:	Seabed intervention and trunkline installation activities in Commonwealth waters associated with the installation of a carbon steel pipeline (Trunkline) that runs approximately 430 km from the from the proposed offshore Scarborough Floating Production Unit (FPU) to the existing onshore Pluto LNG facility. This EP covers activities for the approximately 400 km section of the Trunkline in Commonwealth waters. A separate EP covers activities in State waters.	Drilling and Completions activities in Commonwealth waters, including drilling and subsea tree installation activities for eight planned development wells and the potential for a further two contingency wells. Woodside may need to intervene, workover or re-drill the wells. Subsea inspection, monitoring, maintenance and subsea infrastructure repair activities may also be undertaken.	4D baseline seismic survey over the Scarborough and Jupiter fields. The proposed survey will be conducted over areas where seismic data has previously been acquired. The objective for the proposed activity is to acquire a new 3D seismic survey data that will provide the baseline for future 'time lapse' reservoir surveillance (or technically termed 4D baseline survey).
Location:	Activities run from the Scarborough FPU in WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, to the State waters boundary at the northern extent of the Dampier Archipelago.	Activities are located in Permit Area WA-61-L in Commonwealth waters, about 374 km west-northwest of Dampier, Western Australia. Approximate development well locations for the eight planned wells are provided in Table 2 of the attached D&C EP Consultation Information Sheet.	The seismic survey will cover the Scarborough and Jupiter fields within Commonwealth waters, located in the Exmouth Plateau, approximately 214 km north west of Exmouth, Western Australia.
Approx. Water Depth (m):	~ 32 m – 1400 m	~ 900 m – 955 m	~ 800 m – 1,150 m
Earliest commencement date:	**Seabed intervention activities**: Mid 2023 pending approvals, vessel availability and weather constraints. **Trunkline installation activities:** Q4 2023 pending successful completion approvals, vessel availability and weather constraints.	Activities planned to commence in H2 2023 pending approvals, vessel availability and weather constraints.	Activities planned to commence in H1 2023 pending approvals, vessel availability and weather constraints.
Estimated duration:	~24 months across multiple campaigns	~50 – 60 days per well	~55 – 70 days

Distance from Operational Area to nearest town	The closest Commonwealth section of the trunkline on the State waters boundary is~32 km north-west of Dampier.	~244 km north-northwest of Exmouth, 374 km west-northwest of Dampier.	~214 km north-west of Exmouth.
Distance from Operational Area to nearest marine park	• The trunkline corridor runs through the Montebello Marine Park – Multiple Use Zone (Cwth), close to the northern boundary • Offshore borrow ground located to the north of the Dampier Marine Park Habitat Protection Zone	• ~83 km north of the Gascoyne Marine Park (Cwlth) • ~206 km north-west of Montebello Marine Park (Cwlth) • ~208 km north-northwest of Ningaloo Marine Park (Cwlth)	• ~46 km north of Gascoyne Marine Park Multiple Use Zone
Operational Area and Exclusion Zones	Temporary 500 m exclusion zones will apply around applicable seabed intervention and the Trunkline installation vessels. The Operational Areas are: • Trunkline Project Area: The proposed trunkline from around KP 32 (Commonwealth – State Boundary) to KP 435 and 1.5 km either side of the proposed trunkline centreline. • Offshore Borrow Ground Project Area: Offshore Borrow Ground located in Commonwealth waters.	A petroleum safety zone of 500 m will be in place around the MODU and installation vessel for the duration of activities. The Operational Areas are: • DP MODU/drillship – 500 m radius from each well centre • Moored MODU – 4,000 m radius from each well centre. • Installation vessel – 1,500 m radius around subsea locations	• Three nautical mile radius safe navigation area around the seismic vessel, streamers and tail buoys during seismic operations • Marine users are requested to avoid this area during the survey to ensure the safety of the seismic vessel and third-party vessels • Refer to Table 3 of the attached Seismic EP Consultation Information Sheet for detailed survey location points
Vessels:	**Seabed intervention:** • Trailing suction hopper dredge • Offshore construction vessel • Rock Installation Vessel • Survey vessels • Support vessels • Fuel bunkering vessels **Trunkline installation:** • Pipelay Vessel multi-joint operation	• Installation vessels for installing the subsea infrastructure • Light well intervention vessel as an option for well intervention, subsea hardware installation or contingent activities • Support vessels including installation vessel(s), anchor handling vessel(s) and general supply/support vessels	• A purpose-built seismic vessel • One support vessel • A potential chase vessel, and • An additional spotter vessel (May to June)

	• Shallow Water Lay Barge • Anchor handling vessel/tug • Pipe supply vessels • Offshore construction vessel • Survey vessels • Fuel bunkering vessels		

Feedback:

If you have any issues or concerns with these activities, or any other issues relevant to this location, please respond to Woodside at:
Feedback@woodside.com.au or 1800 442 977.

Your feedback and our response will be included in our Environment Plan which will be submitted to submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth).

Please let us know if your feedback for any of the activities proposed under an Environment Plan is sensitive and we will make this known to NOPSEMA upon submission of the Environment Plan to ensure this information remains confidential to NOPSEMA.

Please provide your views by **26 February 2023**.

Regards,

APPENDIX A

FEEDBACK	**SITI EP**	**D&C EP**	**Seismic EP**

APPENDIX G. DEPARTMENT OF ABORIGINAL AFFAIRS HERITAGE SEARCH RESULTS

Aboriginal Heritage Inquiry System

List of Registered Aboriginal Sites

Search Criteria

No Registered Aboriginal Sites in Custom search area - Polygon - 114.711346061272°E, 20.8366319386942°S (GDA94) : 113.887371451897°E, 21.6557914540822°S (GDA94) : 113.392986686272°E, 22.2569669067452°S (GDA94) : 112.821697623772°E, 22.9163008856403°S (GDA94) : 113.019451530022°E, 21.0213387070791°S (GDA94) : 114.711346061272°E, 20.8366319386942°S (GDA94)

Disclaimer

The *Aboriginal Heritage Act 1972* preserves all Aboriginal sites in Western Australia whether or not they are registered. Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at AboriginalHeritage@dplh.wa.gov.au and we will make every effort to rectify it as soon as possible.

Copyright

Coordinate Accuracy

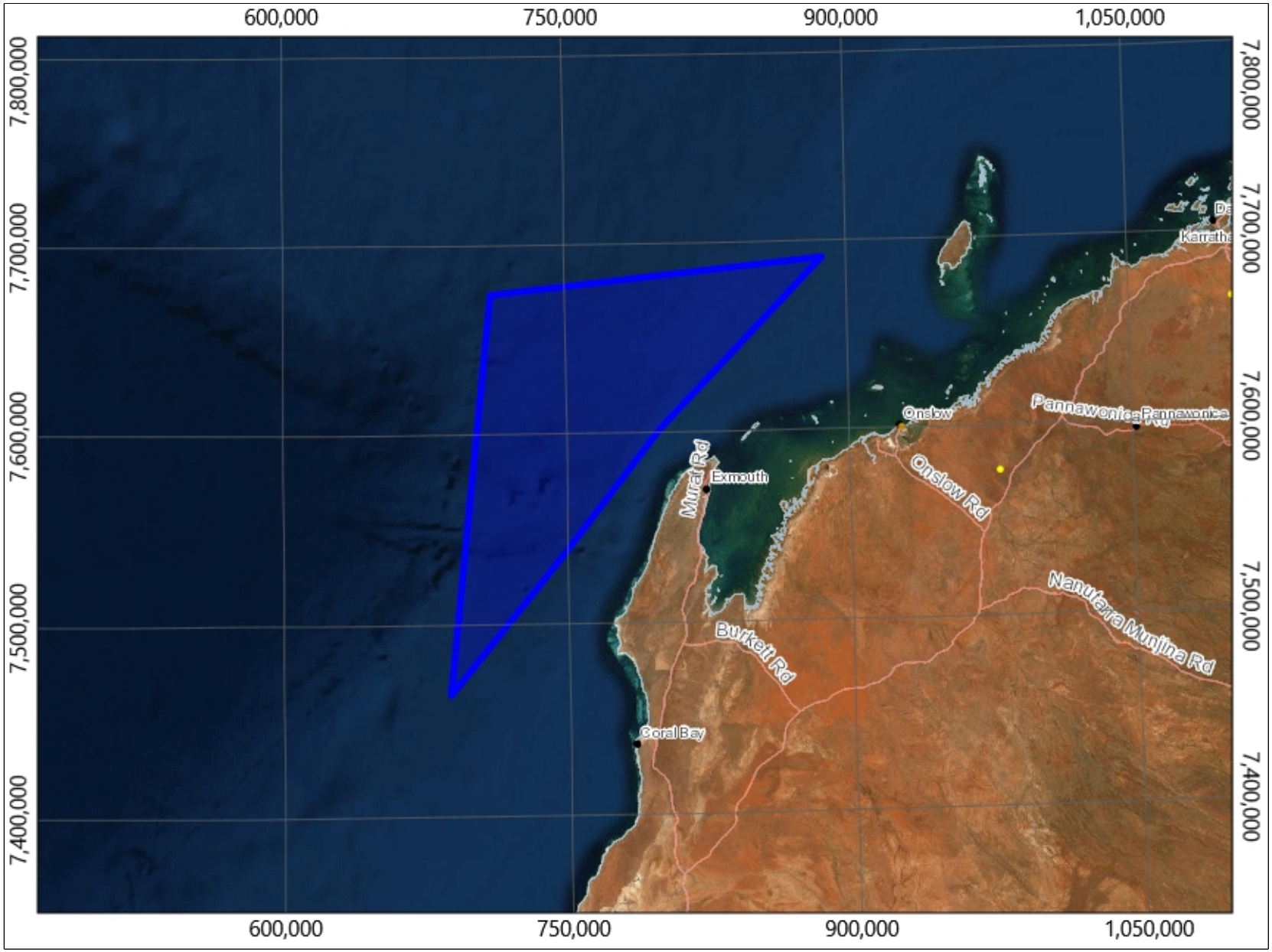
Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

Department of Planning, Lands and Heritage

Aboriginal Heritage Inquiry System

Map of Registered Aboriginal Sites

For further important information on using this information please see the Department of Planning, Lands and Heritage's Disclaimer statement at https://www.dplh.wa.gov.au/about-this-website



Legend

- Registered Aboriginal Site
- Search Area
- Town
- Road
- River
- Local Government Authority

108.59 kilometres

Map Scale 1 : 3,290,000

MGA Zone 49 (GDA94)

APPENDIX H. OIL POLLUTION FIRST STRIKE PLAN

Scarborough Drilling and Completions Oil Pollution First Strike Plan

Corporate HSE
Hydrocarbon Spill Preparedness

October 2023
Revision 0c

TABLE OF CONTENTS

SCARBOROUGH DRILLING & COMPLETIONS OIL POLLUTION FIRST STRIKE PLAN

SPILL FROM FACILITY INCLUDING SUBSEA INFRASTRUCTURE	**LEVEL 1[1]**	
	CONTROL AGENCY:	**WOODSIDE**
	INCIDENT CONTROLLER (IC):	**Person In Charge (PIC) with support from Onshore Team Leader (OTL)**
	LEVEL 2 & 3	
	CONTROL AGENCY:	**WOODSIDE**
	INCIDENT CONTROLLER:	**Corporate Incident Management Team (CIMT) DUTY MANAGER**
SPILL FROM FACILITY ENTERING STATE WATERS	**LEVEL 1**	
	CONTROL AGENCY:	**WOODSIDE**
	INCIDENT CONTROLLER:	**CIMT DUTY MANAGER**
	LEVEL 2 & 3	
	CONTROL AGENCY:	**Department of Transport (DoT)**
	INCIDENT CONTROLLER:	**DoT IC**
SPILL FROM VESSEL	**LEVEL 1**	
	CONTROL AGENCY:	**AMSA**
	INCIDENT CONTROLLER:	**VESSEL MASTER (with response assistance from Woodside)**
	LEVEL 2 & 3	
	CONTROL AGENCY:	**Australian Marine Safety Authority (AMSA)**
	INCIDENT CONTROLLER:	**AMSA (with response assistance from Woodside)**

[1] See Table A - 1 below 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 - 1: 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) activated. Use of CIMT support may be required.	Handover of Control from Onsite IC Corporate Incident Management Team (CIMT) Duty Manager (DM) in Peth.	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 the spill impacts State waters/ shorelines and is a Level 1, Woodside will remain the Control Agency. If the spill is a Level 2 or 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

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 Appendix A.

<table>
<tr><td>ALL INCIDENTS</td><td colspan="2">Notify the Woodside Communication Centre (WCC) on:
[redacted]

Incident Controller or delegate to make relevant notifications in Table 1-1 of this Oil Pollution First Strike Plan.</td></tr>
<tr><td rowspan="2">LEVEL 1</td><td>FACILITY INCIDENT</td><td>VESSEL INCIDENT</td></tr>
<tr><td>Coordinate pre-identified tactics in Table 2-1 of this Oil Pollution First Strike Plan.
Remember to download each Operational Plan.</td><td>Upon agreement with AMSA: Coordinate pre-identified tactics in Table 2-1 of this Oil Pollution First Strike Plan.
Remember to download each Operational Plan.</td></tr>
<tr><td colspan="2">If the spill escalates such that the site cannot manage the incident, inform the WCC on [redacted] and escalate to a level 2/3 incident.</td></tr>
<tr><td rowspan="4">LEVEL 2/3</td><td>FACILITY INCIDENT</td><td>VESSEL INCIDENT</td></tr>
<tr><td>Handover control to CIMT.</td><td>Handover control to AMSA and stand up CIMT to assist.</td></tr>
<tr><td>Commence quick revalidation of the recommended strategies on Table 3-1 taking into consideration seasonal sensitivities and current situational awareness.

Commence validated strategies.</td><td>If requested by AMSA:
Commence quick revalidation of the recommended strategies on Table 3-1 taking into consideration seasonal sensitivities and current situational awareness.

Commence validated strategies.</td></tr>
<tr><td>Create an Incident Action Plan (IAP) for all ongoing operational periods.
<u>The content of the IAP should reflect the selected response strategies based on current situational awareness.</u>

For the full detailed pre-operational Net Environmental Benefit Analysis (NEBA) see here or Appendix A of the OSPRMA</td><td>If requested by AMSA:
Create an IAP for all ongoing operational periods.
<u>The content of the IAP should reflect the selected response strategies based on current situational awareness.</u>

For the full detailed pre-operational NEBA see here or Appendix A of the OSPRMA</td></tr>
</table>

1. NOTIFICATIONS (ALL LEVELS)

The Incident Controller or delegate must ensure the below notifications (Table 1-1) are completed within the designated timeframes.

For other environmental notifications required refer to the Scarborough Drilling and Completions Environmental Plan.

Table 1-1: Immediate Notifications

Notification timing	Responsibility	Authority/ Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
Notifications to be made for ALL LEVELS of spill ***(For spills from a vessel the following notifications must be undertaken by a WEL representative).***							
Immediately	Vessel Master	Woodside Communication Centre (WCC)	Duty Manager	[redacted]	Verbally notify WCC of event and estimated volume and hydrocarbon type.	Verbal	
Within 2 hours	Woodside Site Rep (WSR)	National Offshore Petroleum Safety Environmental Management Authority (NOPSEMA[1])	Incident notification office	[redacted]	Verbally notify NOPSEMA for spills >80L. Record notification using Initial Verbal Notification Form or equivalent and send to NOPSEMA as soon as practicable (cc to NOPTA and DMIRS).	[redacted]	
Within 3 days	WSR				Provide a written NOPSEMA Incident Report Form as soon as practicable (no later than 3 days after notification) (cc to NOPTA and DMIRS) NOPSEMA: [redacted] NOPTA: [redacted] DMIRS: [redacted]	[redacted]	
As soon as practicable	WSR	Woodside	Environment Duty Manager	As per roster	Verbally notify Duty Environment of event and seek advice on relevant performance standards from EP	Verbal	

[1] Notification to NOPSEMA must be from a Woodside Representative.

Notification timing	Responsibility	Authority/ Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
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 the Karratha supply shed. 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 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	[redacted]	Phone call notification	Verbal	
As soon as practicable	CIMT DM or Delegate	Department of Climate Change, Energy, the Environment and Water (DCCEEW) Director of National Parks	Marine Park Compliance Duty Officer	[redacted]	The Marine Park Compliance Duty Officer is notified in the event of oil pollution within a marine park, or where an oil spill response action must be taken within a marine park, so far as reasonably practicable, prior to response action being taken. This notification should include: • titleholder details • time and location of the incident • proposed response arrangements and locations as per the OPEP • contact details for the response coordinator • confirmation of access to relevant monitoring and evaluation reports when available.	Verbal	

Notification timing	Responsibility	Authority/ Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
As soon as practicable	Public Information	Relevant persons/ organisations	To be determined	To be determined	Should it be identified that additional persons such as, but not limited to, commercial fishers or tourism operators may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for Scarborough Drilling and Completions. Relevant persons/ organisations will be re-assessed throughout the response period.	Verbal initially	
As soon as practicable	Public Information	Relevant cultural authorities	To be determined	To be determined	Should it be identified that relevant cultural authorities may be affected, Woodside would, at the relevant time, engage with these parties as appropriate and in alignment with the Oil Spill Preparedness and Response Mitigation Assessment (OSPRMA) for Scarborough Drilling and Completions. Relevant cultural authorities will be re-assessed throughout the response period.	Verbal initially	
Additional notifications to be made ONLY if spill is from a vessel							
Without delay as per protection of the Sea Act, part II, section 11(1)	Vessel Master	Australian Maritime Safety Authority (AMSA)	Response Coordination Centre (RCC)	[redacted]	Verbally notify AMSA RCC of the hydrocarbon spill. Follow up with a written Marine Pollution Report (POLREP) as soon as practicable following verbal notification.	[redacted]	
ADDITIONAL LEVEL 2/3 NOTIFICATIONS							
As soon as practicable	CIMT DM or Delegate	AMOSC	AMOSC Duty Manager	[redacted]	Notify AMOSC that a spill has occurred and follow-up with an email from **CIMT Leader/ CIMT Deputy Leader/ IMT IC/ CMT Adviser/ CMT Leader** to formally activate AMOSC. Determine what resources are required consistent with the AMOSPlan and detail in a Service Contract that will be sent to Woodside from AMOSC upon activation.	[redacted]	

Notification timing	Responsibility	Authority/ Company	Name	Contact Number	Instruction	Form/ Template	Mark Complete (✓)
As soon as practicable	CIMT DM or Delegate	Oil Spill Response Limited (OSRL)	OSRL Duty Manager	[redacted]	Contact OSRL duty manager and request assistance from technical advisor in Perth. Send the completed notification form to OSRL as soon as practicable. For mobilisation of resources, send the Mobilisation Form to OSRL as soon as practicable. The mobilisation form requires to be signed by a nominated callout authority from Woodside.	Notification: [redacted] Mobilisation: [redacted]	
As soon as practicable	CIMT DM or Delegate	Marine Spill Response Corporation (MSRC)	MSRC Response Manager	[redacted]	Activate the contract with MSRC (in full) for the provision of up to 30 personnel depending on what skills are required. Please note that provision of these personnel from MSRC are on a best endeavours basis and are not guaranteed.	Verbal	

2. 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 Drilling and Completions Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).

Table 2-1: Level 1 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	Dry Gas					
Monitor and evaluate – tracking buoy (OM02)	Yes	N/A	If a vessel is on location, consider the need to deploy the oil spill tracking buoy. If no vessel is on location, consider the need to mobilise oil spill tracking buoys from the King Bay Supply Base (KBSB) Stockpile. If a surface sheen is visible from the facility, deploy the satellite tracking buoy within two hours.	Operations	**DAY 1:** Tracking buoy deployed within 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 APPENDIX D – Tracking buoy deployment instructions.
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 Appendix C to increase situational awareness.							
Monitor and evaluate – predictive modelling (OM01)	Yes	N/A	Marine Diesel: Undertake initial modelling using the Rapid assessment oil spill tool (Woodside Maps) and weathering fate analysis using ADIOS (or refer to the hydrocarbon information in Appendix A).	Intelligence or Environment	**DAY 1:** Marine Diesel: 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). *Planning Coordinator to download immediately and follow steps*
	Yes	N/A	Send Oil Spill Trajectory Modelling (OSTM) form APPENDIX B, Form 7 to RPS APASA response team (email [redacted]	Intelligence	**DAY 1:** Detailed modelling within four hours of APASA receiving information from Woodside.		
Monitor and evaluate – aerial surveillance (OM02)	Yes	N/A	Marine Diesel: Instruct Aviation Duty Manager to commence aerial observations in daylight hours. Aerial surveillance observer to complete log in [redacted]	Logistics – Aviation	**DAY 1:** Two trained aerial observers. One aircraft available. Report made available to the IMT within two		Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02 of The Operational Monitoring Operational Plan).

Response Techniques	Hydrocarbon Type		Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel	Dry Gas					
					hours of landing after each sortie.		*Planning Coordinator to download immediately and follow steps*
Monitor and evaluate – satellite tracking (OM02)	Yes	N/A	Marine Diesel: The Intelligence Duty Manager should be instructed to stand up KSAT to provide satellite imagery of the spill (email [redacted]).	Intelligence	**DAY 1:** Service provider will confirm availability of an initial acquisition within two hours. Data received to be uploaded into Woodside Common Operating Picture		
Monitor and evaluate – monitoring hydrocarbons in water (OM03)	Yes	N/A	Marine Diesel: Consider the need to mobilise resources to undertake water quality monitoring (OM03).	Planning or Environment	**DAY 3:** Water quality assessment access and capability. Daily fluorometry reports will be provided to 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)	Potentially	N/A	Marine Diesel: Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk (OM04).	Planning or Environment	In agreement with WA DoT, deployment of two specialists for each of the Response Protection Areas (RPA) within 10 days of predicted impacts.		Pre-emptive Assessment of Sensitive Receptors at Risk (OM04 of The Operational Monitoring Operational Plan).
Monitor and evaluate – shoreline assessment (OM05)	N/A	N/A	No shoreline impact predicted				

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 Drilling and Completions 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	Dry Gas					
Monitor and evaluate – tracking buoy (OM02)	Yes	N/A	If a vessel is on location, consider the need to deploy the oil spill tracking buoy. If no vessel is on location, consider the need to mobilise oil spill tracking buoys from the King Bay Supply Base (KBSB) Stockpile. If a surface sheen is visible from the facility, deploy the satellite tracking buoy within two hours.	Operations	**DAY 1:** Tracking buoy deployed within 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 APPENDIX D – Tracking buoy deployment instructions.
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 Appendix C to increase situational awareness.							
Monitor and evaluate – predictive modelling (OM01)	Yes	N/A	Marine Diesel: Undertake initial modelling using the Rapid assessment oil spill tool (Woodside Maps) and weathering fate analysis using ADIOS (or refer to the hydrocarbon information in **Appendix A**). Dry gas: if feasible, existing worst-case discharge modelling will be verified with available real-time data.	Intelligence or Environment	**DAY 1:** Marine Diesel: 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). *Planning Coordinator to download immediately and follow steps*
	Yes	N/A	Marine Diesel: Send Oil Spill Trajectory Modelling (OSTM) form [redacted] to RPS APASA response team (email [redacted]	Intelligence	**DAY 1:** Marine Diesel: Detailed modelling within four hours of APASA receiving information from Woodside.		
Monitor and evaluate – aerial surveillance (OM02)	Yes	N/A	Marine diesel: Instruct Aviation Duty Manager to commence aerial observations in daylight hours. Marine Diesel: Aerial surveillance observer to complete log in [redacted]	Logistics – Aviation	**DAY 1:** Two trained aerial observers. One aircraft available.		Surveillance and Reconnaissance to Detect Hydrocarbons and Resources at Risk (OM02 of The Operational

Response Techniques	Hydrocarbon Type		Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel	Dry Gas					
			Dry gas: overflights only feasible if gas detection indicates it is safe to do so.		Report made available to the IMT within two hours of landing after each sortie.		Monitoring Operational Plan). *Planning Coordinator to download immediately and follow steps*
Monitor and evaluate – satellite tracking (OM02)	Yes	N/A	Marine Diesel: The Intelligence Duty Manager should be instructed to stand up KSAT to provide satellite imagery of the spill (email [redacted]).	Intelligence	**DAY 1:** Service provider will confirm availability of an initial acquisition within two hours. Data received to be uploaded into Woodside Common Operating Picture		
Monitor and evaluate – monitoring hydrocarbons in water (OM03)	Yes	N/A	Marine Diesel: Consider the need to mobilise resources to undertake water quality monitoring (OM03).	Planning or Environment	**DAY 3:** Water quality assessment access and capability. Daily fluorometry reports will be provided to 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)	Potentially	N/A	Marine Diesel: Consider the need to mobilise resources to undertake pre-emptive assessment of sensitive receptors at risk (OM04).	Planning or Environment	In agreement with WA DoT, deployment of two specialists for each of the Response Protection Areas (RPA) within 10 days of predicted impacts.		Pre-emptive Assessment of Sensitive Receptors at Risk (OM04 of The Operational Monitoring Operational Plan).
Monitor and evaluate – shoreline	N/A	N/A	No shoreline impact predicted				

Response Techniques	Hydrocarbon Type		Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel	Dry Gas					
assessment (OM05)							
Surface Dispersant	No	N/A	Not applicable for a diesel spill or dry gas release				
Mechanical Dispersion	No	N/A	Not applicable for a diesel spill or dry gas release				
Containment and Recovery	No	N/A	Not applicable for a diesel spill or dry gas release				
In-situ Burning	No	N/A	Not applicable for a diesel spill or dry gas release				
Shoreline Protection and Deflection	No	N/A	No shoreline impact predicted				
Shoreline Clean Up	No	N/A	No shoreline impact predicted				
Oiled Wildlife Response	Yes	N/A	If oiled wildlife is a potential impact, request and mobilise AMOSC oiled wildlife containers, first strike kits and relevant personnel. Refer to relevant tactical response plan for potential wildlife at risk. Consider whether additional equipment is required from local suppliers.	Logistics and Planning	**DAY 5:** Contracted capability to treat up to an additional 250 individual fauna within a five-day period. Facilities for oiled wildlife rehabilitation are operational 24/7		Oiled Wildlife Response Operational Plan and relevant Tactical Response Plans
Scientific Monitoring (Type II)	Yes	N/A	Notify Woodside science team of spill event.	Environment			Oil Spill Scientific Monitoring Programme – Operational Plan

Response Techniques	Hydrocarbon Type		Pre- Identified Tactics	Responsible	ALARP Commitment Summary	Complete ✓	Link to Operational Plans for notification numbers and actions
	Marine Diesel	Dry Gas					
Well Intervention – SFRT	N/A	Yes	As per Source Control Emergency Response Plan	Operations, Logistics and Drilling and Completions (source control)	**DAY 2:** Remotely Operated Vehicle (ROV) on Mobile Offshore Drilling Unit (MODU) ready for deployment within 48 hours		Subsea First Response Toolkit (SFRT) Operational Plan Source Control Emergency Response Plan
Subsea Dispersant	N/A	N/A	Not applicable for a diesel spill or dry gas release				
Capping Stack	N/A	Yes	Conventional/vertical capping stack deployment with a heavy lift vessel will be attempted at the discretion of the vessel master on the day, giving due regard to the safety of the vessel and crew and consideration to the factors that may influence a safe deployment such as plume and environmental conditions (e.g. wind speed, wave height and current).	Operations, Logistics and Drilling and Completions (source control)	**DAY 16:** Capping stack deployed by a chartered construction vessel.		Subsea First Response Toolkit (SFRT) and Capping Stack Operational Plan Source Control Emergency Response Plan
Relief Well	N/A	Yes	As per Source Control Emergency Response Plan	Operations, Logistics and Drilling and Completions (source control)	**DAY 1:** Identify source control vessel availability within 24 hours. ROV on MODU ready for deployment within 48 hours. MODU mobilised to location		Source Control Emergency Response Plan

4. PRIORITY RECEPTORS

Note: DoT is 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 these locations.

Based on hydrocarbon spill risk modelling results for the Marine Diesel scenario (Credible Scenario-01 (CS-01)) there are no priority protection areas that have the potential to be contacted by hydrocarbon at or above impact threshold levels within 48 hours of a spill. Please note that impact thresholds (10 g/m^2 surface hydrocarbon concentration, 100 g/m^2 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 4-2**).

Table 4-1: Response Thresholds

Surface Hydrocarbon (g/m^2)	Description
>10	Predicted minimum threshold for commencing operational monitoring
50	Predicted minimum floating oil threshold for containment and recovery and surface dispersant application [2]
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 (CS-01)

Receptor	Distance and Direction from Operational Area (km)	Minimum time to shoreline contact (above 100g/m^2) in days	Maximum shoreline accumulation (above 100g/m^2) in m^3	Tactical Response Plans (also available within the Data Directory DRIMS#9542566)
Open Ocean – Commonwealth Waters	0 km (open ocean)	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:

- Gascoyne AMP

Tactical Response plans can be accessed via the Oil Spill Portal - 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 operational area and identifies priority protection areas.

There are no assets in the vicinity of the Scarborough operational area. Modelling results show the slick from diesel will travel only 52 km from the release location. The closest asset, Santos' Ningaloo vision FPSO is approximately 196 km away.

[2] At 50 g/m^2 containment and recovery and surface dispersant application operations are not expected to be particularly effective. This threshold represents a conservative approach to planning response capability and displaying the spread of surface oil.

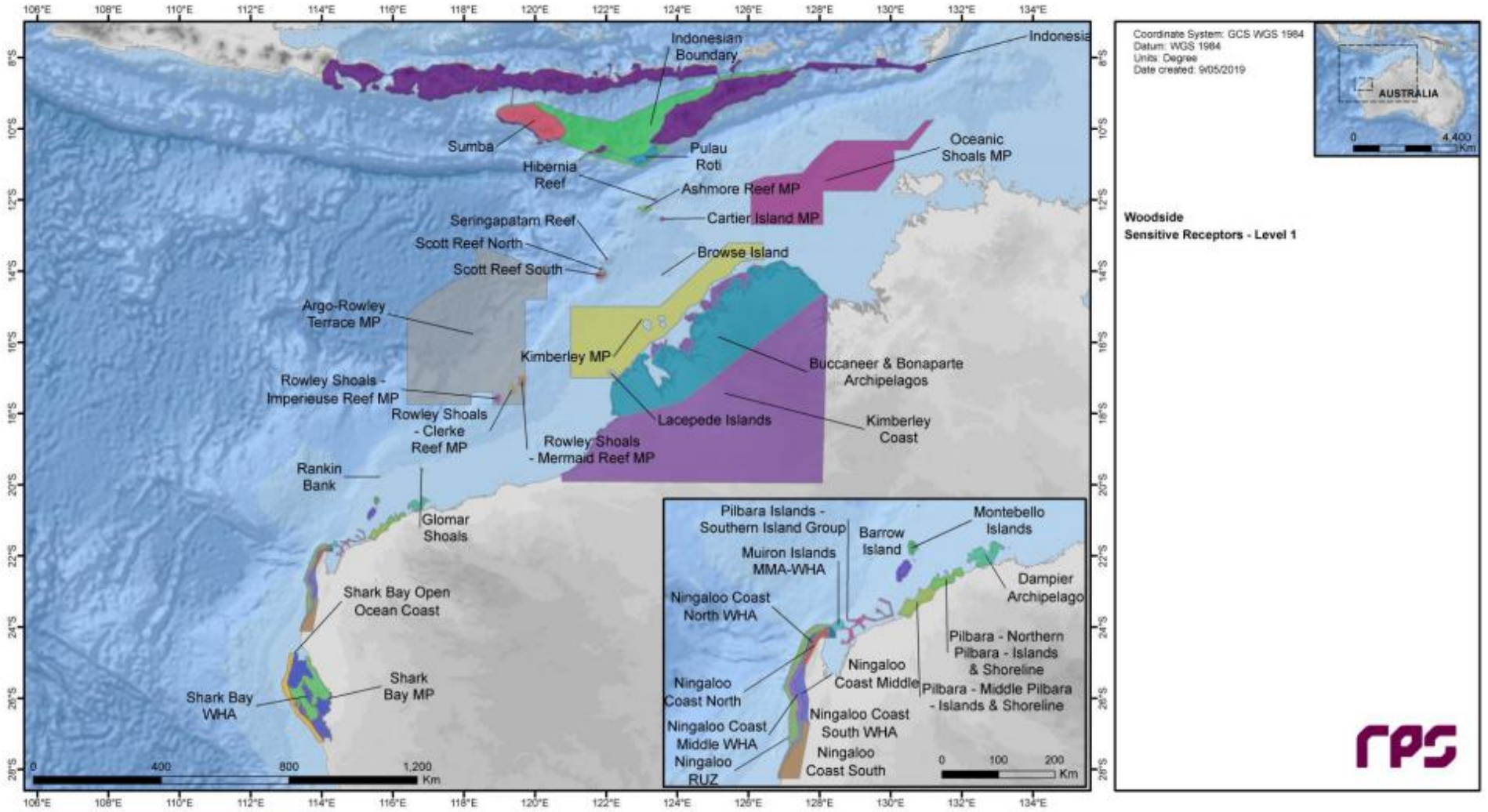


Figure 4-1: Regional Sensitive Receptors – Scarborough Drilling and Completions

5. DISPERSANT APPLICATION

Dispersant is not considered an appropriate response strategy for this activity as described in the Scarborough Drilling and Completions Environment Plan Appendix D (Woodside's Oil Spill Preparedness and Response Mitigation Assessment).

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*
CS-01: Unplanned hydrocarbon release caused by marine vessel collision (Project support vessel)	Marine diesel (API 37.2°)	250 m^3	Diesel Fuel Oil (API 37.2°)
CS-02: Loss of containment caused by refuelling hose failure, coupling failure or operator error	Marine diesel (API 37.2°)	8 m^3	Diesel Fuel Oil (API 37.2°)
CS-03: Loss of well control during drilling of development well	Dry gas	No liquid hydrocarbon	N/A

*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 45% 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.

A series of model weather tests were conducted to illustrate the potential behaviour of marine diesel when exposed to idealised and representative environmental conditions:

- A one-off release of 50 m^3 of marine diesel over 1-hour onto the water surface was modelled under calm wind conditions (constant 5 knots), assuming low seasonal water temperature (27 °C) and average air temperature (25 °C). Slick also subject to ambient tidal and drift currents **(Figure A-1**).
- A one-off release of 50 m^3 of marine diesel over 1-hour onto the water surface was modelled under variable wind conditions (4-19 knots, drawn from representative data files), assuming low seasonal water temperature (27 °C) and average air temperature (25 °C). Slick also subject to ambient tidal and drift currents (**Figure A-2**).

The first case is indicative of cumulative weathering rates under calm conditions that would not generate entrainment, while the second case may represent conditions that could cause a minor degree of entrainment. Both scenarios provide examples of potential behaviour during periods of a spill event, once the oil reaches the surface.

The mass balance forecast for the constant-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 >6m/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.

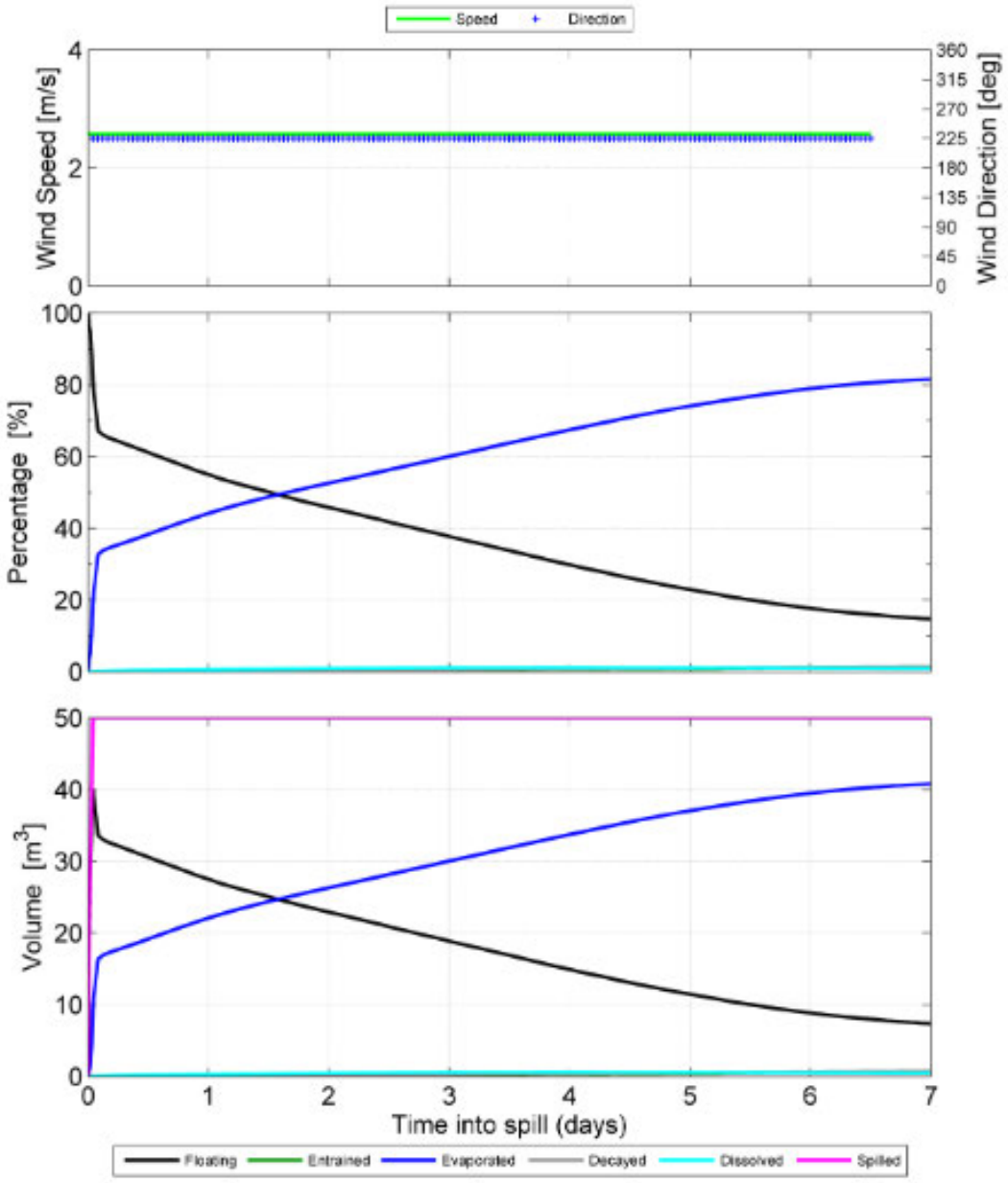


Figure A-1: Mass balance plot representing, as proportion (middle panel) and volume (bottom panel), the weathering of marine diesel spilled onto the water surface as a one-off release (50 m3 over 1-hour) and subject to a constant 5kn (2.6 /s) wind at 27°C water temperature and 25°C air temperature.

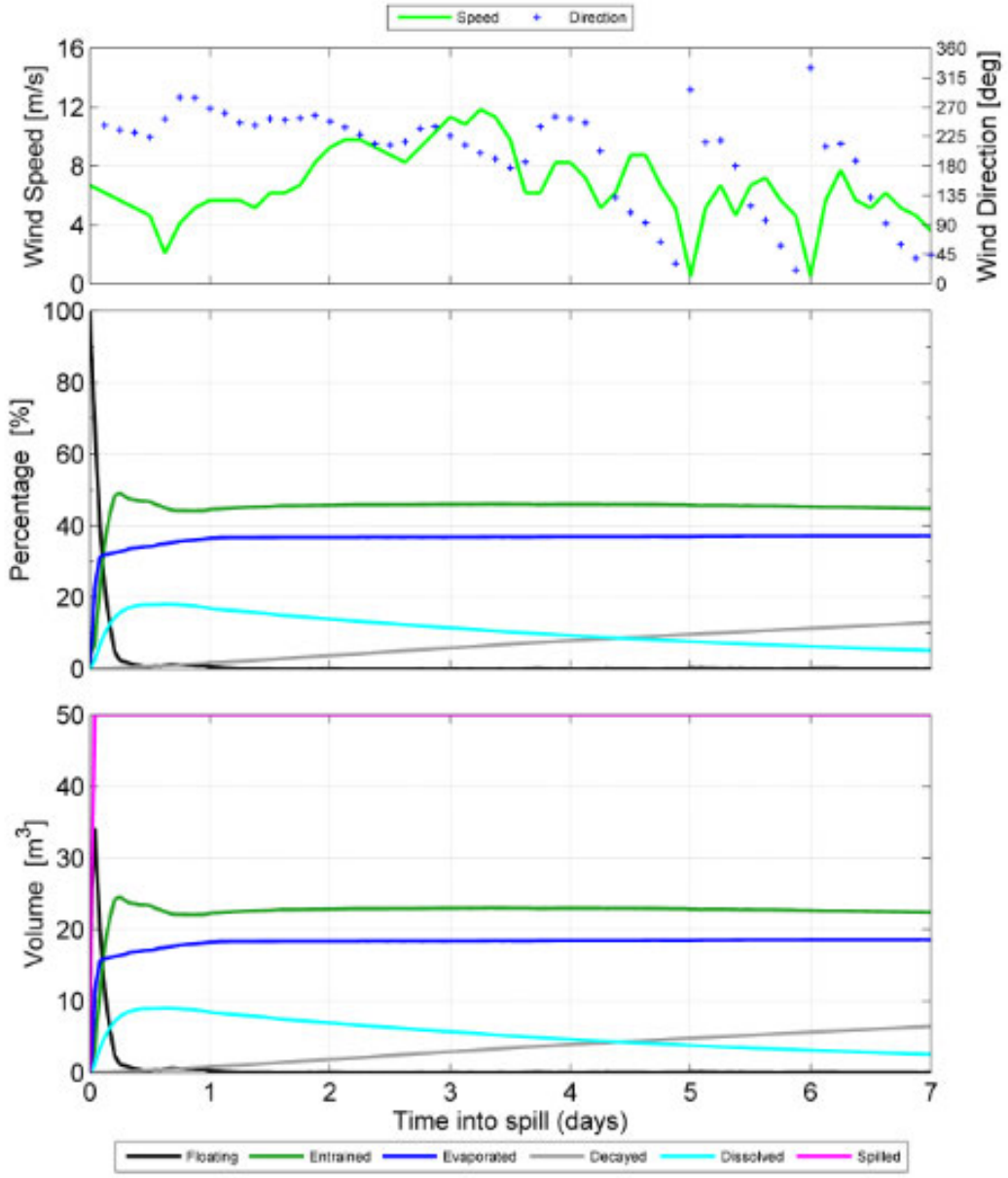


Figure A-2 Mass balance plot representing, as proportion (middle panel) and volume (bottom panel), the weathering of marine diesel spilled onto the water surface as a one-off release (50 m3 over 1 hour) and subject to variable wind at 27°C water temperature and 25°C air temperature.

Dry gas

The Scarborough reservoir properties are dry gas, primarily methane (approximately 95%) and nitrogen (approximately 4%), with some ethane, CO2 contents and limited heavier hydrocarbon components. No liquid hydrocarbons are expected at atmospheric conditions and, as a result, no stochastic or deterministic hydrocarbon spill modelling was undertaken for this scenario (CS-03). Furthermore, worst case discharge rate (‘blowout’ rate’) modelling predicts that the gas plume will not breach the water’s surface.

APPENDIX B – FORMS

Form No.	Form Name	Link
1	Record of Initial Verbal Notification to NOPSEMA Template	[redacted]
2	NOPSEMA Incident Report Form	[redacted]
3	Marine Pollution Report (POLREP – AMSA)	[redacted]
4	AMOSC Service Contract Note	[redacted]
5	Marine Pollution Report (POLREP – DoT)	[redacted]
6a	OSRL Initial Notification Form	[redacted]
6b	OSRL Mobilisation Activation Form	[redacted]
7	RPS Oil Spill Trajectory Modelling Request	[redacted]
8	Aerial Surveillance Observer Log	[redacted]

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:

Date and Time of incident/ time caller became aware of incident		
Details of incident	**1 Location**	
	2 Title	
	3 Hydrocarbon source	
	□ **Platform**	
	□ **Pipeline**	
	□ **FPSO**	
	□ **Exploration drilling**	
	□ **Well**	
	□ **Other (please specify)**	
	4 Hydrocarbon type	
	5 Estimated volume of hydrocarbon	
	6 Has the discharge ceased?	
	7 Fire, explosion or collision?	
	8 Environment Plan(s)	
	9 Other Details	
Actions taken to avoid or mitigate environmental impacts		
Corrective actions taken or proposed to stop, control or remedy the incident		

After the initial call is made to NOPSEMA, please send this record as soon as practicable to:

1. **NOPSEMA** [redacted]
2. **NOPTA** [redacted]
3. **DMIRS** [redacted]

FORM 2

[insert NOPSEMA Notification Template 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]

[redacted]

FORM 6b

[insert OSRL Mobilisation Activation Form when printing]

[redacted]

FORM 7

[insert RPS Response Oil Spill Trajectory Modelling Request form when printing]

FORM 8

[insert Aerial Surveillance Observer Log when printing]

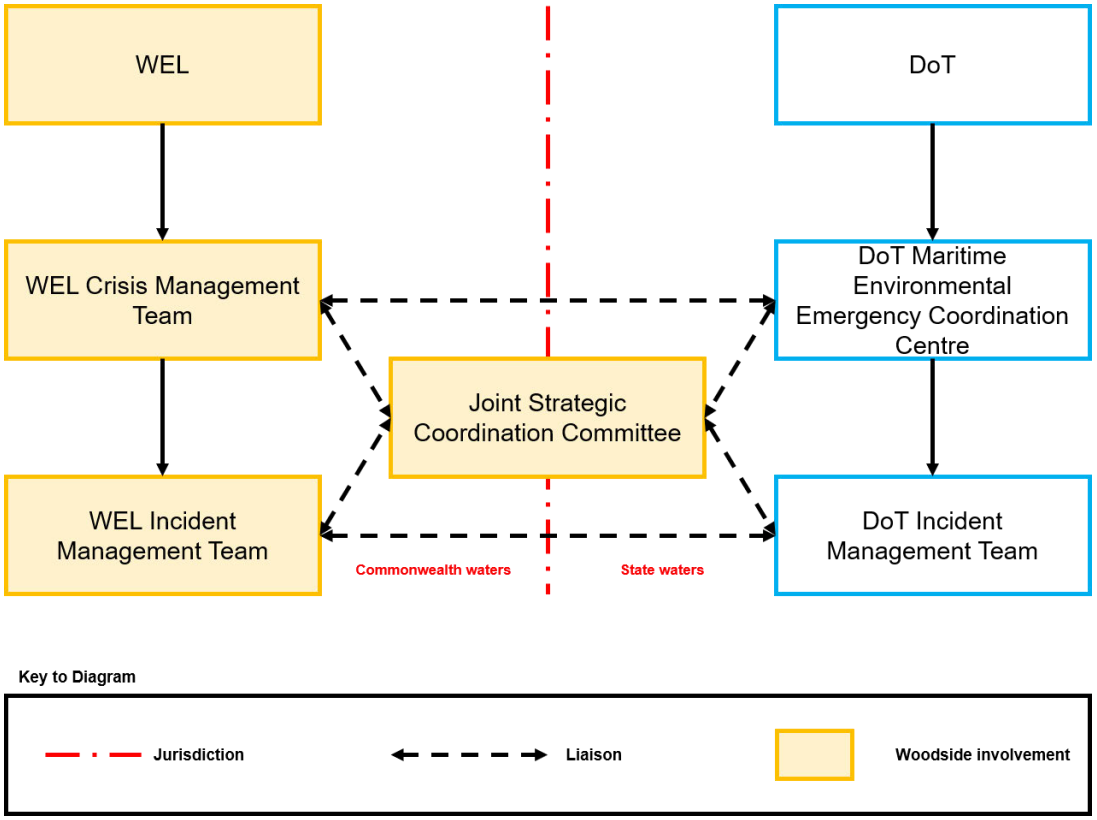
APPENDIX C – 7 Questions of spill assessment

WHAT IS IT? **Oil Type/name** **Oil properties** **Specific gravity / viscosity / pour point / asphphaltines / wax content / boiling point**	
WHERE IS IT? Lat/Long Distance and bearing	
HOW BIG IS IT? Area Volume	
WHERE IT IS GOING? Weather conditions Currents and tides	
WHAT IS IN THE WAY? Resources at risk	
WHEN WILL IT GET THERE? Weather conditions Currents and tides	
WHAT'S HAPPENING TO IT? Weathering processes	

APPENDIX D – TRACKING BUOY DEPLOYMENT INSTRUCTIONS

(Insert [redacted] when printing)

APPENDIX E – COORDINATION STRUCTURE FOR A CONCURRENT HYDROCARBON SPILL IN BOTH COMMONWEALTH AND STATE WATERS/SHORELINES[3]



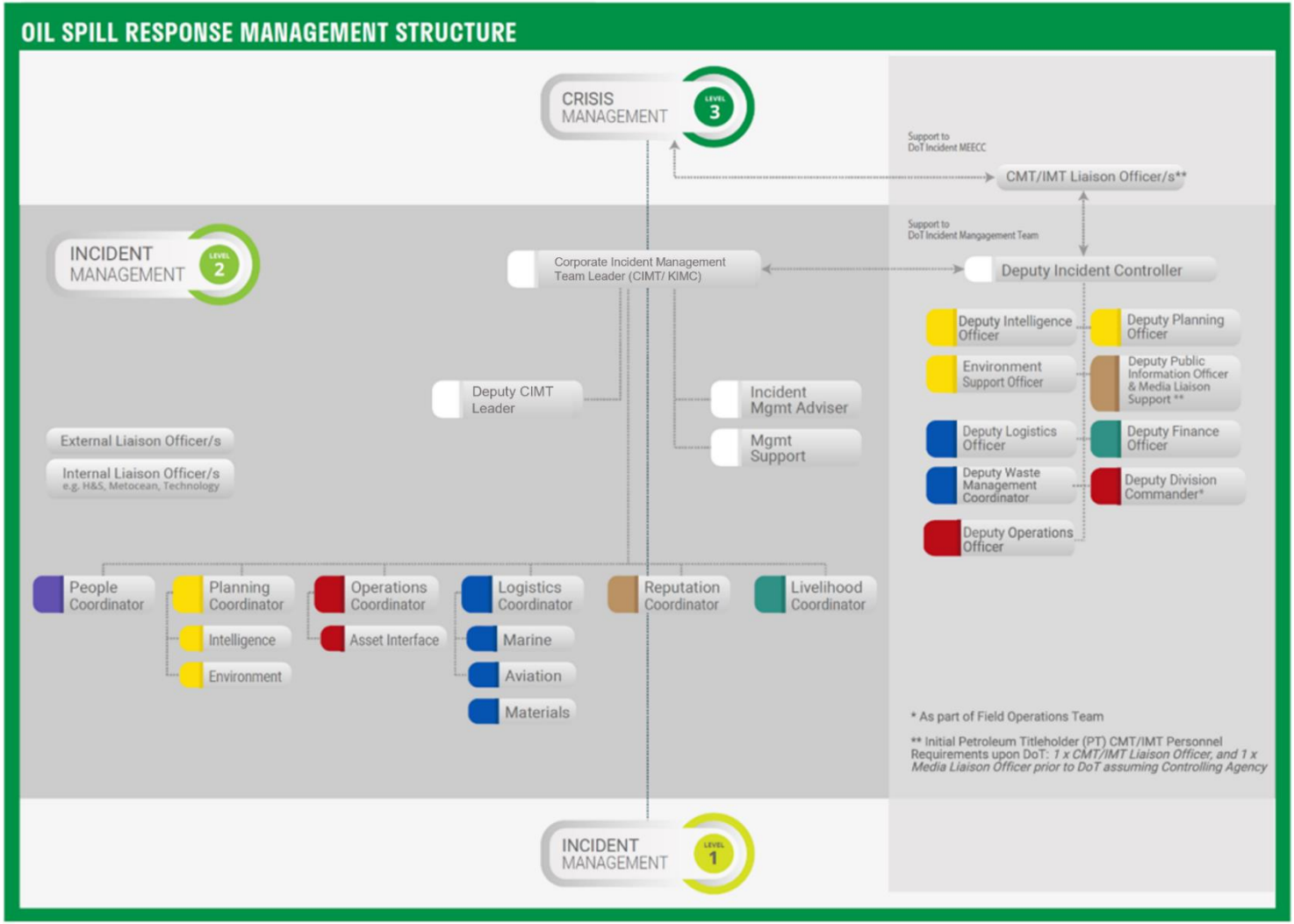
The Control Agency for a Level 1 hydrocarbon spill in Commonwealth waters resulting from an offshore petroleum activity is Woodside (the Petroleum Titleholder) (or AMSA for a vessel spill).

The Control Agency for a Level 2/3 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.

[3] 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.

APPENDIX F – WOODSIDE INCIDENT MANAGEMENT STRUCTURE

Woodside Incident Management Structure for Hydrocarbon Spill (including Woodside Liaison Officers Command Structure within DoT IMT if required).



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[4]:	Key Duties	#
DoT MEECC	CMT Liaison Officer	CIMT Leader Roster	• Provide a direct liaison between the CMT and the MEECC. • Facilitate effective communications and coordination between the CMT Leader and State Marine Pollution Coordinator (SMPC). • Offer advice to SMPC on matters pertaining to PT crisis management policies and procedures.	1
DoT IMT Incident Control	WEL Deputy Incident Controller	CIMT Leader Roster	• Provide a direct liaison between the PT IMT and DoT IMT. • Facilitate effective communications and coordination between the PT IC and the DoT IC. • Offer advice to the DoT IC on matters pertaining to PT incident response policies and procedures. • Offer advice to the Safety Coordinator on matters pertaining to PT safety policies and procedures, particularly as they relate to PT employees or contractors operating under the control of the DoT IMT.	1
DoT IMT Intelligence	Intelligence Support Officer/ Deputy Intelligence Officer	Intelligence Coordinator Roster	• As part of the Intelligence Team, assist the Intelligence Officer in the performance of their duties in relation to situation and awareness. • Facilitate the provision of relevant modelling and predications from the PT IMT. • Assist in the interpretation of modelling and predictions originating from the PT IMT. • Facilitate the provision of relevant situation and awareness information originating from the DoT IMT to the PT IMT. • Facilitate the provision of relevant mapping from the PT IMT. • Assist in the interpretation of mapping originating from the PT IMT. • Facilitate the provision of relevant mapping originating from the DoT IMT to the PT IMT.	1
DoT IMT Intelligence – Environment	Environment Support Officer	Environment Coordinator Roster	• As part of the Intelligence Team, assist the Environment Coordinator in the performance of their duties in relation to the provision of environmental support into the planning process. • Assist in the interpretation of the PT OPEP and relevant TRP plans. • Facilitate in requesting, obtaining and interpreting environmental monitoring data originating from the PT IMT. • Facilitate the provision of relevant environmental information and advice originating from the DoT IMT to the PT IMT.	1
DoT IMT Planning-Plans/ Resources	Deputy Planning Officer	Planning Coordinator Roster	• As part of the Planning Team, assist the Planning Officer in the performance of their duties in relation to the interpretation of existing response plans and the development of incident action plans and related sub plans. • Facilitate the provision of relevant IAP and sub plans from the PT IMT.	1

[4] *These positions would be mobilised, in consultation with DoT, to align to the actual spill scenario. The selected roles and/or individual personnel would be subject to continued evaluation to ensure continued 'best fit'. For CIMT/ KIMC roster arrangements, contact the WCC. During a prolonged response, additional personnel may be sourced through AMOSC Core Group via* [redacted]

Area	WEL Liaison Role	Personnel Sourced from[4]:	Key Duties	#
			• Assist in the interpretation of the PT OPEP from the PT. • Assist in the interpretation of the PT IAP and sub plans from the PT IMT. • Facilitate the provision of relevant IAP and sub plans originating from the DoT IMT to the PT IMT. • Assist in the interpretation of the PT existing resource plans. • Facilitate the provision of relevant components of the resource sub plan originating from the DoT IMT to the PT IMT. **(Note this individual must have intimate knowledge of the relevant PT OPEP and planning processes)**	
DoT IMT Public Information-Media/ Community Engagement	Public Information Support and Media Liaison Officer/ Deputy Public Information Officer	Reputation Coordinator Roster	• As part of the Public Information Team, provide a direct liaison between the PT Media team and DoT IMT Media team. • Facilitate effective communications and coordination between the PT and DoT media teams. • Assist in the release of joint media statements and conduct of joint media briefings. • Assist in the release of joint information and warnings through the DoT Information and Warnings team. • Offer advice to the DoT Media Coordinator on matters pertaining to PT media policies and procedures. • Facilitate effective communications and coordination between the PT and DoT Community Liaison teams. • Assist in the conduct of joint community briefings and events. • Offer advice to the DoT Community Liaison Coordinator on matters pertaining to the PT community liaison policies and procedures. • Facilitate the effective transfer of relevant information obtained from through the Contact Centre to the PT IMT.	1
DoT IMT Logistics	Deputy Logistic Officer	Logistics Coordinator Roster	• As part of the Logistics Team, assist the Logistics Officer in the performance of their duties in relation to the provision of supplies to sustain the response effort. • Facilitate the acquisition of appropriate supplies through the PTs existing OSRL, AMOSC and private contract arrangements. • Collects Request Forms from DoT to action via PT IMT. **(Note this individual must have intimate knowledge of the relevant PT logistics processes and contracts)**	1
DoT IMT Finance-Accounts/	Deputy Finance Officer	Livelihood Coordinator Roster	• As part of the Finance Team, assist the Finance Officer in the performance of their duties in relation to the setting up and payment of accounts for those services acquired through the PTs existing OSRL, AMOSC and private contract arrangements. • Facilitate the communication of financial monitoring information to the PT to allow them to track the overall cost of the response.	1

Area	WEL Liaison Role	Personnel Sourced from[4]:	Key Duties	#
Financial Monitoring			• 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.	
DoT IMT Operations	Deputy Operations Officer	Operations Coordinator Roster	• As part of the Operations Team, assist the Operations Officer in the performance of their duties in relation to the implementation and management of operational activities undertaken to resolve an incident. • Facilitate effective communications and coordination between the PT Operations Section and the DoT Operations Section. • Offer advice to the DoT Operations Officer on matters pertaining to PT incident response procedures and requirements. • Identify efficiencies and assist to resolve potential conflicts around resource allocation and simultaneous operations of PT and DoT response efforts.	1
DoT IMT Operations – Waste Management	Facilities Support Officer/ Deputy Waste Management Coordinator	Logistics Materials Coordinator Roster	• As part of the Operations Team, assist the Waste Management Coordinator in the performance of their duties in relation to the provision of the management and disposal of waste collected in State waters. • Facilitate the disposal of waste through the PT's existing private contract arrangements related to waste management and in line with legislative and regulatory requirements. • Collects Request Forms from DoT to action via PT IMT.	1
DoT FOB Operations Command	Deputy On-Scene Commander/ Deputy Division Commander	CIMT Leader Roster	• As part of the Field Operations Team, assist the Division Commander in the performance of their duties in relation to the oversight and coordination of field operational activities undertaken in line with the IMT Operations Section's direction. • Provide a direct liaison between the PT FOB and DoT FOB. • Facilitate effective communications and coordination between the PT Division Commander and the DoT Division Commander. • Offer advice to the DoT Division Commander on matters pertaining to PT incident response policies and procedures. • Assist the Safety Coordinator deployed in the FOB in the performance of their duties, particularly as they relate to PT employees or contractors. • Offer advice to the Safety Coordinator deployed in the FOB on matters pertaining to PT safety policies and procedures.	1
			Total Woodside personnel initially required in DoT IMT	11

DOT LIAISON OFFICER RESOURCES TO WOODSIDE

Once DoT activates a State waters/shorelines IMT, Woodside will request DoT make available the following roles:

Area	DoT Liaison Role	Personnel Sourced from:	Key Duties	#
WEL CMT	DoT Liaison Officer (prior to DoT assuming Controlling Agency) / Deputy Incident Controller – State waters (after DoT assumes Controlling Agency)	DoT	• Facilitate effective communications between DoT's SMPC / Incident Controller and the Petroleum Titleholder's appointed CMT Leader / Incident Controller. • Provide enhanced situational awareness to DoT of the incident and the potential impact on State waters. • Assist in the provision of support from DoT to the Petroleum Titleholder. • Facilitate the provision technical advice from DoT to the Petroleum Titleholder Incident Controller as required.	1
WEL Reputation FST (Media Room)/ Public Information – Media	DoT Media Liaison Officer	DoT	• Provide a direct liaison between the PT Media team and DoT IMT Media team. • Facilitate effective communications and coordination between the PT and DoT media teams. • Assist in the release of joint media statements and conduct of joint media briefings. Assist in the release of joint information and warnings through the DoT Information and Warnings team. • Offer advice to the PT Media Coordinator on matters pertaining to DoT and wider Government media policies and procedures.	1
			Total DoT Personnel Initial Requirement to Woodside	2

APPENDIX I. MASTER EXISTING ENVIRONMENT

Description of the Existing Environment

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1. INTRODUCTION

1.1 Purpose

This document applies, where indicated in the relevant Environment Plan, to Woodside Energy Ltd. (Woodside) activities and operations.

1.2 Scope

This document describes the existing environment within the Woodside areas of activity located in Commonwealth waters off north-western Western Australia (WA), with a focus on the North-west Marine Region (NWMR) (**Figure 1-1**). This document includes details of the particular and relevant values and sensitivities of the environment as required by the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 in order to inform the impact and risk evaluation of Woodside's activities within the NWMR. Furthermore, the key values of the South-west Marine Region (SWMR) and the North Marine Region (NMR) are summarised to encompass areas outside the NWMR. This is with reference to the environment that may be affected (EMBA), as defined and described in individual EPs, for unplanned hydrocarbon spill risks. Additional information appropriate to the nature and scale of the impacts and risks of activities that may interact with the environment will be used to further inform impact and risk assessments and included in the Description of the Existing Environment of individual EPs.

This document is informed by a variety of resources that includes: a search of the Department of Agriculture, Water and the Environment (DAWE) Protected Matters Search Tool (PMST) for the marine bioregions (NWMR, SWMR and NMR) and the three PMST reports provided in **Appendix A**; State (WA)/Commonwealth Marine Park Management Plans, the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Species Profile and Threats Database (SPRAT), Part 13 statutory instruments (recovery plans, conservation advices and wildlife conservation plans for listed threatened and migratory species); and peer reviewed scientific publications, as well as Woodside and Joint Venture (JV) funded studies and other titleholder funded study findings available in the public domain.

1.3 Review and Revision

The information presented in this document is reviewed and updated, where relevant, on at least an annual basis to address any relevant changes, which includes but is not limited to the status of EPBC Act listed species, Part 13 Instruments, policies and guidelines and recently published scientific literature.

1.4 Regional Context

Where relevant, the physical, biological and social environments within the areas of interest are discussed with reference to the three marine bioregions of Australia—NWMR, SWMR and NMR (**Table 1-1)**. The NWMR is the focal marine bioregion for the Description of the Existing Environment as this is currently the location of most of Woodside's activities.

Table 1-1. Description of the Marine Bioregions

Marine Bioregion	Description
North-west	The NWMR includes all Commonwealth waters (from 3 nautical mile [nm] from the Territorial Sea Baseline [TSB] to the 200 nm Exclusive Economic Zone [EEZ] boundary) extending from the WA/Northern Territory (NT) border to Kalbarri, south of Shark Bay in WA, covering an area of approximately 1.07 million square kilometres and includes extensive areas of shallower waters on the continental shelf, as well as deep areas of abyssal plain where water depths are 5000 m or greater.
South-west	The SWMR comprises Commonwealth waters from the eastern end of Kangaroo Island in SA to Shark Bay in WA. The region spans approximately 1.3 million square kilometres of temperate and subtropical waters and abuts the coastal waters of SA and WA.
North	The NMR comprises Commonwealth waters from west Cape York Peninsula to the NT/WA border). The region covers approximately 625,689 square kilometres of tropical waters in the Gulf of Carpentaria and Arafura and Timor seas, and abuts the coastal waters of Queensland and the NT.

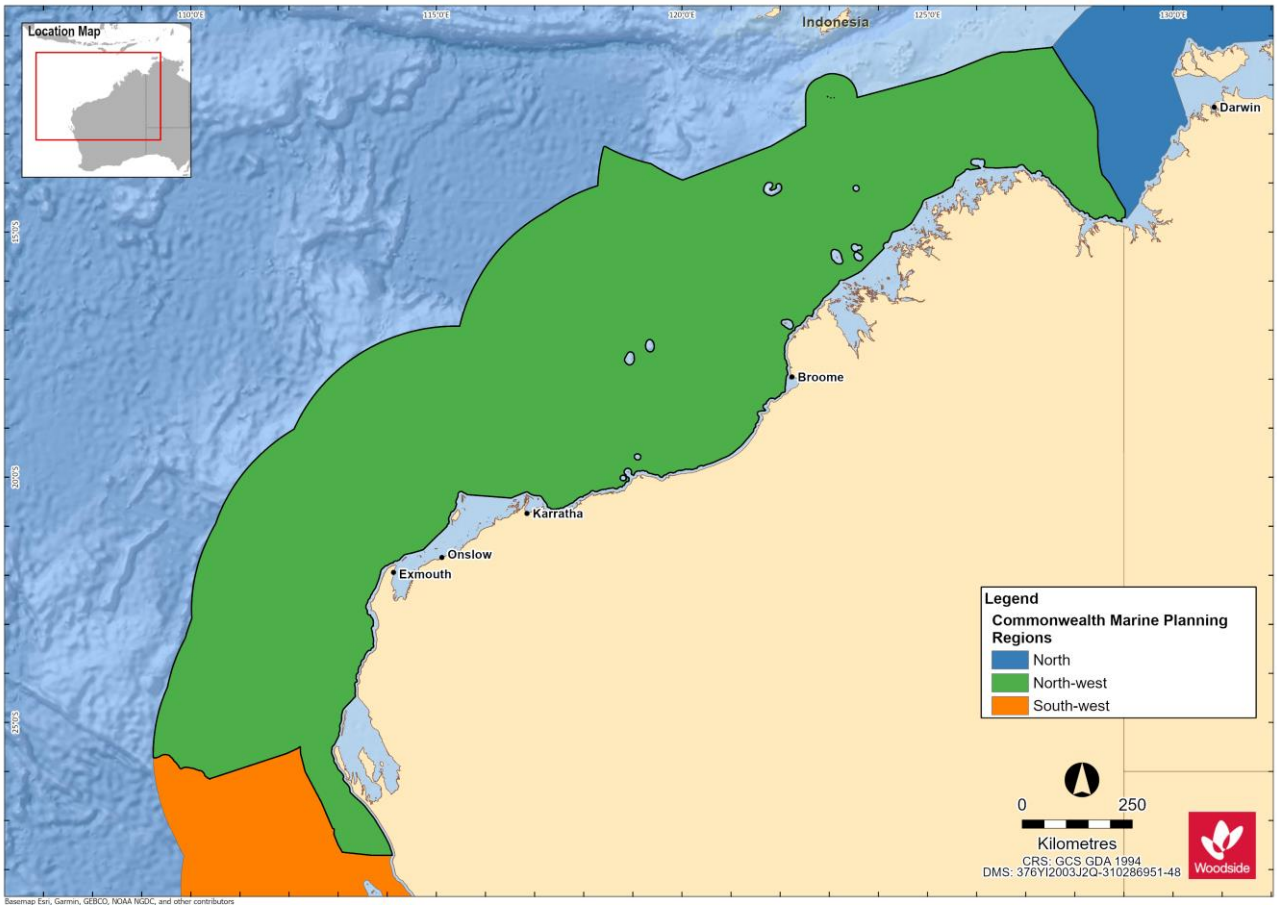

Figure 1-1. Marine Bioregions: North-west (NWMR), South-west (SWMR) and North (NMR)

2. PHYSICAL ENVIRONMENT

2.1 Regional Context

The key physical characteristics of the NWMR, SWMR and NMR are presented in **Table 2-1**.

Table 2-1 Key physical characteristics of the NWMR, SWMR and NMR

Bioregion	Key Characteristics
North-west Marine Region	The NWMR experiences a tropical monsoonal climate towards the northern extent of the region, transitioning to tropical arid and subtropical arid within the central and southern areas of the region (DSEWPAC, 2012a).
	The NWMR is part of the Indo-Australian Basin, the ocean region between the north-west coast of Australia and the Indonesian islands of Java and Sumatra. Dominant currents in the Region include: the South Equatorial Current, the Indonesian Throughflow; the Eastern Gyral Current, and the Leeuwin Current (DEWHA, 2007a).
	The seafloor of the NWMR consists of four general feature types: continental shelf; continental slope; continental rise; and abyssal plain and is distinguished by a range of topographic features including canyons, plateaus, terraces, ridges, reefs, and banks and shoals.
South-west Marine Region	The SWMR contains both subtropical and temperate climates, with overall light climatic cycles.
	The SWMR experiences complex and unusual oceanographic patterns, driven largely by the Leeuwin Current and its associated currents that have a significant influence on biodiversity distribution and abundance.
	The major seafloor features of the SWMR include a narrow continental shelf on the west coast to the waters off south-west WA, and a wide continental shelf dominated by sandy carbonate sediments of marine origin in the Great Australian Bight, the region also contains a steep, muddy continental slope, many canyons and large tracts of abyssal plains (DSEWPAC, 2012b).
North Marine Region	The NMR experiences a tropical monsoonal climate with complex weather cycles, including high temperatures and heavy seasonal yet variable rainfall and cyclones, which can be both destructive (loss of seagrass and mangroves) and constructive (mobilisation of sediment into coastal habitats).
	The NMR comprises Commonwealth waters from west Cape York Peninsula to the NT–WA border, covering tropical waters in the Gulf of Carpentaria and Arafura and Timor seas. Currents in the NMR are driven largely by strong winds and tides, with only minor influences from oceanographic currents such as the Indonesian Throughflow and the South Equatorial Current (DSEWPAC, 2012c).
	The seafloor of the NMR consists mainly of a wide continental shelf, as well as other geomorphological features such as shoals, banks, terraces, valleys, shallow canyons and limestone pinnacles.

2.2 Marine Systems of the North-west Marine Region.

The NWMR can be divided into three large scale ecological marine systems on the basis of the influence of major ocean currents, seafloor features and eco-physical processes (e.g. climate, tides, freshwater inflow) upon the Region (DSEWPAC, 2012a). The three large scale marine systems approximate the Woodside activity areas within the NWMR (**Figure 2-1**). The key characteristics of each marine system are outlined below in **Table 2-2**.

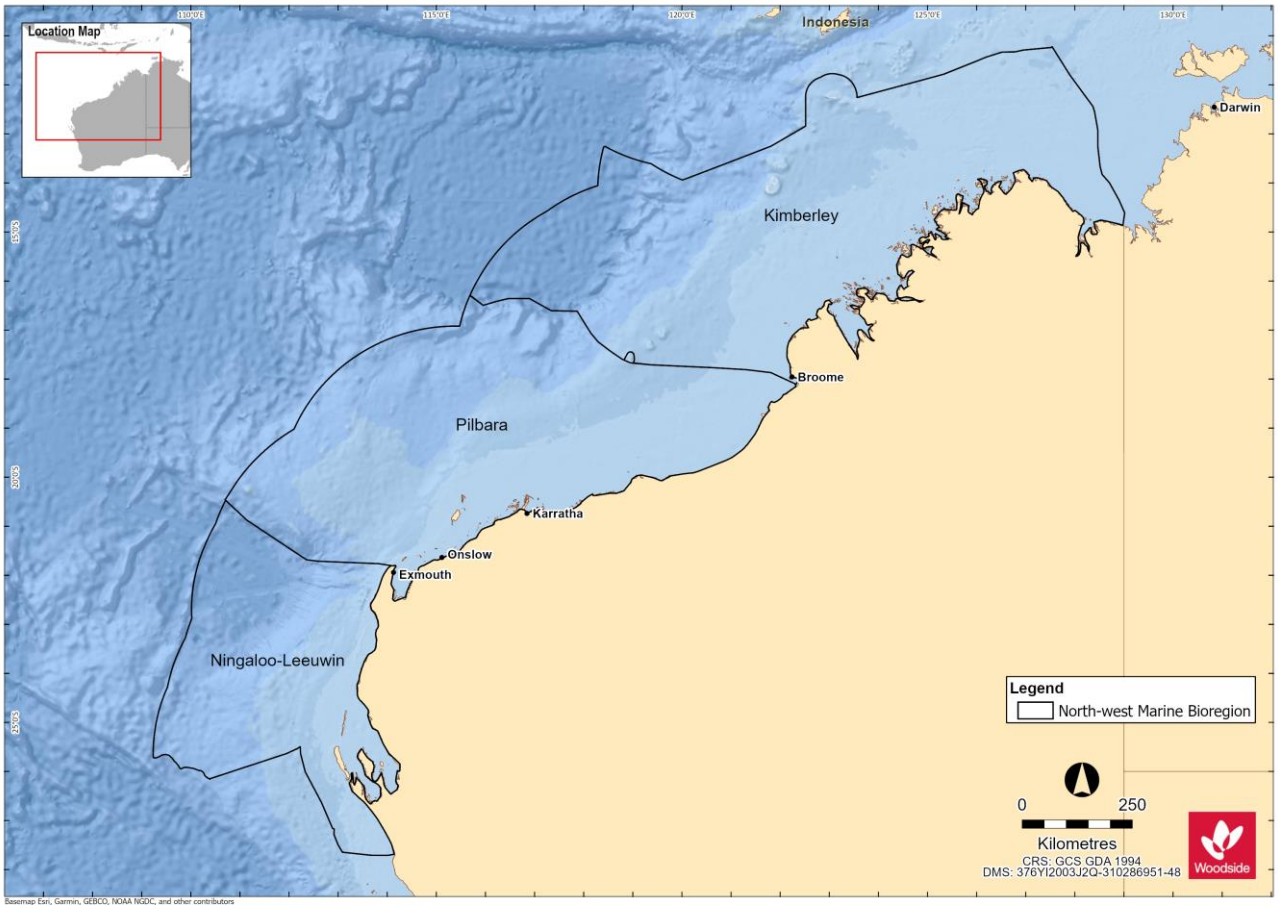

Figure 2-1. The marine systems of the North-west Marine Region (NWMR)

Table 2-2. Key characteristics of the Marine Systems of the NWMR

Note: Woodside areas align with the marine systems as described in DEWHA (2007a)

Marine System	Woodside Activity Area	Key Characteristics
Kimberley	Browse	Tropical monsoonal climate Strong influence from Indonesian Throughflow Predominantly tropical Indo-Pacific species Subject to episodic offshore cyclonic activity, rarely crossing the coast Large tidal regimes Freshwater input from terrestrial monsoonal run-off Turbid coastal waters (i.e. light limited systems) Dominated by shelf environments Predominantly hard substrates in inner to mid-shelf environments Includes a number of shelf-edge atolls (i.e. Scott Reef, Rowley Shoals)
Pilbara	North-west Shelf (NWS) / Scarborough	Tropical arid climate Transition between Indonesian Throughflow and Leeuwin Current dominated areas Predominantly tropical species High cyclone activity with frequent crossing of the coast Transitional tidal zone Internal tide activity Large areas of shelf and slope Dry coast with ephemeral freshwater inputs
Ningaloo-Leeuwin	North-west Cape	Subtropical arid climate Leeuwin Current consolidates Transitional tropical/temperate faunal area Higher water clarity in near-shore and offshore environments Narrow shelf and slope Marginal tidal range Seasonal wind forcing more dominant influence on marine environment

2.3 Meteorology and Oceanography

This section describes the general meteorological conditions and oceanography for the NWMR and provides further detail for the three Woodside activity areas. The NWMR is influenced by a complex system of ocean currents that change between seasons and between years, which generally result in its surface waters being warm and nutrient-poor, and of low salinity (DEWHA, 2007a). The mix of bathymetric features, complex topography and oceanography across the whole north-west marine environment has created and supports a globally important marine biodiversity hotspot (Wilson, 2013).

Table 2-3 NWMR climate and oceanography summary

Receptor	Description
Meteorology	
Seasonal patterns	The NWMR associated land mass of the Australian continent is characterised as a hot and humid summer climate zone. The broader NWMR experiences variations of a tropical or monsoon climate. In the far north-west (Kimberley), there is a hot summer season from December to March and a milder winter season between April and November. The Pilbara area is described as having a tropical arid climate with high cyclone activity (DEWHA, 2007a). The Pilbara and North-west Cape has a hot summer season from October to April and a milder winter season between May and September with transition periods between the summer and winter regimes.
Air temperature and rainfall	In summer (between September and March), maximum daily temperatures range from 31ºC to 33ºC. During winter (May to July), mean daily temperatures range from 18ºC to 31ºC (BOM[1]), refer to **Figure 2-2a** and **b**. Rainfall in the region typically occurs during the summer, with highest falls observed late in the season. This is often associated with the passage of tropical low-pressure systems and cyclones.
Wind	Wind patterns in north-west WA are dictated by the seasonal movement of atmospheric pressure systems. During summer, high-pressure cells produce prevailing winds from the north-west and south-west, which vary between 10 and 13 ms^{-1}. During winter, high-pressure cells over central Australia produce north-easterly to south-easterly winds with average speeds of between 6 and 8 ms^{-1}. Refer to **Figure 2-3a** and **b**.
Tropical cyclones	The NWS and Pilbara coast (within the NWMR) experiences more cyclonic activity than any other region of the Australian mainland coast (BOM, 2021a). Tropical cyclone activity typically occurs between November and April and is most frequent in the region during December to March (i.e. considered the peak period), with an average of about one cyclone per month (BOM, 2021a). Refer to **Figure 2-4**.
Oceanography	
Ocean temperature	Waters in NWMR are tropical year-round, with sea surface temperature in open shelf waters reaching ~26°C in summer and dropping to ~22°C in winter. Nearshore temperatures (as recorded for the NWS area) fluctuate more widely on an annual basis from ~17°C in winter to ~31°C in summer (Chevron Australia, 2010). Refer to **Figure 2-5a** and **b**.
Currents	The major surface currents influencing north-west WA flow towards the poles and include the Indonesian Throughflow, the Leeuwin Current, the South Equatorial Current, and the Eastern Gyral Current. The Ningaloo Current, the Holloway Current, the Shark Bay Outflow, and the Capes Current are seasonal surface currents in the region. Below these surface currents are several subsurface currents, the most important of which are the Leeuwin Undercurrent and the West Australian Current. These subsurface currents flow towards the equator in the opposite direction to surface currents (DEWHA, 2007a). Refer to **Figure 2-6**. The offshore waters of the NWMR are characterised by surface and subsurface boundary currents that flow along the continental shelf/slope and are enhanced through inflows from the ocean basins and are an important conduit for the poleward heat and mass transport along the west coast (Wijeratne *et al.*, 2018). Local physical oceanography is strongly influenced by the large-scale water movements of the Indonesian Throughflow (Liu *et al*. 2015; Sutton *et al*. 2019). Typically, a warm and well-mixed oligotrophic surface layer and a cooler and more nutrient rich, deeper water layer (Menezes *et al*. 2013).
Waves	Sea surface waves within the NWMR, generally reflect the direction of the synoptic winds and flow predominately from the south-west in the summer and east in winter (Pearce *et al.*, 2003). The NWS within the NWMR is a known area of internal wave generation. Both internal tides and internal waves are thought to be more prevalent during summer months due to the increased stratification of the water column (DEWHA, 2007a). Along the continental slope of the NWMR, strong internal waves and interaction between semi-diurnal tidal currents and seabed topographic features facilitates upwelling events and localised productivity events (Holloway, 2001).
Tides	Tides on the NWS (NWMR) increase as the water moves from deep towards the shallower coast. The highest offshore tides are experienced at the border of the Browse and Canning basins. The smallest tides are experienced at the Exmouth Plateau, near the coast. Tides of NWS (NWMR) are predominantly semi-diurnal (two highs and two lows each day), but with increasing importance of the diurnal (once per day) inequality at the southern and northern extremities of the NWS.

[1] http://www.bom.gov.au/jsp/ncc/climate_averages/temperature/index.jsp, accessed 21 January 2021.

Receptor	Description
	The tide range—represented by the Mean Spring Range (MSR)—increases northwards along the coast from 1.4 m at North-west Cape (Point Murat) to 7.7 m at Broome, before decreasing again (apart from local amplification in King Sound and Collier Bay) to about 5 m off Cape Londonderry. The MSR then increases again through Joseph Bonaparte Gulf and on up 5.5 m at Darwin (RPS, 2016).

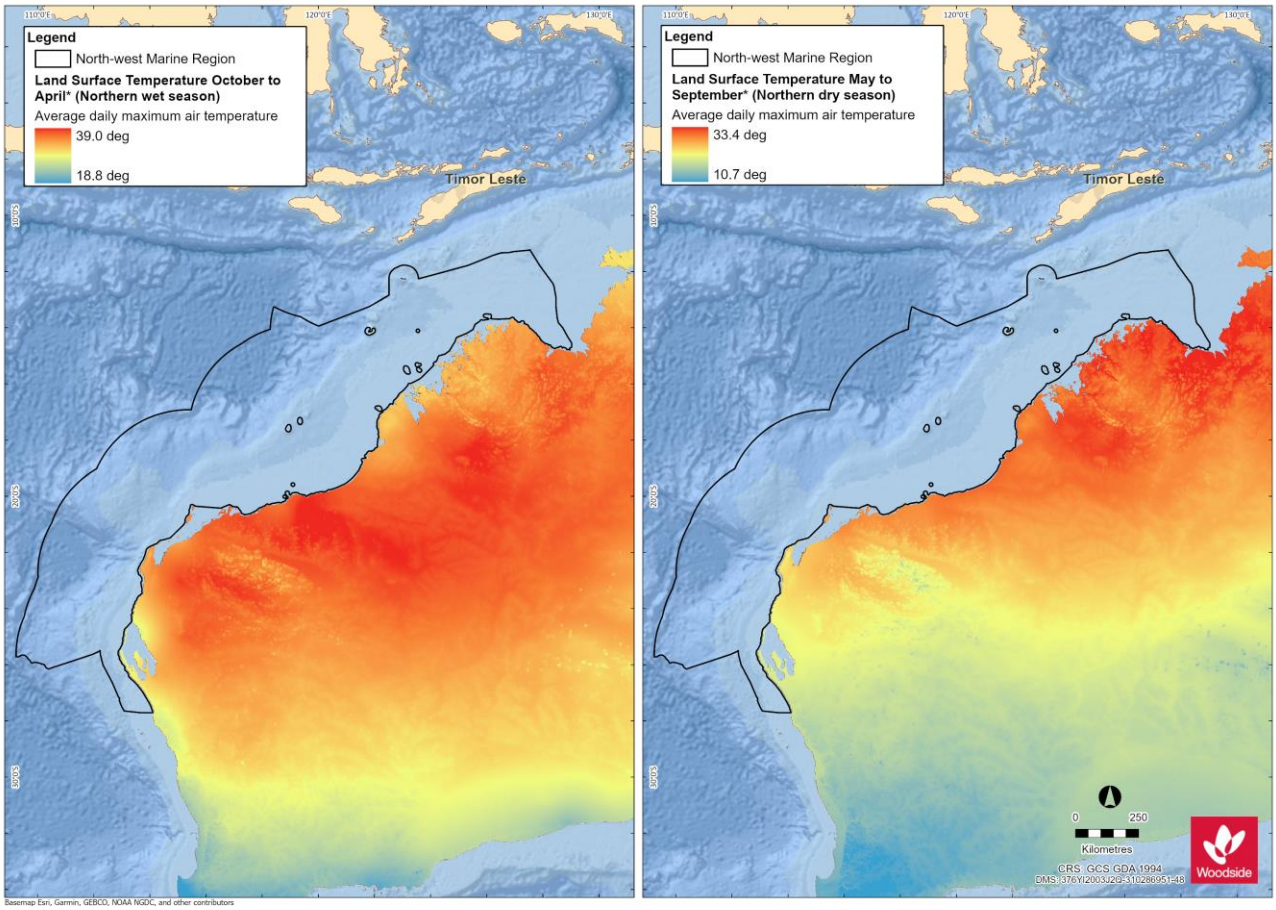

Figure 2-2. Average daily maximum air temperature for land surface adjacent to NWMR: (a) summer (northern wet season) and (b) winter (northern dry season)

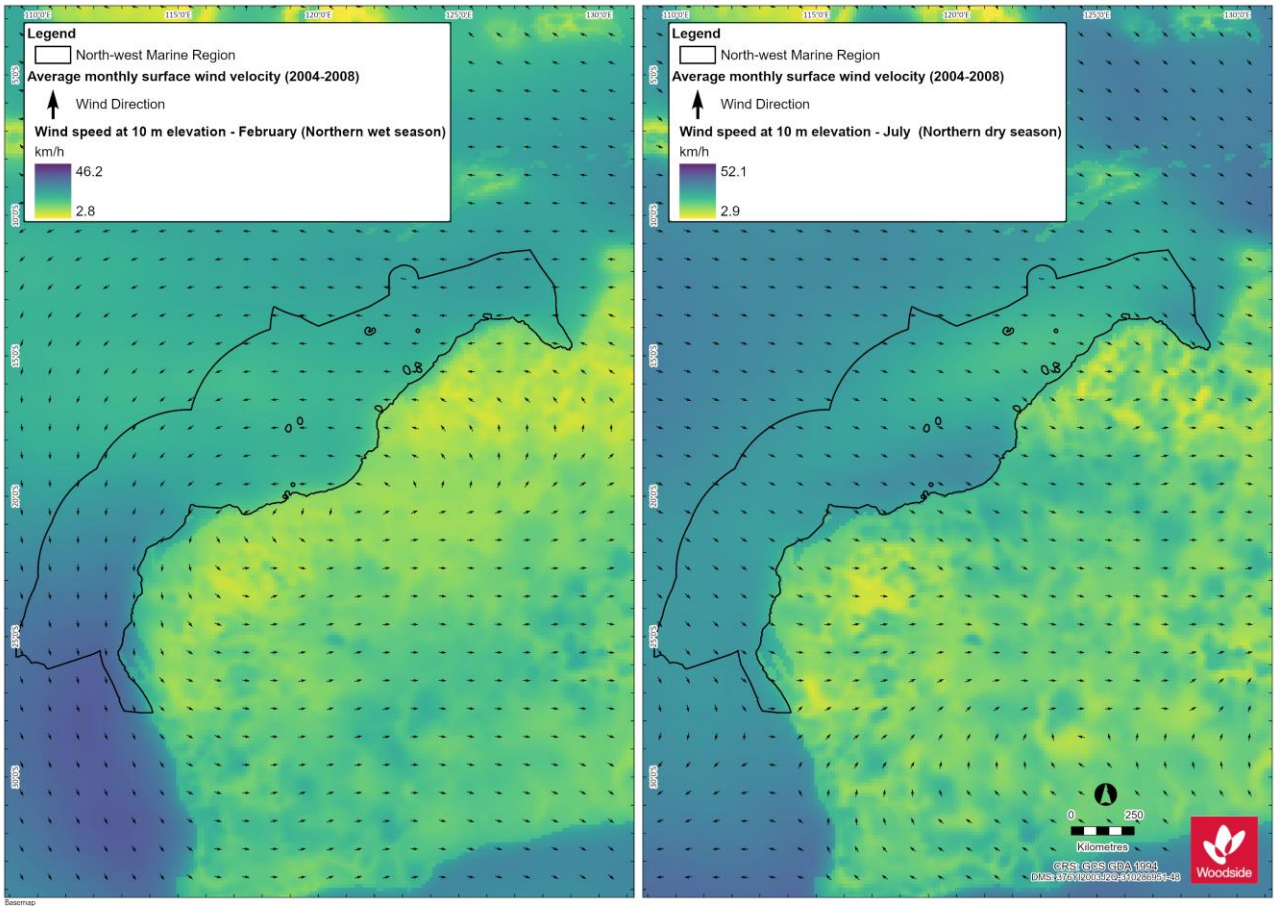

Figure 2-3. Average monthly surface wind direction and velocity for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

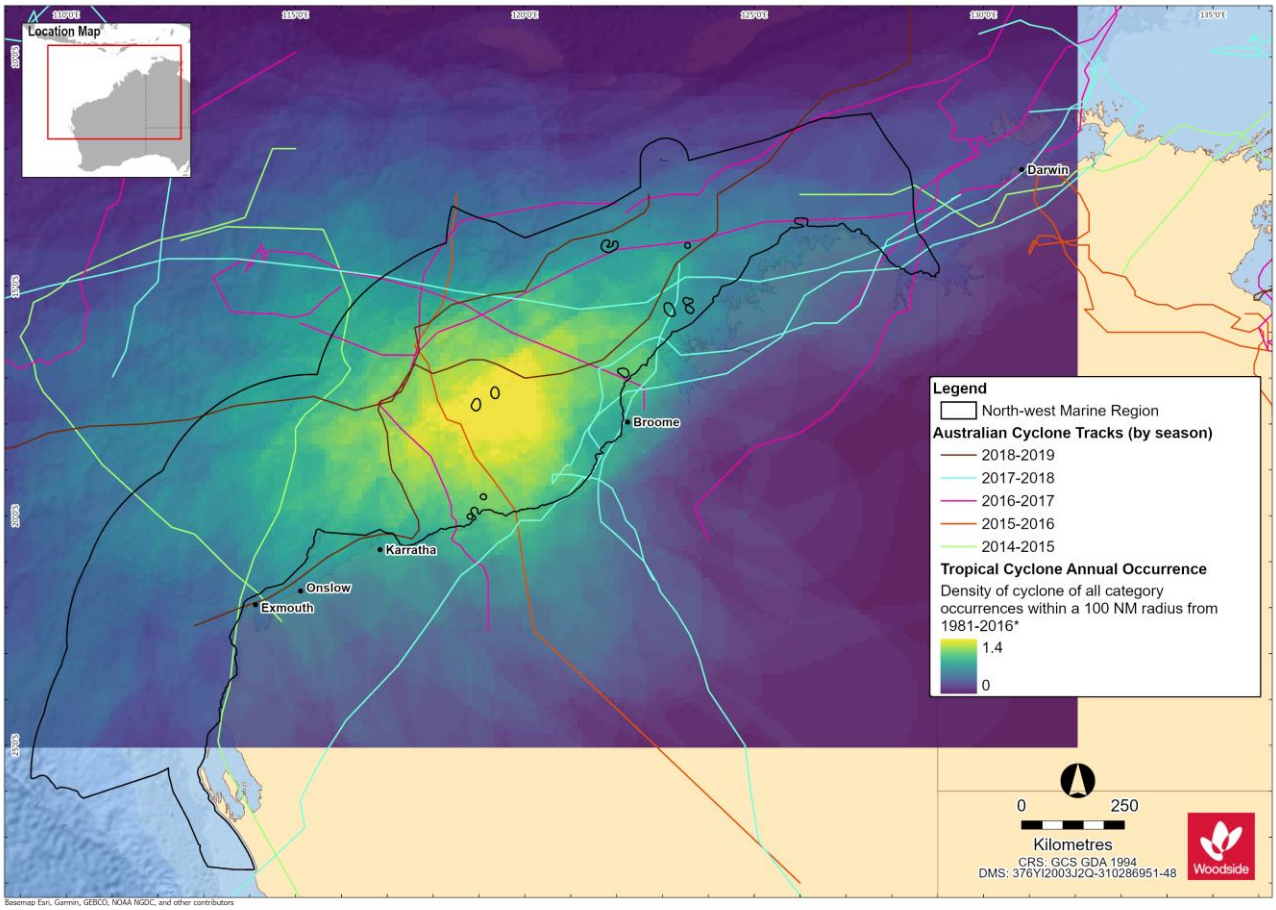

Figure 2-4. Tropical cyclone annual occurrence and cyclone tracks for NWMR

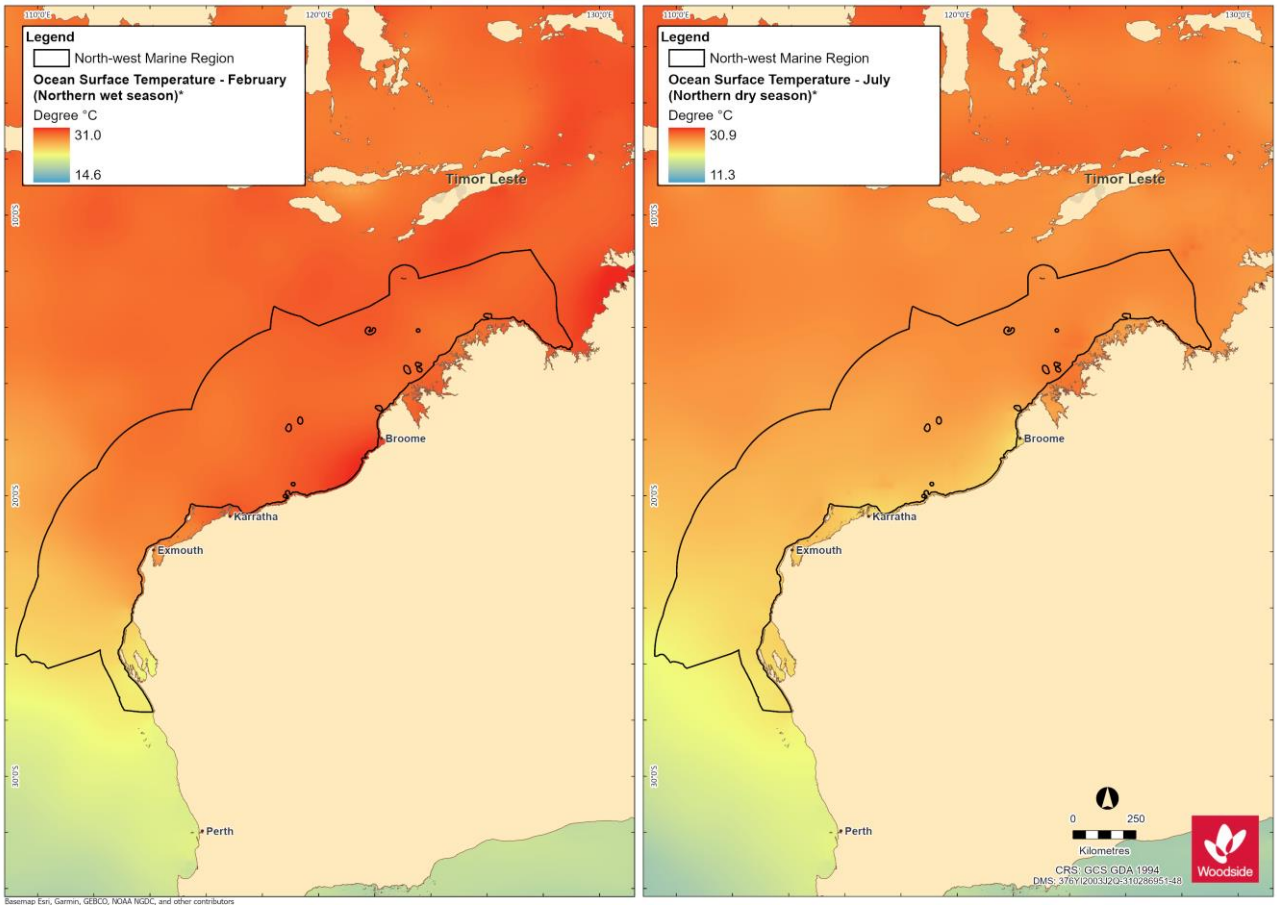

Figure 2-5. Ocean surface temperature for NWMR: (a) summer (February, northern wet season) and (b) winter (July, northern dry season)

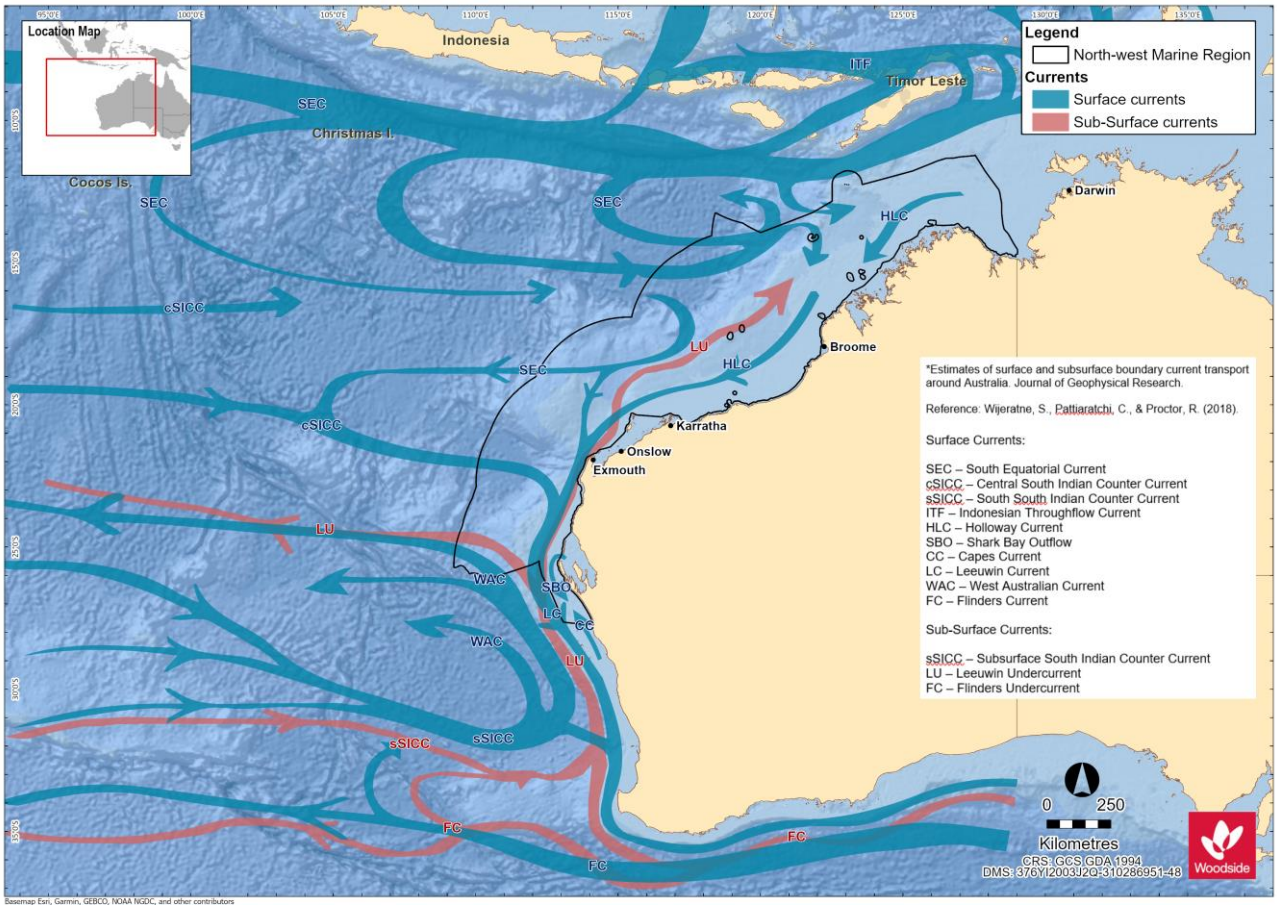

Figure 2-6. Ocean surface and sub-surface currents of the NWMR and wider region

2.3.1 Browse

Table 2-4 Summary meteorology and oceanography for Browse (refer to Appendix B for supporting metocean figures)

Receptor	Description
Meteorology	
Seasonal patterns	The Browse area overlapping the Kimberley marine system experiences tropical monsoon climate with two distinct seasons: the wet season from December to March and dry season from April to November.
Air temperature	The mean annual air temperature recorded at Troughton Island between 2010 and 2020 ranged from 30.1ºC in 2011 to 32.6ºC in 2016 and highest mean monthly air temperatures were recorded for the months of November and December (BOM, 2021b).
Rainfall	Rainfall recorded from Troughton Island in the Browse basin ranged from barely detectable (<1 mm) mean monthly level to >100 mm in December to March, with the highest rainfall recorded for January. Reflecting the wet monsoon season of the Kimberley marine system (BOM, 2021c).
Wind	The dry season experiences high pressure systems that bring east to south-easterly winds with average wind speeds during the season of approximately 16.6 km/hr and maximum wind gusts of 65 km/hr. In contrast the wet season brings predominately westerly winds with average wind speeds approximately 17 km/hr and maximum gusts exceeding 100 km/hr (generally associated with tropical cyclones (MetOcean Engineers, 2005).
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the south-west during March to June and more variable outside this period (Woodside, 2019). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.3.2 North West Shelf / Scarborough

Table 2-5 Summary meteorology and oceanography for the North West Shelf and Scarborough (refer to Appendix B for supporting metocean figures)

Receptor	Description
Meteorology	
Seasonal patterns	The NWS and Scarborough areas experience the monsoonal climate of the wider NWMR with a distinct wet and dry seasonal regime and transitions periods between seasons.
Air temperature	Air temperatures as measured at the North Rankin A platform on NWS ranged from a maximum average of 39.5ºC in summer to a minimum average temperature of 15.6ºC in winter (Woodside, 2012).
Rainfall	Rainfall patterns annually reveal the wet season with highest rainfalls during the late summer, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall in the dry season is typically extremely low. (Pearce *et al.* 2003).
Wind	Winds are typically from the southwest during the wet season (summer) and tending from the south-east during the dry season (winter). The summer south-westerly winds are driven by high pressure cells that pass from west to east over the Australian continent. During the winter period, the relative position of the high-pressure cells shifts further north, leading to prevailing south-easterly winds from the mainland (Pearce *et al.* 2003).
Oceanography	
Currents	The large-scale ocean currents of the NWMR, primarily the Indonesian Throughflow and Leeuwin Current (and Holloway Current), are the primary influence on the NWS and Scarborough areas. The ITF and Leeuwin Current are strongest during the late summer and winter and flow reversals to the north-east, typically short-lived and weak, when there are strong south-westerly winds can generate localised upwelling on the shelf edge (Holloway and Nye, 1985; James *et al.* 2004 and Condie *et al.* 2006).

2.3.3 North-west Cape

Table 2-6 Summary meteorology and oceanography for the North-west Cape (refer to Appendix B for supporting metocean figures)

Receptor	Description
Meteorology	
Seasonal patterns	The climate of the NWMR is dry tropical exhibiting a hot summer season and a mild winter season. There are often distinct transition periods between the summer and winter regimes, characterised by periods of relatively low winds.
Air temperature	Air temperatures in the North-west Cape area range from high summer temperatures (maximum average of 37.5ºC) and mild winter temperatures (minimum average of 12.2ºC).
Rainfall	Rainfall typically occurs during the summer, with highest rainfall during later summer and autumn, often associated with the passage of tropical low-pressure systems and cyclones. Rainfall is typically low in winter.
Wind	Winds vary seasonally, generally from the south-west quadrant during summer months and the south, south-east quadrant during the autumn and winter months. The summer south-westerly winds are driven by high pressure cells that pass from west to east over the Australian continent. Winds typically weaken and are more variable during the transitional period between the summer and winter seasons, generally between April to August.
Oceanography	
Currents	Surface currents exhibit seasonal directionality, with flow to the south-west during March to June and more variable outside this period (Woodside, 2016). This is consistent with the stronger Leeuwin Current flow during winter months, with more variable currents driven by local wind stress during periods of weaker Leeuwin Current flow.

2.4 Physical Environment of NWMR

Based on the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) Version 4.0, there are eight provincial bioregions that occur within the NWMR, which are based on patterns of demersal fish diversity, benthic habitat and oceanographic data (Commonwealth of Australia, 2006), **Figure 2-7**. Of the eight provincial bioregions that occur within the NWMR, these include four offshore (~65% of total NWMR area) and four shelf (~35% of total NWMR area) bioregions (Baker *et al.,* 2008).

The NWMR is a tropical carbonate margin that comprises an extensive area of shelf, slope and abyssal plain/deep ocean floor, as well as complex areas of bathymetry such as plateau, terraces and major canyons (Harris *et al.*, 2005). A series of reefs are located on the outer shelf/slope of the NWMR, including Ashmore, Cartier, Scott and Seringapatam reefs (Baker *et al*., 2008). The distribution of seafloor geomorphic features has been systematically mapped over much of the Australian margin and adjacent seafloor. The mapped area can be divided into 10 geomorphic regions, of which the NWMR overlays two; the Western Margin and Northern Margin (Harris *et al.*, 2005). Most of the region consists of either continental slope (61%) or continental shelf (28%) (DEWHA, 2007a) with more than 40% of the NWMR having a water depth less than 200 m. The shallow shelf is contrasted by features such as the Cuvier and Argo abyssal plains, which reach depths more than five kilometres. A unique feature of the region is the significant narrowing of the continental shelf around North-west Cape (approximately 7 km wide) from the broad continental shelf in the north of the region (approximately 400 km wide at Joseph Bonaparte Gulf) (DEWHA, 2007a), **Figure 2-8.**

The geological history of the region, as well as its geomorphology and oceanography, has influenced the composition and distribution of sediments (DEWHA, 2007a). The sedimentology of the NWMR is dominated by marine carbonates, which show a broad zoning and fining with water depth. Main trends of the NWMR sediments include a tropical carbonate shelf that is dominated by sand and gravel, an outer shelf/slope zone that is dominated by mud and a relatively homogenous rise and abyssal plain/deep ocean floor that is dominated by non-carbonate mud (Baker *et al.,* 2008), **Figure 2-9**.

The distribution and resuspension of sediments on the inner shelf is strongly influenced by the strength of tides across the continental shelf as well as episodic events such as cyclones. Further offshore, on the mid to outer shelf and on the slope itself, sediment movement is primarily influenced by ocean currents and internal tides (DEWHA, 2007a).

This variation in bathymetry and interactions with oceanographic processes provides a diversity of habitats to marine fauna and flora within the NWMR.

2.5 Air quality

The ambient air quality of all three marine regions is largely unpolluted due to the extent of the open ocean area, the activities currently carried out in each and the relative remoteness of each region.

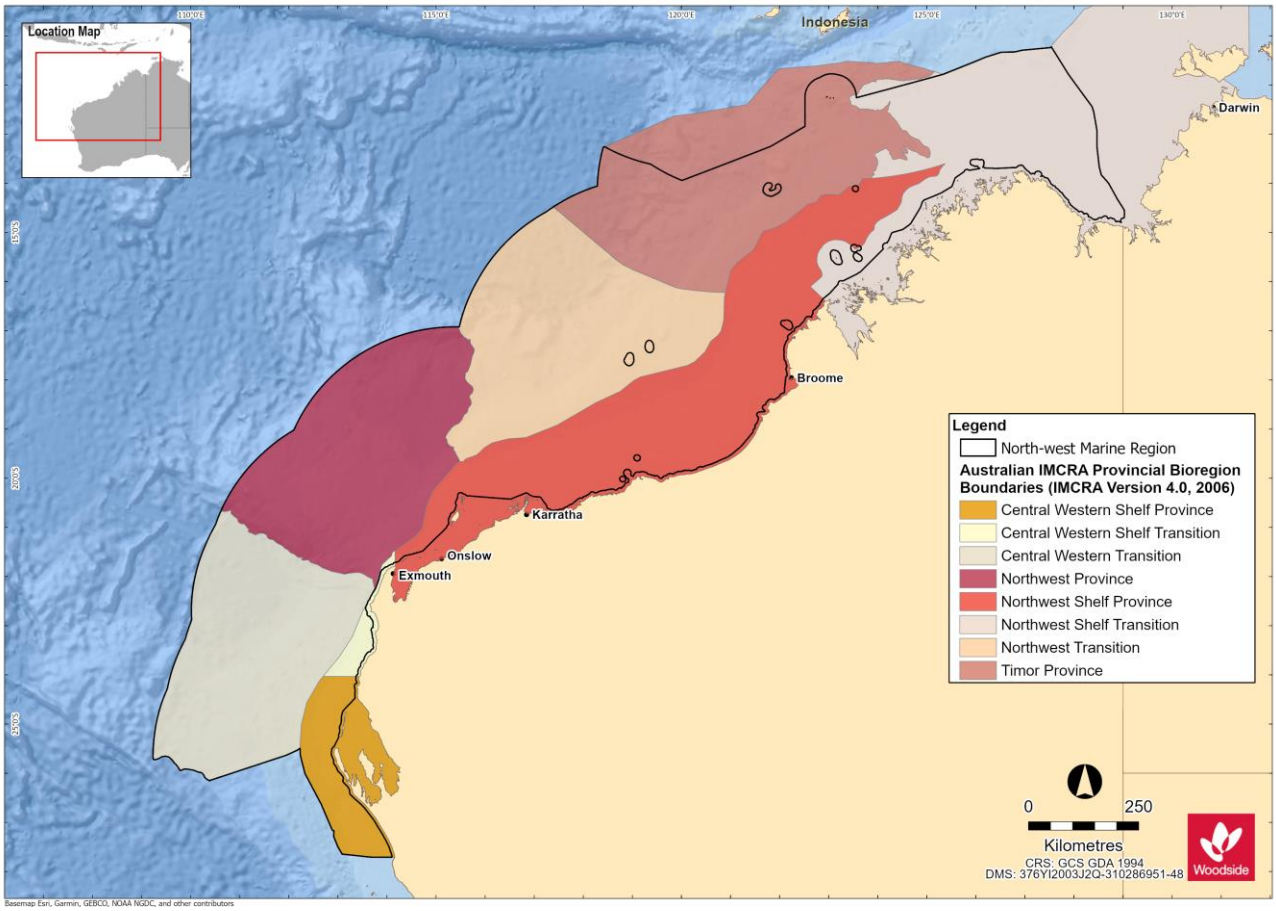

Figure 2-7. The eight provincial bioregions of the NWMR (Commonwealth of Australia, 2006)

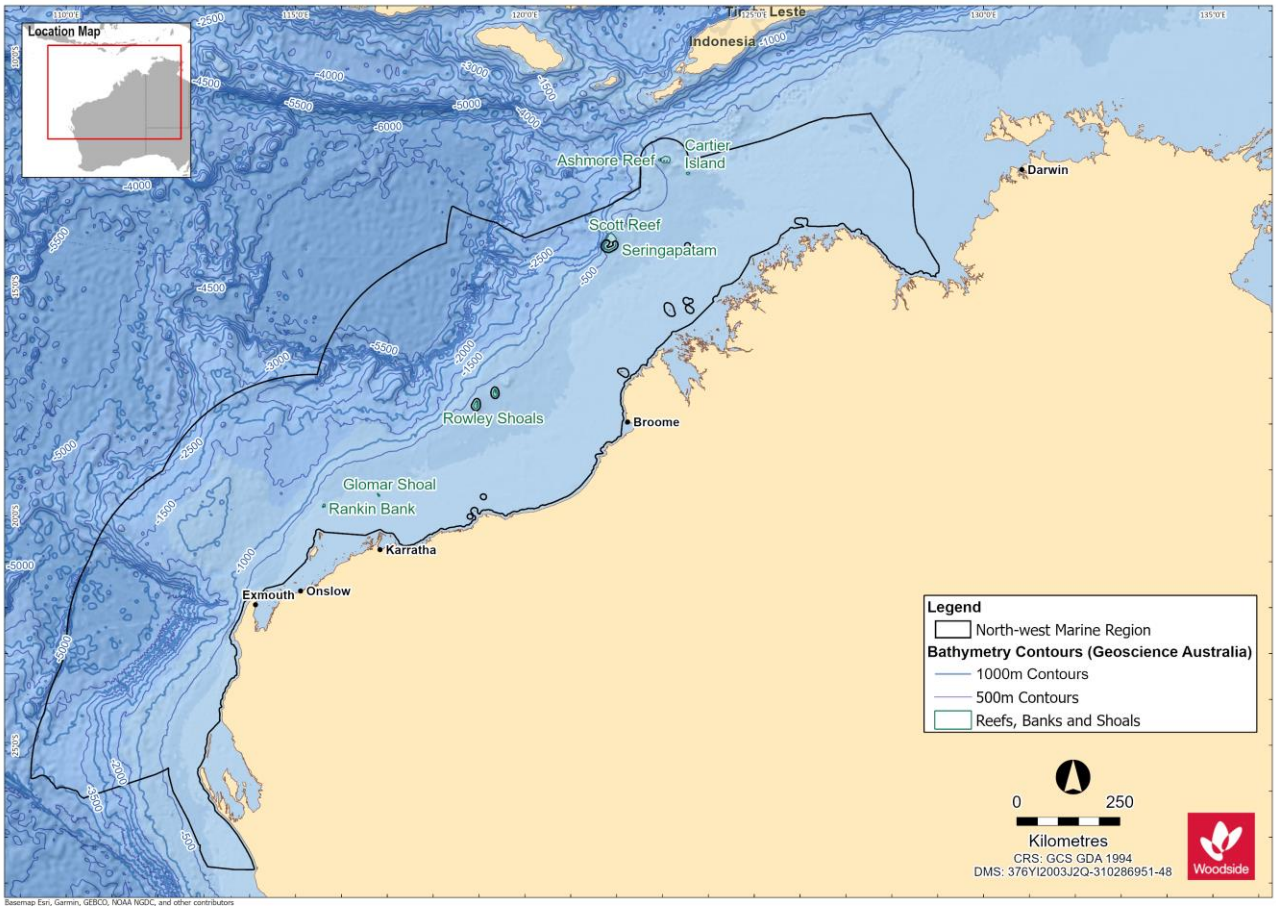

Figure 2-8. Bathymetry of the NWMR

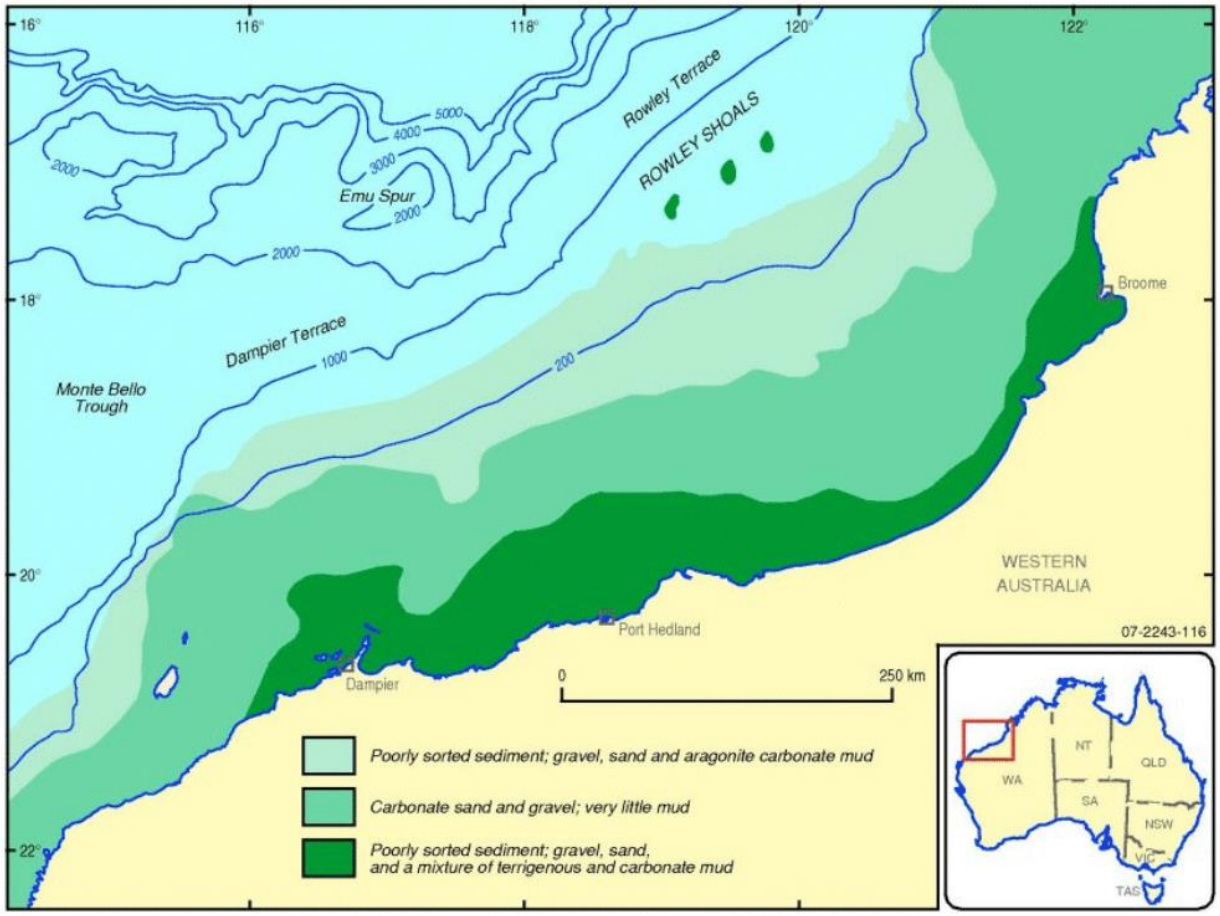

Figure 2-9. Overview of the seabed sediments of the NWMR (Baker *et al*., 2008)

3. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (EPBC ACT)

3.1 Summary of Matters of National Environmental Significance (MNES)

This section summarises the matters of national environmental significance (MNES) reported for the three bioregions; NWMR **(Table 3-1),** SWMR (**Table 3-2**) and NMR (**Table 3-3**), based on the Protected Matters search reports (**Appendix A**).

Additional information on these MNES are provided in subsequent sections (referenced below).

Table 3-1 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as potentially occurring within the NWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	2	Shark Bay The Ningaloo Coast	**Section 10**
National Heritage Places	5	Shark Bay The Ningaloo Coast The West Kimberley The Dampier Archipelago (including Burrup Peninsula) Dirk Hartog Landing Site 1616	**Section 10**
Wetlands of International Importance (Ramsar)	3	Ashmore Reef National Nature Reserve Eighty Mile Beach Roebuck Bay[1]	**Section 10**
Commonwealth Marine Area	2	EEZ and Territorial Sea Key Ecological Features (KEFs) Australian Marine Parks (AMPs) Australian Whale Sanctuary Extended Continental Shelf	**Section 9** **Section 10**
Listed Threatened Ecological Communities	1	Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Terrestrial community and not considered further
Listed Threatened Species	70	Refer NWMR PMST report (**Appendix A**)	**Section 5 – Section 8**
Listed Migratory Species	84	Refer NWMR PMST report (**Appendix A**)	**Section 5 – Section 8**

[1] *Roebuck Bay is a designated Wetland of International Importance (Ramsar site), which was not included in the PMST Report (**Appendix A**).*

Table 3-2 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) as potentially occurring within the SWMR

MNES	Number	Description	Section of this Document
World Heritage Properties	0	N/A	N/A
National Heritage Places	3	Cheetup Rock Shelter Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos HMAS Sydney II and HSK Kormoran Shipwreck Sites	**Section 10**
Wetlands of International Importance (Ramsar)	4	Becher Point Wetlands Forrestdale and Thomsons Lakes Peel-Yalgorup System Vasse-Wonnerup System	**Section 10**
Commonwealth Marine Area	2	EEZ and Territorial Sea KEFs AMPs Australian Whale Sanctuary Extended Continental Shelf	**Section 9** **Section 10**
Listed Threatened Ecological Communities	3	Banksia Woodlands of the Swan Coastal Plain ecological community Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia Tuart (*Eucalyptus gomphocephala*) Woodlands and Forests of the Swan Coastal Plain ecological community	Terrestrial communities and not considered further
Listed Threatened Species	65	Refer SWMR PMST report (**Appendix A**)	N/A
Listed Migratory Species	67	Refer SWMR PMST report (**Appendix A**)	N/A

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

MNES	Number	Description	Section of this Document
World Heritage Properties	0	N/A	N/A
National Heritage Places	0	N/A	N/A
Wetlands of International Importance (Ramsar)	0	N/A	N/A
Commonwealth Marine Area	2	EEZ and Territorial Sea KEFs AMPs Australian Whale Sanctuary Extended Continental Shelf	**Section 9** **Section 10**
Listed Threatened Ecological Communities	0	N/A	N/A
Listed Threatened Species	33	Refer NMR PMST report (**Appendix A**)	N/A
Listed Migratory Species	70	Refer NMR PMST report (**Appendix A**)	N/A

3.2 Part 13 Statutory Instruments for EPBC Act Listed Threatened and Migratory Species in the NWMR, SWMR and NMR

A screening process was conducted to identify which EPBC Act listed threatened and migratory species, and associated Part 13 statutory instruments, are relevant in the context of the assessment of impacts and risks associated with petroleum activities in each of the Woodside activity areas, using the following criteria:

- overlap between the Woodside activity areas with habitat critical for the survival of marine turtles, and with BIAs (overlapping the marine environment) for any listed threatened species as reported in the PMST searches;
- published literature, unpublished reports and/or credible anecdotal information (e.g. feedback from stakeholders) indicating species presence/occurrence within the Woodside activity areas;
- temporal overlap between the likely timing of petroleum activities and peak periods for key behaviours (e.g. breeding, nesting, calving, resting, foraging, migration); and
- environmental aspects associated with petroleum activities have been identified as a key threat to a species in a Part 13 statutory instrument (e.g. anthropogenic noise, light emissions, marine debris).

Relevant EPBC Act threatened and migratory species and their Part 13 statutory instruments are listed in **Table 3-4**. For the full list of EPBCA Act listed species for each marine bioregion refer to the PMST reports (**Appendix A**).

Table 3-4 Summary of MNES identified by the EPBC Act Protected Matters Search Tool (PMST) to be considered for impact or risk evaluation for Woodside operations

Species	EPBC Act Part 13 Statutory Instrument
All vertebrate marine fauna	Threat Abatement Plan for the impacts of marine debris on vertebrate marine life (Commonwealth of Australia, 2018)
Marine Mammals	
Blue whale	Conservation Management Plan for the Blue Whale: A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2015–2025 (Commonwealth of Australia, 2015a)
Southern right whale	Conservation Management Plan for the Southern Right Whale: A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2011–2021 (DSEWPAC, 2012d)
Sei whale	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee, 2015a)
Humpback whale	Conservation Advice *Megaptera novaeangliae* humpback whale (Threatened Species Scientific Committee, 2015b)
Fin whale	Conservation Advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee, 2015c)
Australian sea lion	Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) 2013 (DSEWPAC, 2013a) (due to expire in October 2023) Conservation Advice *Neophoca cinerea* Australian Sea Lion (Threatened Species Scientific Committee, 2020a) (in effect under the EPBC Act from 23-Dec-2020)
Marine Reptiles	
All marine turtle species (loggerhead, green, leatherback, hawksbill, flatback, olive ridley)	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017)
Short-nosed sea snake	Approved Conservation Advice for *Aipysurus apraefrontalis* (Short-nosed Sea Snake) (DSEWPAC, 2011a)
Leaf-scaled sea snake	Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
Fishes, Sharks, Rays and Sawfishes	
Grey nurse shark (west coast population)	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) 2014 (DOE, 2014)
White shark	Recovery Plan for the White Shark (*Carcharodon carcharias*) 2013 (DSEWPAC, 2013b)
Whale shark	Conservation Advice *Rhincodon typus* whale shark (Threatened Species Scientific Committee, 2015d)
All sawfishes (largetooth, green, dwarf, speartooth, narrow)	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)

Species	EPBC Act Part 13 Statutory Instrument
Seabirds	
Migratory seabird species	Draft Wildlife Conservation Plan for Migratory Seabirds (Commonwealth of Australia, 2019)
Southern giant petrel	National recovery plan for threatened albatrosses and giant petrels 2011–2016 (DSEWPAC, 2011c)
Indian yellow-nosed albatross	National recovery plan for threatened albatrosses and giant petrels 2011–2016 (DSEWPAC, 2011c)
Abbott's booby	Conservation Advice for the Abbott's booby - *Papasula abbotti* (Threatened Species Scientific Committee, 2020b)
Australian fairy tern	Approved Conservation Advice for *Sterna nereis nereis* (Fairy Tern) (DSEWPAC, 2011d)
Australian lesser noddy	Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee, 2015e)
Soft-plumaged petrel	Conservation Advice *Pterodroma mollis* soft-plumaged petrel (Threatened Species Scientific Committee, 2015f)
Shorebirds	
Migratory shorebird species	Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c)
Eastern curlew, far eastern curlew	Conservation Advice *Numenius madagascariensis* eastern curlew (DOE, 2015a)
Curlew sandpiper	Conservation Advice *Calidris ferruginea* curlew sandpiper (DOE, 2015b)
Great knot	Conservation Advice *Calidris tenuirostris* Great knot (Threatened Species Scientific Committee, 2016a)
Red knot, knot	Conservation Advice *Calidris canutus* Red knot (Threatened Species Scientific Committee, 2016b)
Bar-tailed godwit (*menzbieri*)	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia) (Threatened Species Scientific Committee, 2016c)
Greater sand plover	Conservation Advice *Charadrius leschenaultii* Greater sand plover (Threatened Species Scientific Committee, 2016d)
Lesser sand plover	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threatened Species Scientific Committee, 2016e)

4. HABITAT AND BIOLOGICAL COMMUNITIES

4.1 Regional context

The NWMR habitats range from nearshore benthic primary producer habitats such as seagrass beds, coral communities and mangrove forests, to offshore soft sediment seabed habitats and submerged and emergent reef systems. These habitats support biological communities that range from low density sessile and mobile benthos, such as sponges, molluscs and echinoids (with noted areas of sponge hotspot diversity) in offshore soft sediment habitat (DSEWPAC, 2012a) to complex, diverse, remote coral reef systems.

Benthic primary producer habitats, such as seagrass beds, coral communities and mangrove forests within the SWMR, are described as a mixture of tropical and temperate species, due to the seasonal influences of the tropical waters carried south by the Leeuwin Current and the temperate waters carried north by the Capes Current (DSEWPAC, 2012b).

The NMR shares similar habitat types to the NWMR. The predominant habitat of the region includes soft muddy sediments on relatively flat terrain. Other habitat types include seagrasses, reefs, shoals and coastal habitats such as mangroves and coastal wetlands (Rochester *et al.*, 2007).

The summary of key habitats and biological communities provided in the following sub-sections is focused on the primary features of relevance to the activity areas within the NWMR – primarily the offshore habitats of the continental shelf and slope, submerged shoals and banks, and remote oceanic reef systems of recognised conservation value.

4.2 Biological Productivity of NWMR

Primary productivity of the NWMR is generally low and appears to be largely driven by offshore influences (Brewer *et al.*, 2007), with periodic upwelling events and cyclonic influences driving coastal productivity with nutrient recycling and advection. Seasonal weather patterns also influence the delivery of nutrients from deep-water to shallow water. Cyclones and north-westerly winds during the North-west monsoon (approximately November–March) and the strong offshore winds of the South-east monsoon (approximately April–September) facilitate the upwelling and mixing of nutrients from deep-water to shallow water environments (Brewer *et al.*, 2007).

The Indonesian Throughflow (ITF) has an important effect on productivity in the northern areas of the Region. Generally, its deep, warm and low nutrient waters suppress upwelling of deeper comparatively nutrient-rich waters, thereby forcing the highest rates of primary productivity to occur at depths associated with the thermocline. When the ITF is weaker, the thermocline lifts bringing deeper, more nutrient-rich waters into the photic zone and hence resulting in conditions favourable to increased productivity (DEWHA, 2007a). Similarly, the Leeuwin Current has a significant role in determining primary productivity in the southern areas of the NWMR. As with the ITF, the overlying warm oligotrophic waters of the Leeuwin Current suppress upwelling. A subsurface chlorophyll maximum is therefore formed at a depth in the water column where nutrients and light are sufficient for photosynthesis to proceed. Seasonal changes in the strength of the Leeuwin Current influence primary productivity levels and seasonal interactions between the Leeuwin and Ningaloo currents in the south of the NWMR are believed to be particularly important (DEWHA, 2007a).

Internal tides (defined as internal waves generated by the barotropic tide) are a striking characteristic of many parts of the NWMR and are associated with highly stratified water columns. Internal waves (solitons), which can raise cooler, generally more nutrient rich water higher in the water column, are generated between water depths of 400 m and 1000 m where bottom topography results in a significant change in water depth over a relatively short distance. Cyclones are episodic events in the NWMR that contribute to spikes in productivity through enrichment of surface water layers due to enhanced vertical mixing of the water column. Temporary increases in primary productivity as a result of cyclones generally last between one and two weeks, and it is believed that the impacts of

cyclones are generally limited to waters less than 100 m deep and affect benthic communities more substantially than pelagic systems (DEWHA, 2007a).

Water depth also has a significant overriding influence over productivity in the marine environment, due to its influence on light availability. This is reflected by distinct onshore and offshore assemblages of major pelagic groups of phytoplankton, microzooplankton, mesoplankton and ichthyoplankton. Productivity booms are thought to be triggered by seasonal changes to physical drivers or episodic events, as detailed above, which result in rapid increases in primary production over short periods, followed by extended periods of lower primary production. The trophic systems in the NWMR are able to take advantage of blooms in primary production, enabling nutrients generated to be used by different groups of consumers over long periods (DEWHA, 2007a).

Little detailed information is available about the trophic systems in the NWMR. The utilisation of available nutrients is thought to differ between pelagic and benthic environments, influenced by water depth and vertical migration of some species groups in the water column. In the pelagic system, it is thought that approximately half of the nutrients available are utilised by microzooplankton (e.g. protozoa) with the remainder going to macro/meso-zooplankton (e.g. copepods). As primary and secondary consumers, gelatinous zooplankton (e.g. salps, coelenterates) and jellyfish are thought to play an important role in the food web, contributing a significant proportion of biomass in the marine system during and for periods after booms in primary productivity. Salps are semi-transparent, barrel-shaped marine animals that can reproduce quickly in response to bursts in primary productivity and provide a food source for many pelagic fish species (DEWHA, 2007a).

4.3 Planktonic Communities in the NWMR

The NWMR has two distinct phytoplankton assemblages; a tropical oceanic community in offshore waters and a tropical shelf community confined to the NWS (Hallegraeff, 1995). MODIS (Moderate Resolution Imaging Spectrometer) satellite datasets from the NWMR indicates that chlorophyll (and thus phytoplankton) levels are low in summer months (December to March) and higher in the winter months (Schroeder *et al.*, 2009). Low chlorophyll levels during summer months may be a result of lower plankton productivity during the wet season or lower nutrient inputs from warm surface waters dominant during summer. However, it is likely that much of the primary production is taking place below the surface, where the MODIS imagery does not penetrate (Schroeder *et al.*, 2009). The winter months are relatively cloud free and surface chlorophyll is high throughout most of the region.

Zooplankton and may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well as larval stages of other taxa such as fishes, corals and molluscs. Peaks in zooplankton such as mass coral spawning events (typically in March and April) (Rosser and Gilmour, 2008) and fish larvae abundance (CALM, 2005a) can occur throughout the year. Spatial and temporal patterns in the distribution and abundance of macro-zooplankton on the North-west Shelf are influenced by sporadic climatic and oceanographic events, with large inter-annual changes in assemblages (Wilson *et al.*, 2003). Amphipods, euphausiids, copepods, mysids and cumaceans are among the most common components of the zooplankton in the region (Wilson *et al.*, 2003).

4.3.1 Browse

Phytoplankton within the Browse activity area is expected to reflect the conditions of the NWMR. There is a tendency for offshore phytoplankton communities in the NWMR to be characterised by smaller taxa (e.g. bacteria), whereas shelf waters are dominated by larger taxa such as diatoms (Hanson *et al.*, 2007).

Zooplankton within the activity area may include organisms that complete their lifecycle as plankton (e.g. copepods, euphausiids) as well as larval stages of other taxa such as fishes, corals and molluscs. Peaks in zooplankton such as mass coral spawning events (typically in March and April) (Rosser and Gilmour, 2008; Simpson *et al.*, 1993) and fish larvae abundance (CALM, 2005a) can occur throughout the year.

The influence of the Indonesian Throughflow restricts upwelling across the Kimberley System (approximately equates to the Browse activity area). However, small-scale topographically associated current movements and upwellings are thought to occur, which inject nutrients into specific locations within the system and result in 'productivity hot-spots'. Similarly, internal waves, generated at the shelf break (e.g. west of Browse Island and around submerged cliffs) play a role in making nutrients available in the photic zone. Productivity within shallow nearshore waters is driven primarily by tidal movement and terrestrial runoff whereby nutrients are mixed by tidal action and new inputs of organic matter come from the land.

4.3.2 North-west Shelf / Scarborough

Plankton communities within the NWS / Scarborough activity area are expected to reflect conditions of the NWMR. Within the Pilbara system of the NWMR (approximately equates to the NWS / Scarborough activity area). Internal tides along the NWS and Exmouth Plateau result in the drawing of deeper cooler waters into the photic zone, stirring up nutrients and triggering primary productivity. Broadly the greatest productivity within this sub-system is found around the 200 m isobath associated with the shelf break.

4.3.3 North-west Cape

Waters of the North-west Cape experience a relatively high diversity of phytoplankton groups including diatoms, coccolithophorids and dinoflagellates. During the warmer months blooms of *Trichodesmium* occur in the region, these have been observed particularly on the frontal systems around Point Murat (Heyward *et al*., 2000).

Average Leeuwin Current phytoplankton biomass is characteristic of low productivity oceanic waters like the Indian, Pacific and Atlantic Oceans (Hanson *et al.*, 2005). However, the Canyons linking the Cuvier Abyssal Plain and Cape Range Peninsula KEF are connected to the Commonwealth waters adjacent to Ningaloo Reef, and may also have connections to Exmouth Plateau. The canyons are thought to interact with the Leeuwin Current to produce eddies inside the heads of the canyons, resulting in waters from the Antarctic intermediate water mass being drawn into shallower depths and onto the shelf (Brewer *et al.* 2007). These waters are cooler and richer in nutrients and strong internal tides may also aid upwelling at the canyon heads (Brewer *et al.* 2007). The narrow shelf width (about 10 kilometres) near the canyons facilitates nutrient upwelling and relatively high productivity. This high primary productivity leads to high densities of primary consumers, such as micro and macro-zooplankton, such as amphipods, copepods, mysids, cumaceans, euphausiids (Brewer *et al.*, 2007).

4.4 Habitats and Biological Communities in the NWMR

4.4.1 Offshore Habitats and Biological communities

The NWMR has a large area of continental shelf and continental slope, with a range of bathymetric features such as canyons, plateaus, terraces, ridges, reefs, banks and shoals. The marine environment in this region is typified by tropical to sub-tropical marine ecosystems with diverse habitats from soft sediments, canyons, remote coral reefs and limestone pavement.

The key habitats and biological communities representative of the broader NWMR are summarised in **Table 4-1**.

The key habitats and biological communities representative of the broader SWMR and NMR are summarised in **Table 4-2** and **Table 4-3**.

4.4.2 Shoreline habitats and biological communities

The NWMR encompasses offshore and coastal waters, islands and mainland shoreline habitats typified by mangroves, tidal flats, saltmarshes, sandy beaches, and smaller areas of rocky shores. Each of these shoreline types has the potential to support different flora and fauna assemblages due to the different physical factors (e.g. waves, tides, light, etc.) influencing the habitat.

The key shoreline habitats representative of the broader NWMR are summarised in **Table 4-1**.

The key shoreline habitats representative of the broader SWMR and NMR are summarised in **Table 4-2** and **Table 4-3**.

Table 4-1 Habitats and biological communities within the NWMR

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
Offshore habitats and biological communities				
Soft sediment with infauna	The offshore environment of the NWMR comprises predominately of seabed habitats dominated by soft sediments (sandy and muddy substrata with occasional patches of coarser sediments) and sparse benthic biota. The benthic communities inhabiting the predominantly soft, fine sediments of the offshore habitats are characterised by infauna such as polychaetes, and sessile and mobile epifauna such as crustacea (shrimp, crabs and squat lobsters) and echinoderms (starfish, cucumbers).The density of benthic fauna is typically lower in deep-sea sediment habitats (greater than 200 m) than in shallower coastal sediment habitats, but the diversity of communities may be similar.			
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments. This habitat is found in offshore areas of the NWMR, often associated with key ecological features such as the Ancient coastline at 125 m depth contour KEF.			**Section 9**
	Ancient Coastline at 125 m Depth Contour KEF Continental Slope Demersal Fish Communities KEF	Ancient Coastline at 125 m Depth Contour KEF Continental Slope Demersal Fish Communities KEF	Ancient Coastline at 125 m Depth Contour KEF Continental Slope Demersal Fish Communities KEF	**Section 9**
Coral Reef	Coral reef habitats within the NWMR have a high species diversity that includes corals, and associated reef species such as fishes, crustaceans, invertebrates, and algae. Coral reef habitats of the offshore environment of the NWMR include remote oceanic reef systems, large platform reefs, submerged banks and shoals.			
	Browse Island Scott Reef Seringapatam Reef Ashmore Reef Cartier Island Hibernia Reef	Rowley Shoals (including Mermaid Reef, Clerke Reef, Imperieuse Reef) Glomar Shoal Rankin Bank	-	**Section 10**
Seagrass and Macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and also provide key habitats and nursery grounds (Heck Jr. *et al.*, 2003; Wilson *et al.*, 2010). In the northern half of Western Australia, these habitats are restricted to sheltered and shallow waters, including around offshore reef systems, due to large tidal movement, high turbidity, large seasonal freshwater run-off and cyclones.			
	Scott Reef Seringapatam Reef Ashmore Reef	Rowley Shoals (including; Mermaid Reef, Clerke Reef, Imperieuse Reef)		**Section 10**
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWHA, 2008). Filter feeders generally live in areas that have strong currents and hard substratum, often associated with deeper environments of the shoals and banks in the offshore NWMR.			
	Lower outer reef slopes of the oceanic reef	Glomar Shoal Rankin Bank	Cape Range canyon system	**Section 10**

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
	systems such as Scott Reef	Ancient coastline at 125 m depth contour KEF		
Sandy Beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors (e.g. waves, currents, etc). Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NWMR, being found around islands and reefs in the offshore areas of the region.			
	Browse Island Scott Reef (Sandy Islet) Ashmore Reef Cartier Island	Montebello Islands Lowendal Islands Barrow Island	Muiron Islands	**Section 10**
Nearshore/coastal habitats and biological communities				
Coral Reef	Coral reef habitats typically found in nearshore regions of the NWMR include the fringing reefs around coastal islands and the mainland shore.			
	Kimberley East Holothuria and Long reefs Bonaparte and Buccaneer Archipelagos Montgomery Reef Adele complex (Beagle, Mavis, Albert, Churchill reefs, Adele Island)	Dampier Archipelago Montebello, Lowendal and Barrow Island Groups	Ningaloo Reef Exmouth Gulf Shark Bay	**Section 10**
Seagrass and Macroalgae communities	Seagrass beds and benthic macroalgae reefs are a main food source for many marine species and also provide key habitats and nursery grounds (Heck Jr. *et al.*, 2003; Wilson *et al.*, 2010). In the nearshore areas of the NWMR, these habitats are restricted to sheltered and shallow waters due to large tidal movement, high turbidity, large seasonal freshwater run-off and cyclones. These areas include in bays and sounds and around reef and island groups.			
	King Sound	Roebuck Bay Dampier Archipelago Montebello, Lowendal and Barrow Island Groups	Ningaloo Reef Exmouth Gulf Shark Bay	**Section 10**
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWHA, 2007a). Filter feeders generally live in areas that have strong currents and hard substratum. Conversely, higher diversity infauna are mainly associated with soft unconsolidated sediment and infauna communities are considered widespread and well represented along the continental shelf and upper slopes of the NWMR. In nearshore areas of the NWMR, these species are generally found around reef systems.			
	-	Deeper habitats of Rankin Bank and Glomar Shoal	Deeper habitats of Ningaloo Reef and the protected sponge zone in the south	

Habitat/Community	Browse	NWS / Scarborough	North-west Cape	Reference
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie *et al.*, 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie *et al.*, 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the NWMR.			
	Dampier Peninsula (including Carnot Bay, Beagle Bay and Pender Bay)	Pilbara Coastline (including; Ashburton River Delta, Coolgra Point, Robe River Delta, Yardie Landing, Yammadery Island and the Mangrove Islands) Montebello, Lowendal and Barrow Island Groups Roebuck Bay	Shark Bay Mangrove Bay, Cape Range Peninsula Exmouth Gulf	
Saltmarshes	Saltmarshes communities are confined to shoreline habitats and are typically dominated by dense stands of halophytic plants such as herbs, grasses, and low shrubs. The diversity of saltmarsh plant species increases with increasing latitude (in contrast to mangroves). The vegetation in these environments is essential to the stability of the saltmarsh, as they trap and bind sediments. The sediments are generally sandy silts and clays and can often have high organic material content.			
	-	Eighty Mile Beach Roebuck Bay	Shark Bay	
Sandy Beaches	Sandy beaches are dynamic environments, naturally fluctuating in response to external forcing factors (e.g. waves, currents, etc). Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NWMR. Sandy beaches are important for both resident and migratory seabirds and shorebirds and can also provide an important habitat for turtle nesting and breeding. They are located along many coastlines of the nearshore environments of the NWMR.			
	Cape Domett Lacrosse Island	Eighty Mile Beach Eco Beach Dampier Archipelago Inshore Pilbara Islands (Northern, Middle, and Southern)	Ningaloo coast Muiron Islands Exmouth Gulf	

Table 4-2 Habitats within the SWMR

Habitat/Community	Location
Offshore	
Soft sediment with infauna	Most of the SWMR seafloor is composed of soft unconsolidated sediments, but due to large variations in bathymetry there are marked differences in sedimentary composition and benthic assemblage structure across the region. Despite the prevalence of these habitats in the SWMR, very little is known about the composition or distribution of the region's sedimentary infauna (DEWHA, 2008b)
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments.
	Perth Canyon Marine Park Ancient coastline at 90-120 m depth contour KEF Diamantina Fracture Zone Naturaliste Plateau
Coral Reef	To date, studies and understanding of the corals within the SWMR have concentrated on the shallow water areas in State Waters. Within the deeper Commonwealth waters of the SWMR little is known of the distribution of corals.
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWR, 2007). Filter feeders generally inhabit deeper habitat (below the photic zone) that have strong currents and hard substratum
	Ancient coastline at 90-120 m depth Diamantina Fracture Zone Naturaliste Plateau Perth Canyon Marine Park South-west Corner Marine Park
Nearshore	
Coral Reef	The northern extent of the SWMR coincides loosely with the disappearance of abundant and diverse coral from coastal habitats. To the south of Shark Bay, abundant corals occur predominantly around offshore islands, with corals at inshore sites occurring in very isolated patches of non-reef coral communities, usually of reduced species richness.
	Houtman Abrolhos Islands Rottnest Island
Seagrass and Macroalgae communities	Within the SWMR, macroalgae and seagrass communities are noted for their extent, species richness and endemism. The clear waters of the region allow light to reach greater depths, with some species found at much greater depths than usual (down to 120 m) (DEWR, 2007). Of the known species there are more than 1000 species of macro-algae and 22 species of seagrass consisting of tropical and temperate species. Seagrass and macro-algae occur in areas with sheltered bays and in the inter-reef lagoons along exposed sections of the coast.
	Houtman Abrolhos Islands Jurien Marine Park Shoalwater Islands Marine Park Geographe Marine Park Cockburn Sound Rottnest Island

Habitat/Community	Location
	Commonwealth marine environment within and adjacent to the west-coast inshore lagoons KEF Commonwealth marine environment within and adjacent to Geographe Bay KEF Commonwealth marine environment surrounding the Recherche Archipelago KEF
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWR, 2007). Filter feeders generally live in areas that have strong currents and hard substratum.
	Houtman Abrolhos Islands Recherche Archipelago
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie *et al.*, 2006). Mangrove forests can help stabilise coastal sediments, provide a nursery ground for many species of fish and crustacean, and provide shelter or nesting areas for seabirds (McClatchie *et al.*, 2006). Mangroves are confined to shoreline habitats, in nearshore areas of the SWMR.
	Houtman Abrolhos Islands
Sandy Beaches	Sandy beaches within the SWMR are important for both resident and migratory seabirds and shorebirds and can also host breeding populations of the Australian sea lion. They are found along many coastlines of the nearshore environments of the SWMR. In addition to this, beaches in the SWMR provide a variety of socio-economic values including tourism, commercial and recreational fishing, and support other recreational activities.
	Houtman Abrolhos Islands Marmion Marine Park Ngari Capes Marine Park Walpole and Nornalup Inlets Marine Park

Table 4-3 Habitats and Biological Communities within the NMR

Habitat/Community	Location
Offshore habitats and biological communities	
Soft sediment with infauna	Most of the offshore environment of the NMR is characterised by relatively flat expanses of soft sediment seabed. The soft sediments of the region are characterised by moderately abundant and diverse communities of infauna and mobile epifauna dominated by polychaetes, crustaceans, molluscs, and echinoderms.
Soft sediment with hard substrate outcropping	A unique seafloor feature combining both soft sediment and hard substrates, including outcrops, terraces, continental slope, and escarpments. The variability in substrate composition may contribute to the presence of unique ecosystems. Species present include sponges, soft corals and other sessile filter feeders associated with hard substrate sediments.
	Carbonate bank and terrace system of the Van Diemen Rise KEF Pinnacles of the Bonaparte Basin KEF
Coral Reef	Offshore coral reefs within the NMR is generally associated with a series of submerged shoals and banks. The shoals/banks in the region support tropical marine biota consistent with that found on emergent reef systems of the Indo West Pacific region such as Ashmore Reef, Cartier Island, Seringapatam Reef and Scott Reef (Heyward *et al.,* 1997)
	Pinnacles of the Bonaparte Basin KEF Evans Shoal Tassie Shoal Blackwood Shoal
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWHA, 2007b). Filter feeders generally live in areas that have strong currents and hard substratum and typically associated with the deeper habitats of the submerged shoals and banks, and canyon features.
	Carbonate bank and terrace system of the Van Diemen Rise KEF Pinnacles of the Bonaparte Basin KEF Tributary Canyons of the Arafura Depression KEF Evans Shoal Tassie Shoal Goodrich Bank
Nearshore	
Coral Reef	Within the NMR corals occur both as reefs and in non-reef coral communities. Nearshore reefs include patch reefs and fringing reefs sparsely distributed within the region. Coral reefs within the NMR provides breeding and aggregation areas for many fish species including mackerel and snapper and offer refuges for sea snakes and apex predators such as sharks.
	Submerged coral reefs of the Gulf of Carpentaria KEF Darwin Harbour
Seagrass and Macroalgae communities	Seagrasses provide key habitats in the NMR. They stabilise coastal sediments and trap and recycle nutrients. They provide nursery grounds for commercially harvested fish and prawns and provide feeding grounds for dugongs and green turtles. Seagrass distribution in the region is largely associated with sheltered small bays and inlets including shallow waters surrounding inshore islands.
	Field Island The mainland coastline adjacent to Kakadu National Park

Habitat/Community	Location
Filter Feeders/ heterotrophic	Filter feeder epifauna such as sponges, ascidians, soft corals, and gorgonians are animals that feed by actively filtering suspended matter and food particles from water, by passing the water over specialised filtration structures (DEWHA, 2007b). Filter feeders generally live in areas that have strong currents and hard substratum.
	Cape Helveticus
Mangroves	Mangroves grow in intertidal mud and sand, with specially adapted aerial roots (pneumatophores) that provide for gas exchange during low tide (McClatchie *et al.*, 2006). Mangroves provide habitat for waterbirds and support many commercially and recreationally important fish and crustacean species for parts of their life cycles. They buffer the coast from large tidal movements, storm surges and flooding.
	Tiwi Islands Darwin Harbour The mainland coastline adjacent to the Daly River
Sandy Beaches	Sandy beaches vary in length, width and gradient, and in sediment type, composition, and grain size throughout the NMR and are important for both resident and migratory seabirds and shorebirds. Sandy beaches can also provide an important habitat for turtle nesting. They are located along many coastlines of the nearshore environments of the islands and mainland shores of the NMR.
	Tiwi Islands Cobourg Peninsula Joseph Bonaparte Gulf

5. FISHES, SHARKS AND RAYS

5.1 Regional Context

Western Australian waters provide important habitat for listed fishes, sharks, and rays including areas that support key life stages such as breeding, foraging, and migration routes for fish species. Pelagic and demersal fishes occupy a range of habitats throughout each of the regions, from coral reefs to open offshore waters, and are an extremely important component of ecosystems, providing a link between primary production and higher predators, with many species being of conservation value and important for commercial and recreational fishing.

The fish fauna in the NWMR is diverse. Of the approximately 500 shark species found worldwide, 94 are found in the region (DEWHA, 2008). Approximately 54 species of syngnathids (seahorses, seadragons, pipehorses and pipefishes) and one species of solenostomids (ghostpipefishes) are also known to occur in the NWMR or adjacent State waters (DSEWPAC, 2012a).

The fish fauna of the SWMR includes more than 900 species occupying a large variety of habitats. However, only three species of bony fishes known to occur in the region are listed under the EPBC Act as threatened or marine species, and seven listed species of shark (DSEWPAC, 2012b).

The NMR is considered an important area for the sawfish and river shark species group, with five species of sawfishes and river sharks listed under the EPBC Act known to occur in the region (DSEWPAC, 2012c). Approximately 28 species of syngnathids and two species of solenostomids are listed marine and known to occur in the NMR, however there is a paucity of knowledge on the distribution, relative abundance and habitats of these species in the region (DEWHA, 2008).

The following sections focus on the fish species (including sharks and rays) listed as threatened or migratory that are known to occur within the NWMR. In addition, listed, conservation dependent fish and shark species for the NWMR are described. A detailed account of commercial and recreational fisheries that operate in the region is provided in **Section 11**.

Table 5-1 outlines the threatened and migratory fish species that may occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice. **Table 5-2** provides information for species of fish that are listed as conservation dependent that may occur within the NWMR, NMR and SWMR. Note that currently there are no approved Conservation Advices in place for any of these five species.

Table 5-1 Fish species (including sharks and rays) identified by the EPBC Act PMST for the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Rhincodon typus	Whale shark	Vulnerable	Migratory	Marine	Other specially protected fauna	Conservation Advice *Rhincodon typus* whale shark. (Threatened Species Scientific Committee, 2015d)
Carcharias taurus	Grey nurse shark (west coast population)	Vulnerable	N/A	Marine	Vulnerable	Recovery Plan for the Grey Nurse Shark (*Carcharias taurus*) (DOE, 2014a)
Carcharodon carcharias	White shark	Vulnerable	Migratory	Marine	Vulnerable	Recovery Plan for the White Shark (*Carcharodon carcharias*) (DSEWPAC, 2013b)
Isurus oxyrinchus	Shortfin mako	N/A	Migratory	Marine	N/A	N/A
Isurus paucus	Longfin mako	N/A	Migratory	Marine	N/A	N/A
Lamna nasus	Porbeagle shark Mackerel shark	N/A	Migratory	Marine	N/A	N/A
Carcharhinus longimanus	Oceanic whitetip shark	N/A	Migratory	Marine	N/A	N/A
Anoxypristis cuspidata	Narrow sawfish	N/A	Migratory	Marine	N/A	N/A
Pristis clavata	Dwarf sawfish	Vulnerable	Migratory	Marine	Priority	Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
Pristis pristis	Largetooth (Freshwater) sawfish	Vulnerable	Migratory	Marine	Priority	
Pristis zijsron	Green sawfish	Vulnerable	Migratory	Marine	Vulnerable	
Glyphis garricki	Northern river shark	Endangered	N/A	Marine	Priority	
Manta alfredi	Reef manta ray	N/A	Migratory	Marine	N/A	N/A
Manta birostris	Giant manta ray	N/A	Migratory	Marine	N/A	N/A

Table 5-2 EPBC Act listed Conservation Dependent species of fishes and sharks that may occur in the NWMR, NMR and SWMR

Species Name	Common Name	Likely Occurrence / Distribution	Listing Advice
Hoplostethus atlanticus	Orange roughy, Deep-sea perch, Red roughy	SWMR	No conservation listing advice for this species. Refer to the Marine bioregional plan for the SWMR (DSEWPAC, 2012b) for further information
Thunnus maccoyii	Southern bluefin tuna	NWMR and SWMR	Threatened Species Scientific Committee (2010)
Sphyrna lewini	Scalloped hammerhead	NWMR, NMR and SWMR	Threatened Species Scientific Committee (2018)
Centrophorus zeehaani	Southern dogfish, Endeavour dogfish, Little gulper shark	SWMR	Threatened Species Scientific Committee (2013)
Galeorhinus galeus	School shark, Eastern school shark, Snapper shark, Tope, Soupfin shark	SWMR	Threatened Species Scientific Committee (2009)

5.2 Protected Sharks, Sawfishes and Rays in the NWMR

The EPBC Act Protected Matters search (**Appendix A**) identified seven species of shark and five species of river shark or sawfish listed as threatened and/or migratory within the NWMR. In addition, two species of ray (the reef manta ray and giant manta ray) are listed as migratory within the region (refer **Table 5-2**).

5.2.1 Sharks and Sawfishes

The shark species known to occur within the NWMR include: the whale shark, grey nurse shark, white shark, shortfin mako, and longfin mako (**Table 5-2**).

Five species of river shark or sawfish known to occur in the NWMR and include: the narrow sawfish, northern river shark, freshwater sawfish, green sawfish and dwarf sawfish (**Table 5-2**).

There are identified BIAs within the NWMR for the whale shark, freshwater sawfish, green sawfish, and dwarf sawfish (refer **Section 5.3.2**).

Table 5-2 Information on the threatened shark and sawfish species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Whale shark	Preferred habitat: They have a widespread distribution in tropical and warm temperate seas, both oceanic and coastal (Last and Stevens, 2009). The species is widely distributed in Australian waters. Diet: Whale sharks are planktivorous sharks and feed on a variety of planktonic organisms including krill, jellyfish, and crab larvae (Last and Stevens, 2009).	Ningaloo Reef is the main known aggregation site for whale sharks in Australian waters and has the largest density of whale sharks per kilometre in the world (Martin, 2007). Refer **Table 5-3** for the BIA summary for the whale shark.
Grey nurse shark (west coast population)	Preferred habitat: Most commonly found in temperate waters on, or close to, the bottom of the continental shelf, from close inshore to depths of about 200 m (McAuley, 2004). Diet: A variety of teleost and elasmobranch fishes and some cephalopods (Gelsleichter *et al.*, 1999; Smale, 2005).	Details of movement patterns of the western sub-population are unclear (McAuley, 2004) and key aggregation sites have not been formally identified within the NWMR (Chidlow *et al.*, 2006). The NWMR represents the northern limit of the west coast population.

Species	Preferred Habitat and Diet	Habitat Location
White shark	Preferred habitat: The species typically occurs in temperate coastal waters between the shore and the 100 m depth contour; however, adults and juveniles have been recorded diving to depths of 1000 m (Bruce *et al.*, 2006; Bruce, 2008). Diet: Smaller white sharks (less than 3 m in length) feed primarily on teleost and elasmobranch fishes, broadening their diet as larger sharks to include marine mammals (Last and Stevens, 2009).	There are no known aggregation sites for white sharks in the NWMR, and this species is most often found south of North-west Cape, in low densities (DSEWPAC, 2012a). Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
Shortfin mako	Preferred habitat: The shortfin mako shark is a pelagic species with a circumglobal, wide-ranging oceanic distribution in tropical and temperate seas (Mollet *et al.*, 2000). Tagging studies indicate shortfin makos spend most of their time in water less than 50 m deep but with occasional dives up to 880 m (Abascal *et al.*, 2011; Stevens *et al.*, 2010). Diet: Feeds on a variety of prey, such as teleost fishes, other sharks, marine mammals, and marine turtles (Campana *et al.*, 2005).	Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
Longfin mako	Preferred habitat: A pelagic species with a wide-ranging oceanic distribution in tropical and temperate seas (Mollet *et al.*, 2000). Diet: Primarily teleost fishes and cephalopods (primarily squid) (Last and Stevens, 2009).	Records on longfin mako sharks are sporadic and their complete geographic range is not well known (Reardon *et al.*, 2006). Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.
Mackerel/Porbeagle shark	Preferred habitat: The porbeagle shark primarily inhabits offshore waters around the edge of the continental shelf. They occasionally move into coastal waters, but these movements are temporary (Campana and Joyce, 2004; Francis *et al.*, 2002). The porbeagle shark is known to dive to depths exceeding 1300 m (Campana *et al.*, 2010; Saunders *et al.*, 2011). Diet: Primarily teleost fish, elasmobranchs, and cephalopods (primarily squid) (Joyce *et al.*, 2002; Last and Stevens, 2009).	In Australia, the species occurs in waters from southern Queensland to south-west Australia (Last and Stevens, 2009). Distribution within the NWMR is unknown, but there are several records for this species on the NWS in the Atlas of Living Australia (ALA).
Oceanic whitetip shark	Preferred habitat: The oceanic whitetip shark is globally distributed in warm-temperate and tropical oceans (Andrzejaczek *et al.*, 2018). The species may occur in tropical and sub-tropical offshore and coastal waters around Australia. They primarily occupy pelagic waters in the upper 200 m of the water column; however, they have been observed diving to depths of around 1000 m, potentially associated with foraging behaviour (Howey-Jordan *et al.*, 2013; D'Alberto *et al.*, 2017). The species is highly migratory, travelling large distances between shallow reef habitats in coastal waters and oceanic waters (Howey-Jordan *et al.*, 2013). The species does exhibit a strong preference for warm and shallow waters above 120 m. Diet: Opportunistic feeders and generally target a variety of finfishes and pelagic squid, depending on habitat. Target pelagics such as tuna in open ocean as noted by the large bycatch numbers in the long line fisheries.	Given the migratory nature of the species, most likely has a broad distribution within the NWMR. No BIAs identified for NWMR.

Species	Preferred Habitat and Diet	Habitat Location
Narrow sawfish	Preferred habitat[1]: Shallow coastal, estuarine, and riverine habitats, however it may occur in waters up to 40 m deep (D'Anastasi *et al.*, 2013). Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	Shallow coastal waters of the Pilbara and Kimberly coasts (Last and Stevens, 2009).
Northern river shark	Preferred habitat[1]: Rivers, tidal sections of large tropical estuarine systems and macrotidal embayments, as well as inshore and offshore marine habitats (Pillans *et al.*, 2009; Thorburn and Morgan, 2004). Adults have been recorded only in marine environments. Juveniles and sub-adults have been recorded in freshwater, estuarine and marine environments (Pillans *et al.*, 2009). Diet: Variety of fish and crustaceans (Stevens *et al.*, 2005)	Within the NWMR records have come from both the west and east Kimberley, including King Sound, the Ord and King rivers, West Arm of Cambridge Gulf and also from Joseph Bonaparte Gulf (Thorburn and Morgan, 2004; Stevens *et al.*, 2005; Thorburn, 2006; Field *et al.*, 2008; Pillans *et al.*, 2008, Whitty *et al.*, 2008; Wynen *et al.*, 2008).
Largetooth (Freshwater) sawfish	Preferred habitat: Sandy or muddy bottoms of shallow coastal waters, estuaries, river mouths and freshwater rivers, and isolated water holes. Diet: Shoaling fishes, such as mullet, as well as molluscs and small crustaceans (Cliff and Wilson, 1994).	Refer **Table 5-3** for the BIA summary for the freshwater sawfish.
Green sawfish	Preferred habitat[1]: Inshore coastal environments including estuaries, river mouths, embayments, and along sandy and muddy beaches, as well as offshore marine habitat (Stevens *et al.*, 2005; Thorburn *et al.*, 2003). Diet: Schools of baitfish and prawns (Poganoski *et al.*, 2002), molluscs and small crustaceans (Cliff and Wilson, 1994).	Refer **Table 5-3** for the BIA summary for the green sawfish.
Dwarf sawfish	Preferred habitat[1]: Shallow (2 to 3 m) silty coastal waters and estuarine habitats, occupying relatively restricted areas and moving only small distances (Stevens *et al.*, 2008) Diet: Shoaling fish such as mullet, molluscs, and small crustaceans (Cliff and Wilson, 1994).	Refer **Table 5-3** for the BIA summary for the dwarf sawfish.

1 Preferred habitat as described within the Sawfish and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b).

5.2.2 Rays

Rays are commonly found in the NWMR. Two listed and migratory species of ray known to occur within the NWMR: the reef manta ray and giant manta ray.

No BIAs for either the reef or giant manta ray species have been identified in the NWMR.

Table 5-3 Information on migratory ray species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Reef manta ray	Preferred habitat: The reef manta ray is commonly sighted within productive nearshore environments, such as island groups, atolls or continental coastlines. However, the species has also been recorded at offshore coral reefs, rocky reefs, and seamounts (Marshall *et al.*, 2009). Diet: Feed on planktonic organisms including krill and crab larvae.	A resident population of reef manta rays has been recorded at Ningaloo Reef. No BIAs identified for NWMR.
Giant manta ray	Preferred habitat: The species primarily inhabits near-shore environments along productive coastlines with regular upwelling, but they appear	The Ningaloo Coast is an important area for giant manta rays from March to August (Preen *et al.*, 1997).

Species	Preferred Habitat and Diet	Habitat Location
	to be seasonal visitors to coastal or offshore sites including offshore island groups, offshore pinnacles and seamounts (Marshall *et al.*, 2011). Diet: Feed on planktonic organisms including krill and crab larvae.	No BIAs identified for NWMR.

5.3 Fish, Shark and Sawfish Biological Important Areas in the NWMR

A review of the National Conservation Values Atlas identified Biologically Important Areas (BIAs) for four species of shark and sawfish (whale shark, freshwater sawfish, green sawfish and dwarf sawfish) within the NWMR. The BIAs for the whale shark and the sawfish species include foraging, nursing and pupping areas. These are described in **Table 5-4**.

Table 5-4 Fish, whale shark and sawfish BIAs within the NWMR

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Pupping	Nursing	Foraging
Whale shark	✓	✓	✓	No pupping BIA identified within the NWMR	No nursing BIA identified within the NWMR	Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March–July) Foraging northward from Ningaloo along the 200 m isobath (July – Nov).
Green sawfish	✓	✓	-	Pupping in Cape Keraudren (pupping occurs in summer in a narrow area adjacent to shoreline) Pupping in Willie Creek Pupping in Roebuck Bay Pupping in Cape Leveque Pupping in waters adjacent to Eighty Mile Beach Pupping (likely) in Camden Sound.	Nursing in Cape Keraudren Nursing in waters adjacent to Eighty Mile Beach	Foraging in Cape Keraudren Foraging in Roebuck Bay Foraging in Cape Leveque Foraging in Camden Sound
Largetooth (freshwater) sawfish	✓	✓	-	Pupping in the mouth of the Fitzroy River (January to May) Roebuck Bay (Jan – May) Pupping likely in waters adjacent to Eighty Mile Beach	Nursing (likely) in King Sound Roebuck Bay (Jan – May)	Foraging in the mouth of the Fitzroy River (January to May) Foraging in King Sound Roebuck Bay (Jan – May) Foraging in waters adjacent to Eighty Mile Beach
Dwarf sawfish	✓	✓	-	Pupping in King Sound Pupping in waters adjacent to Eighty Mile Beach	Nursing in King Sound Nursing waters adjacent to Eighty Mile Beach	Foraging in King Sound Foraging in Camden Sound Foraging in waters adjacent to Eighty Mile Beach

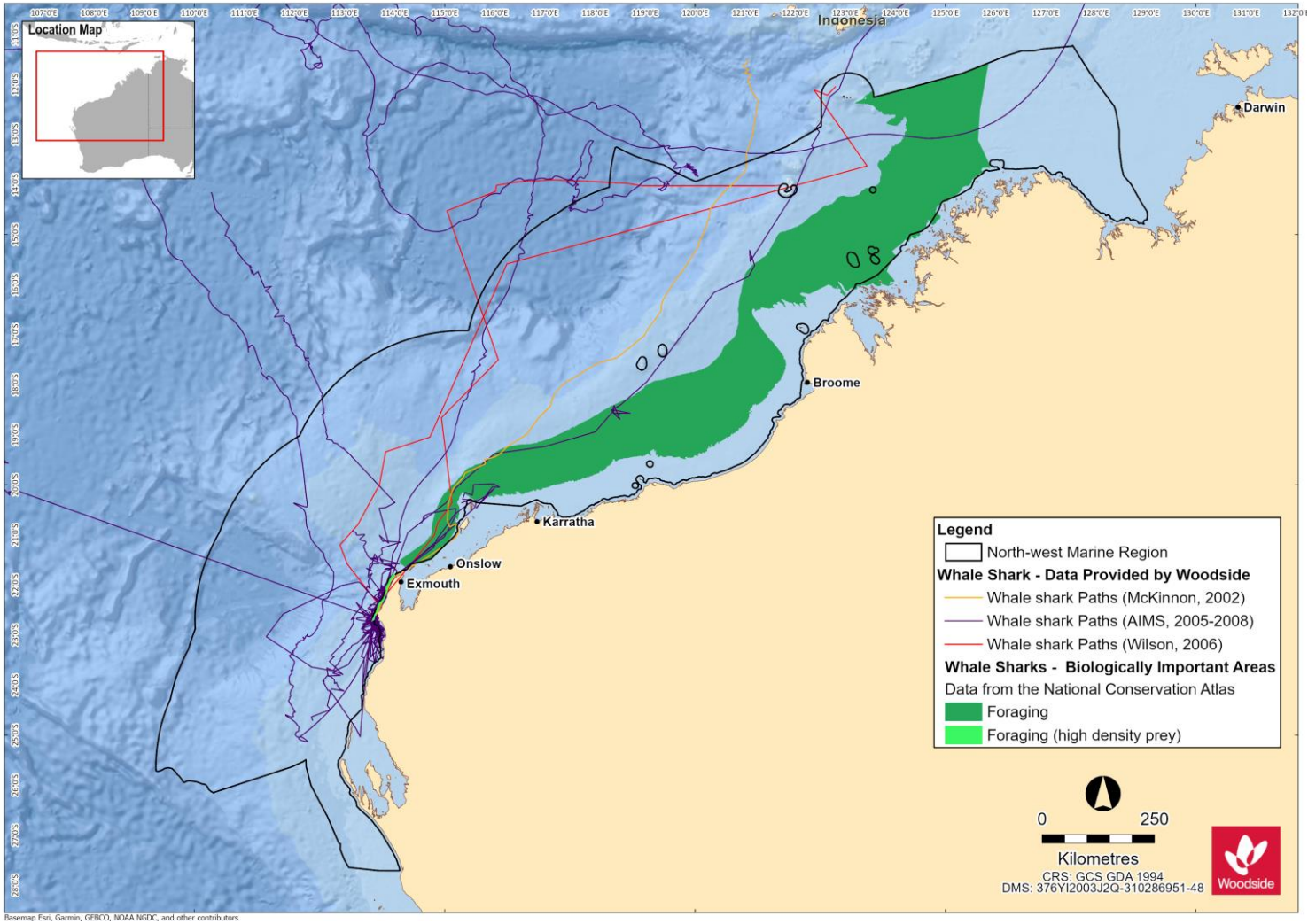

Figure 5-1 Whale shark BIAs for the NWMR and tagged whale shark tracks

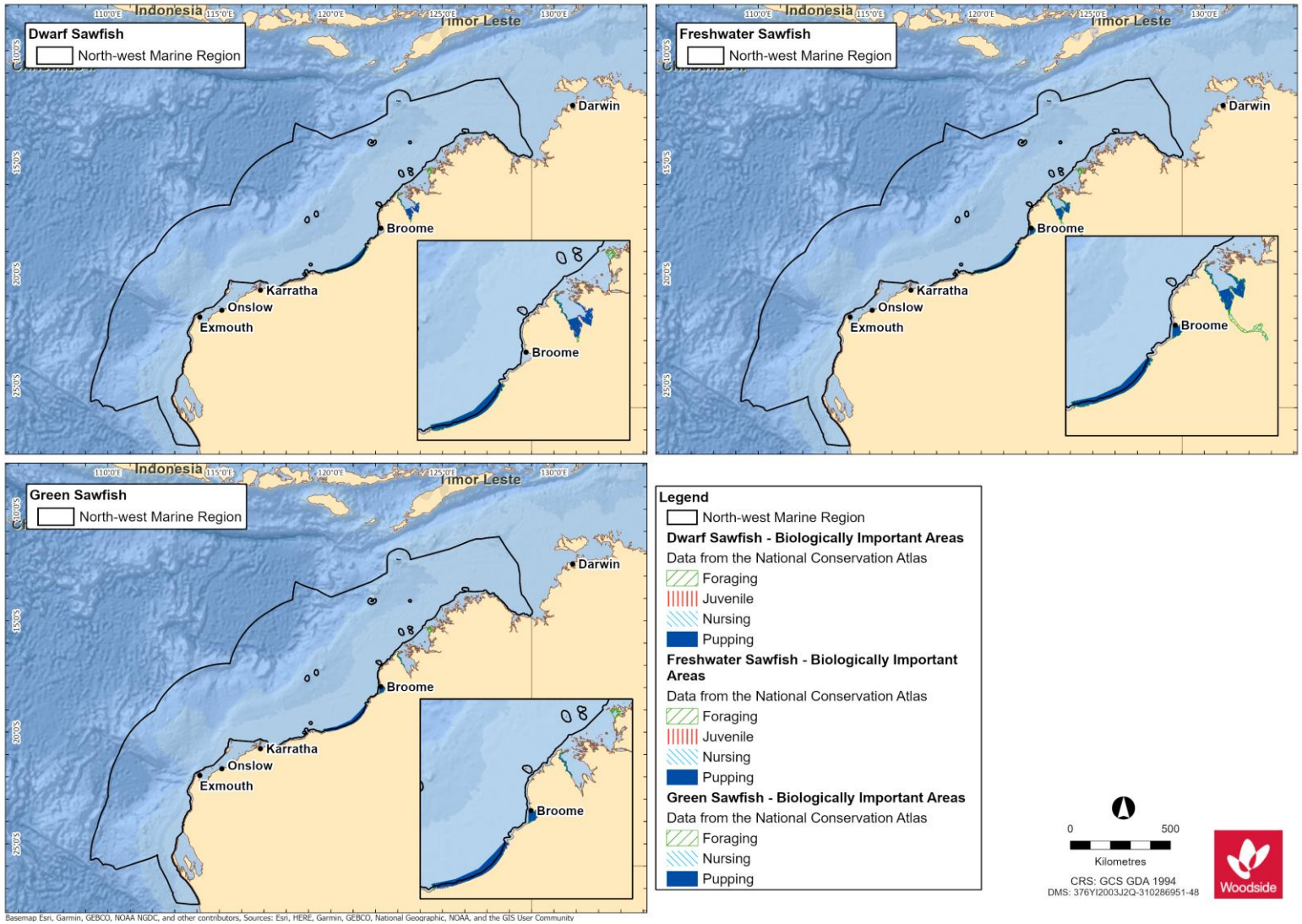

Figure 5-2 Sawfish BIAs for the NWMR

5.4 Fish Assemblages of the NWMR

5.4.1 Regional Context for Fish Assemblages of NWMR

The NWMR contains a diverse range of fishes of tropical Indo-west Pacific affinity (Allen *et al.*, 1988). The region is characterised by the highest level of endemism and species diversity compared with other areas of the Australian continental slope. Last *et al.* (2005) recorded 1431 species from the three bioregions encompassing the continental slope, whilst also acknowledging some information gaps.

The NWMR is known for its demersal slope fish assemblages; the continental slope of the Timor Province and the North-west Transition supports more than 418 and 505 species of demersal fishes respectively, of which 64 are considered to be endemic. This is the second richest area for demersal fish species across the entire Australian continental slope. Conversely, the broad Southern Province, which covers most of southern Australia, supports 463 species, only 26 possibly being endemic. The continental slope demersal fish assemblages of the NWMR have been identified as a KEF (DEWHA, 2008), as described in **Section 9**.

The NWMR also features a diversity of pelagic fishes (those living in the pelagic zone) and bentho-pelagic fishes, including tuna, billfish, bramids, lutjanids, serranids and some sharks (DEWHA, 2007a). These species feed on salps and jellyfish, and more often on secondary consumers such as squid and bait fish. Water depth provides an indication of the level of interaction between pelagic and benthic communities within the NWMR; in waters deeper than 1000 m, for instance, the trophic system is pelagically-driven and benthic communities rely on particulates that fall to the seafloor (DEWHA, 2007a).

Pelagic fishes play an important ecological role within the NWMR; small pelagic fishes, such as lantern fish, inhabit a range of marine environments, including inshore and continental shelf waters and form a vital link in and between many of the region's trophic systems, feeding on pelagic phytoplankton and zooplankton and providing a food source for a wide variety of predators including large pelagic fishes, sharks, seabirds and marine mammals (Bulman, 2006; Mackie *et al.*, 2007). Large pelagic fishes, such as tuna, mackerel, swordfish, sailfish and marlin, are found mainly in oceanic waters and occasionally on the continental shelf (Brewer *et al.*, 2007). Both juvenile and adult phases of the large pelagic species are highly mobile and have a wide geographic distribution, although the juveniles more frequently inhabit warmer or coastal waters (DEWHA, 2008).

5.4.2 Listed Fish Species in the NWMR

The family Syngnathidae is a group of bony fishes that includes seahorses, pipefishes, pipehorses and seadragons. Along with syngnathids, members of the related Solenostomidae family (ghost pipefishes) are also found in the NWMR (DSEWPAC, 2012a).

There are 44 solenostomid and syngnathid species that are listed marine species that may occur within the NWMR, although no species is currently listed as threatened or migratory, according to the PMST report (**Appendix A**).

Syngnathids live in nearshore and inner shelf habitats, usually in shallow coastal waters, among seagrasses, mangroves, coral reefs, macroalgae dominated reefs, and sand or rubble habitats (Dawson, 1985; Lourie *et al.*, 1999, Lourie *et al.*, 2004; Vincent, 1996). Two species, the winged seahorse (*Hippocampus alatus*) and western pipehorse (*Solegnathus sp. 2*) have been identified in deeper waters of the NWMR (up to 200 m) (DSEWPAC, 2012a), however, these species were not identified by the Protected Matters search of the NWMR.

Knowledge about the distribution, abundance and ecology of both syngnathids and solenostomids in the NWMR is limited. No BIAs for syngnathids and solenostomids have been identified in the NWMR.

5.4.3 Browse

The proposed Browse activity area includes biologically important habitat for the whale shark and three sawfish species:

- whale shark (foraging northward from Ningaloo along the 200 m isobath (July – Nov),
- freshwater sawfish (pupping, nursing and foraging areas),
- green sawfish (pupping, nursing and foraging areas); and
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the shark and sawfish species are outlined in **Table 5-4** and **Figure 5-1**.

The proposed Browse activity area has partial overlap with the Continental slope demersal fish communities KEF.

5.4.4 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for the whale shark and three sawfish species:

- whale shark (foraging northward from Ningaloo along the 200 m isobath (July – Nov),
- freshwater sawfish (pupping, nursing and foraging areas),
- green sawfish (pupping, nursing and foraging areas); and
- dwarf sawfish (pupping, nursing and foraging areas).

BIAs for the whale shark and sawfish species are outlined in **Table 5-4** and **Figure 5-1**.

The NWS / Scarborough activity area has partial overlap with the Continental slope demersal fish communities KEF. The continental slope between North-west Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last *et al.*, 2005).

5.4.5 North-west Cape

The North-west Cape activity area includes biologically important foraging habitat for the whale shark:

- whale shark, including:
  - Foraging (high density) in Ningaloo Marine Park and adjacent Commonwealth waters (March–July); and
  - Foraging northward from Ningaloo along the 200 m isobath (July – Nov).

BIAs for the whale shark are outlined in **Table 5-4** and **Figure 5-1**.

The North-west Cape activity area coincides with part of the Continental slope demersal fish communities KEF.

6. MARINE REPTILES

6.1 Regional Context for Marine Reptiles

The NWMR contains important habitat for listed marine reptiles, including areas that support key life stages such as nesting, internesting, migration and foraging for marine turtle species, and habitats supporting resident sea snake and crocodile populations.

Six of the seven marine turtle species occur in Australian waters, and all six (the green turtle, hawksbill turtle, loggerhead turtle, flatback turtle, leatherback turtle and olive ridley turtle) occur in the NWMR and NMR.

There are 25 listed species of sea snake reported within or adjacent to the NWMR (Guinea, 2007a; Udyawer *et al*., 2016), of which four are endemic to reef habitats in the remote parts of the region. Nineteen (19) listed sea snake species are known to occur in the NMR, as reported in the Protected Matters search (**Appendix A**).

There are significantly fewer marine reptile species that frequently occur within the SWMR and presently include three species of listed marine turtle and one sea snake species. Other species of sea snake may occur because of the southward-flowing Leeuwin Current, as vagrants in the region (DSEWPAC, 2012b).

The following sections focus on the listed marine reptile species known to occur within the NWMR.

Table 6-1 outlines the threatened and migratory marine reptile species that occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

Table 6-1 Marine reptile species identified by the EPBC Act PMST as potentially occurring within or utilising habitats in the NWMR for key life cycle stages

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Caretta caretta	Loggerhead turtle	Endangered	Migratory	Marine	Endangered	Recovery Plan for Marine Turtles in Australia 2017-2027 (Commonwealth of Australia, 2017)
Chelonia mydas	Green turtle	Vulnerable	Migratory	Marine	Vulnerable	
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	Marine	Vulnerable	
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	Marine	Vulnerable	
Natator depressus	Flatback turtle	Vulnerable	Migratory	Marine	Vulnerable	
Lepidochelys olivacea	Olive ridley turtle	Endangered	Migratory	Marine	Vulnerable	
Aipysurus apraefrontalis	Short-nosed sea snake	Critically endangered	N/A	Marine	Critically endangered	Approved Conservation Advice for *Aipysurus apraefrontalis* (Short-nosed Sea Snake) (DSEWPAC, 2011a)
Aipysurus foliosquama	Leaf-scaled sea snake	Critically endangered	N/A	Marine	Critically endangered	Approved Conservation Advice for *Aipysurus foliosquama* (Leaf-scaled Sea Snake) (DSEWPAC, 2011b)
Crocodylus porosus	Salt-water crocodile	N/A	Migratory	Marine	Other protected fauna	N/A

6.2 Marine Turtles in the NWMR

According to the Protected Matters search (**Appendix A**) six species of marine turtle known to occur within the NWMR are listed as threatened and migratory (three Vulnerable and three Endangered) under the EPBC Act—the green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), flatback (*Natator depressus*), loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*) and olive ridley (*Lepidochelys olivacea*) turtle (DSEWPAC, 2012a) (refer **Table 6-1**).

The NWMR supports globally significant breeding populations of four marine turtle species: the green, hawksbill, flatback and loggerhead turtle. Olive ridley turtles are known to forage within the NWMR, but there are only occasional records of the species nesting in the region. Leatherback turtles regularly forage over Australian continental shelf waters within the NWMR but there are also no records of the species nesting in the region (DSEWPAC, 2012a).

The six marine turtle species reported for the NWMR also occur within the NMR.

Three marine turtle species; the green, loggerhead, and leatherback turtle, have presumed feeding areas within the SWMR; however, no known nesting areas exist within the region (DSEWPAC, 2012b).

Discrete genetic stocks have evolved within each marine turtle species. This is the result of marine turtles returning to the location where they hatched. These genetically distinct stocks are defined by the presence of regional breeding aggregations. Stocks are composed of multiple rookeries in a region and are delineated by where there is little or no migration of individuals between nesting areas. Turtles from different stocks typically overlap at feeding grounds (Commonwealth of Australia, 2017). There are 17 genetic stocks across both the NWMR and NMR (nine in the NWMR, six in the NMR, and two overlapping both regions). Of these 17 genetic stocks, nine are known to occur within Woodside's three areas of activity (**Table 6-2**).

6.2.1 Life Cycle Stages

Marine turtles are highly migratory during non-reproductive life phases and have high site fidelity during breeding and nesting life phases. Majority of their lives are spent in the ocean, but the adult female marine turtles will come ashore to lay eggs in the sand above the high water mark on natal beaches (Commonwealth of Australia, 2017). **Figure 6-1** summarises the generalised life cycle of marine turtles. Species-specific life cycle information is outlined within the Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017).

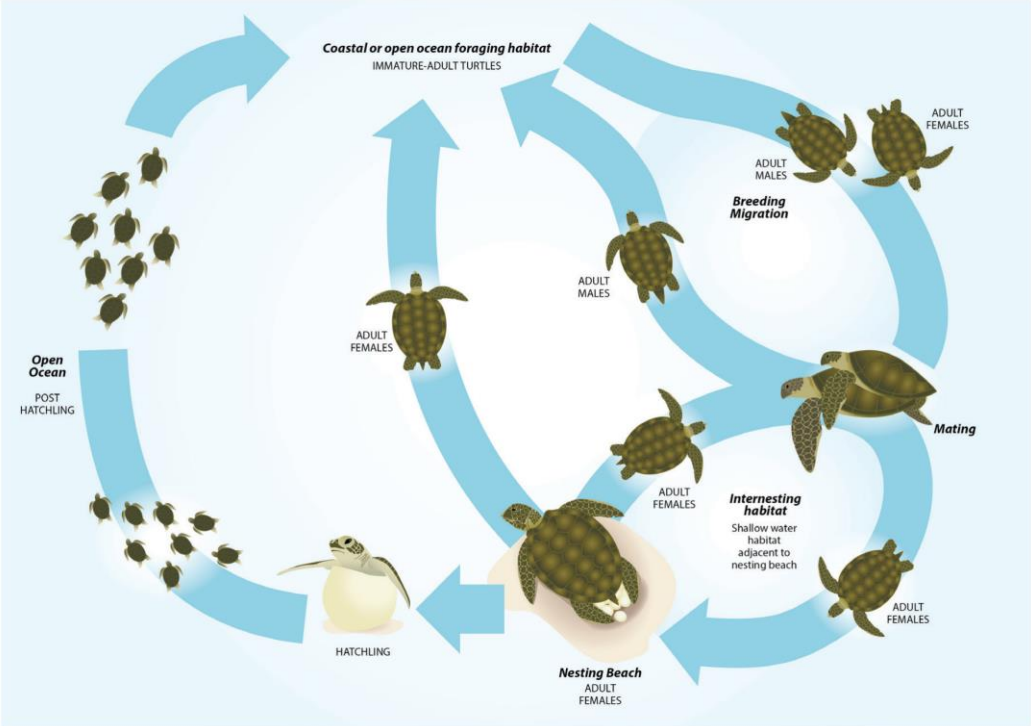

Figure 6-1 Generalised life cycle of marine turtles (Commonwealth of Australia, 2017)

6.2.2 Habitat Critical to Survival for Marine Turtles in the NWMR

The Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017) identifies habitat critical to the survival of a species for marine turtle stocks under the EPBC Act. Habitat critical to survival is defined by the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* as areas necessary:

- for activities such as foraging, breeding or dispersal;
- for the long-term maintenance of the species (including the maintenance of species essential to the survival of the species);
- to maintain genetic diversity and long term evolutionary development; and
- for the reintroduction of populations or recovery of the species.

The Recovery Plan for Marine Turtles of Australia (Commonwealth of Australia, 2017) has identified nesting locations and associated internesting areas as habitat critical to survival for four marine turtle species within the NWMR and these are identified, described and mapped in **Table 6-2** and **Figure 6-2**. No habitat critical to survival has been identified within the NWMR for olive ridley or leatherback turtles.

Table 6-2 outlines the relevant genetic stock, habitat critical to survival and key life cycle stage seasonality of the four species of marine turtles within the NWMR.

Table 6-2 Genetic stock, habitat critical to survival and key life cycle stage seasonality of the four species of marine turtles within the NWMR

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (* Major Rookery[1])	Internesting Buffer	Seasonality-Nesting	Preferred Habitat[2]
Green Turtle							
NWS Stock (G-NWS)	✓	✓	✓	Adele Island Maret Island Cassini Island Lacepede Islands* Barrow Island* Montebello Islands (all with sandy beaches)* Serrurier Island Dampier Archipelago Thevenard Island Northwest Cape* Ningaloo coast	20 km radius	Nov-Mar	Nearshore reef habitats in the photic zone.
Ashmore Reef Stock (G-AR)	✓	-	-	Ashmore Reef* Cartier Reef*		All year (peak: Dec-Jan)	
Scott Reef-Browse Island Stock (G-ScBr)	✓	-	-	Scott Reef (Sandy Islet)* Browse Island*		Nov-Mar	
Hawksbill Turtle							
Western Australia Stock (H-WA)	-	✓	-	Dampier Archipelago (including Rosemary Island and Delambre Island)* Montebello Islands (including Ah Chong Island, South East Island and Trimouille Island)* Lowendal Islands (including Varanus Island, Beacon Island and Bridled Island) Sholl Island	20 km radius	Oct-Feb	Nearshore and offshore reef habitats.

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (* Major Rookery[1])	Internesting Buffer	Seasonality-Nesting	Preferred Habitat[2]
Flatback Turtle							
Cape Domett Stock (F-CD)	✓	-	-	Cape Domett* Lacrosse Island	60 km radius	All year (peak: Jul-Sep)	Nearshore and offshore sub-tidal and soft bottomed habitats of offshore islands.
South-west Kimberley Stock (F-swKim)	-	✓	-	Eighty Mile Beach* Eco Beach* Lacepede Islands		Oct-Mar	
Pilbara Stock (F-Pil)	-	✓	-	Montebello Islands Mundabullangana Beach* Barrow Island* Cemetery Beach Dampier Archipelago (including Delambre Island* and Huay Island) Coastal islands from Cape Preston to Locker Island		Oct-Mar	
Unknown genetic stock Kimberley, Western Australia	✓	✓	-	Maret Islands Montilivet Islands Cassini Island Coronation Islands (includes Lamarck Island) Napier-Broome Bay Islands (West Governor Island, Sir Graham Moore Island – near Kalumbaru) Champagny, Darcy and Augustus Islands (Camden Sound)		May-July	

Species	Woodside Activity Area			Habitat Critical to Survival			
	Browse	NWS/S	NWC	Nesting (* Major Rookery[1])	Internesting Buffer	Seasonality-Nesting	Preferred Habitat[2]
Loggerhead Turtle							
Western Australia Stock (LH-WA)	-	-	✓	Dirk Hartog Island* Muiron Islands* Gnaraloo Bay* Ningaloo coast	20 km radius	Nov-May	Nearshore and island coral reefs, bays and estuaries in tropical and warm temperate latitudes.

[1] *Major rookeries as outlined in the Recovery Plan (Commonwealth of Australia, 2017)*

[2] *Preferred habitat as outlined in the Recovery Plan (Commonwealth of Australia, 2017)*

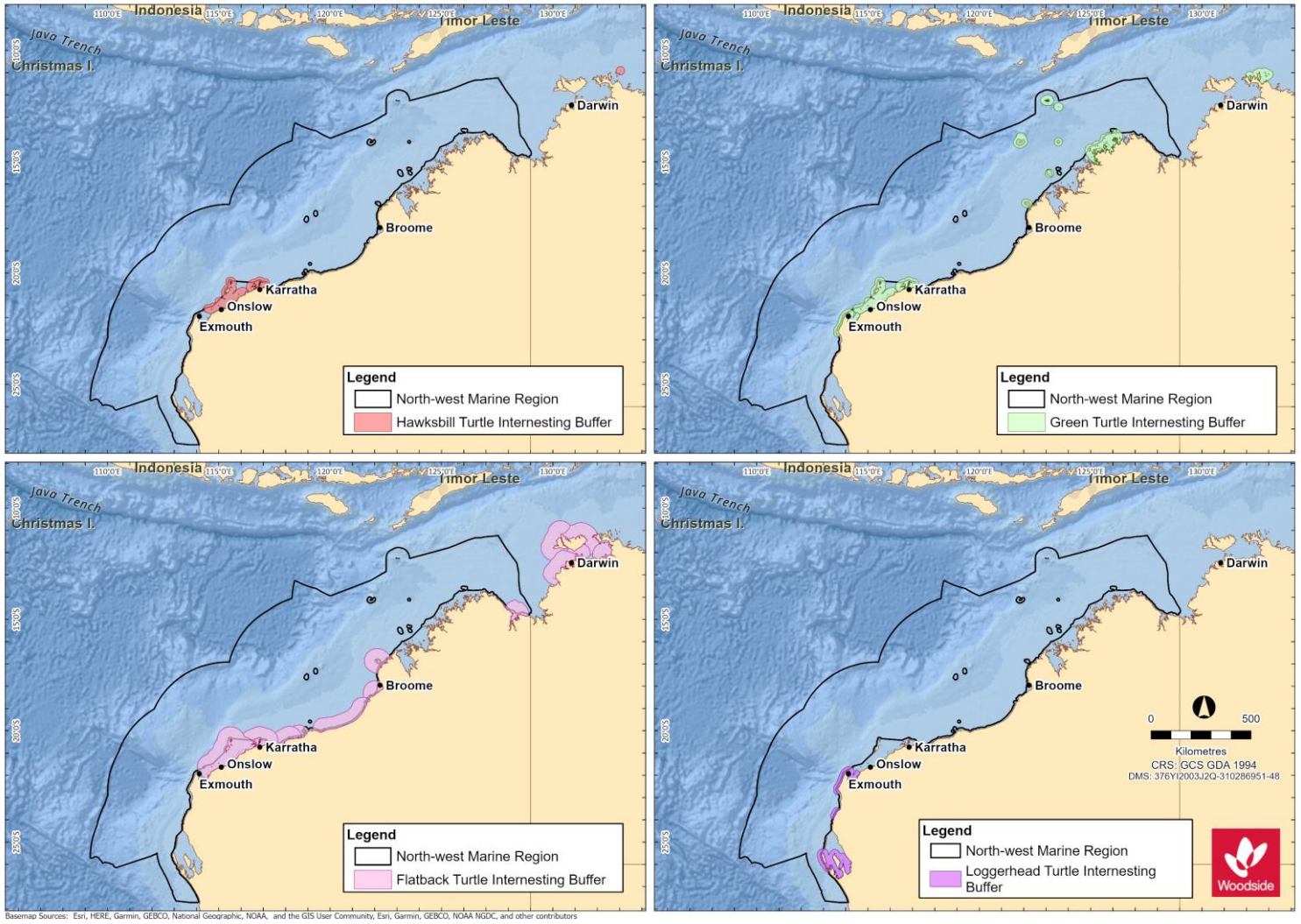

Figure 6-2 Marine turtle species habitat critical to survival (nesting beaches and internesting buffers) for the NWMR

6.3 Marine Turtle Biological Important Areas in the NWMR

A review of the National Conservation Values Atlas (DAWE, 2020[2]) identified BIAs for the four marine turtle species that occur within the NWMR. These are described in **Table 6-3**. Note that nesting and internesting BIAs are not listed in **Table 6-3** as they are defined as in the Recovery Plan as habitat critical to survival for marine turtles nesting beaches and internesting areas (refer **Table 6-2**).

[2] http://www.environment.gov.au/webgis-framework/apps/ncva/ncva.jsf

Table 6-3 Marine turtle BIAs within the NWMR

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration[3]
Green turtle	✓	✓	✓	No mating BIA identified within the NWMR.	Foraging inshore areas of Barrow Island Foraging at Montgomery Reef Foraging at Montebello Islands Foraging at Dixon Island Foraging around Ashmore Reef Foraging at Seringapatam Reef and Scott Reef Foraging in the De Grey River area to Bedout Island Foraging around the Islands between Cape Preston and Onslow and inshore of Barrow Island Foraging around Dampier Archipelago (islands to the west of the Burrup Peninsula) Foraging at Legendre Island and Huay Island Foraging around Delambre Island Foraging in the Joseph Bonaparte Gulf Foraging in waters adjacent to James Price Point	Green turtles can migrate more than 2600 km between their feeding and nesting grounds. Individual turtles foraging in the same area do not necessarily take the same migration route (Limpus *et al.*, 1992). Ferreira et al. (2021) broadly identified two migratory corridors, one used by the NWS stock-Pilbara and another used by the NWS stock-Kimberley and the Scott-Browse stock with some overlap at the northern and southern extents respectively. This study showed that the foraging distribution of green turtles from two stocks in WA expands throughout north-west and northern Australian coastal waters, including the NT and Queensland.
Hawksbill turtle	✓	✓	✓	No mating BIA identified within the NWMR.	Foraging around the Lowendal Island group Foraging at Delambre Island Foraging around Dixon Island Foraging in the De Grey River area to Bedout Island Foraging around the islands between Cape Preston and	Individuals may migrate up to 2400 km between their nesting and foraging grounds (DSEWPAC, 2012a).

[3] Migration BIA does not exist for Marine Turtles – general information provided.

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration[3]
					Onslow and inshore of Barrow Island Foraging around the islands of the Dampier Archipelago (to the west of the Burrup Peninsula) Foraging at Ashmore Reef	
Flatback turtle	✓	✓	-	Lacepede Islands Mating at Montebello Islands Mating at Dampier Archipelago (islands to the west of the Burrup Peninsula) Mating at Barrow Island A year-round internesting buffer biologically important area (BIA) of 80 km is located north and north-west of the Montebello Islands, extending 20 km further than the habitat critical to survival. However, use level for this BIA has been defined as very low (Commonwealth of Australia, 2017) and the habitat critical to survival internesting buffer is the legally recognised area of protection under the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* Refer to the Marine Bioregional Plan for the North-west Marine Region (DSEWPAC, 2012a) for locations of seasonal 80 km internesting buffer BIAs for flatback turtles	Foraging at the islands between Cape Preston and Onslow and inshore of Barrow Island. Foraging at Montebello Islands Foraging at Dampier Archipelago (islands to the west of the Burrup Peninsula) Foraging at Legendre Island and Huay Island Foraging at Delambre Island Foraging in the Joseph Bonaparte Depression Foraging in waters adjacent to James Price Point	There is evidence that some flatback turtles undertake long-distance migrations between breeding and feeding grounds (Limpus *et al.*, 1983). However, flatback turtles generally do not have a pelagic phase to their lifecycle. Instead, hatchlings grow to maturity in shallow coastal waters thought to be close to their natal beaches (DSEWPAC, 2012a).

Species	Woodside Activity Area			BIAs		
	Browse	NWS/S	NWC	Mating	Foraging	Migration[3]
Loggerhead turtle	✓	✓	-	No mating BIA identified within the NWMR	Foraging in the De Grey River area to Bedout Island Foraging on the Western Joseph Bonaparte Depression Foraging in the waters adjacent to James Price Point	Adult loggerhead turtles dispersing from Dirk Hartog Island beaches (near Shark Bay) have remained within WA waters from southern WA to the Kimberley. Turtles dispersing from the North-west Cape–Muiron Islands nesting area have ranged north as far as the Java Sea and the north-western Gulf of Carpentaria, and to south-west WA (DSEWPAC, 2012).
Olive ridley turtle	✓	✓	-	No mating BIA identified within the NWMR	Foraging in the Western Joseph Bonaparte Depression and Gulf Foraging in the Dampier Archipelago (islands to the west of the Burrup Peninsula)	Migration routes and distances between nesting beaches and foraging areas are not known for Australian olive ridley turtles.

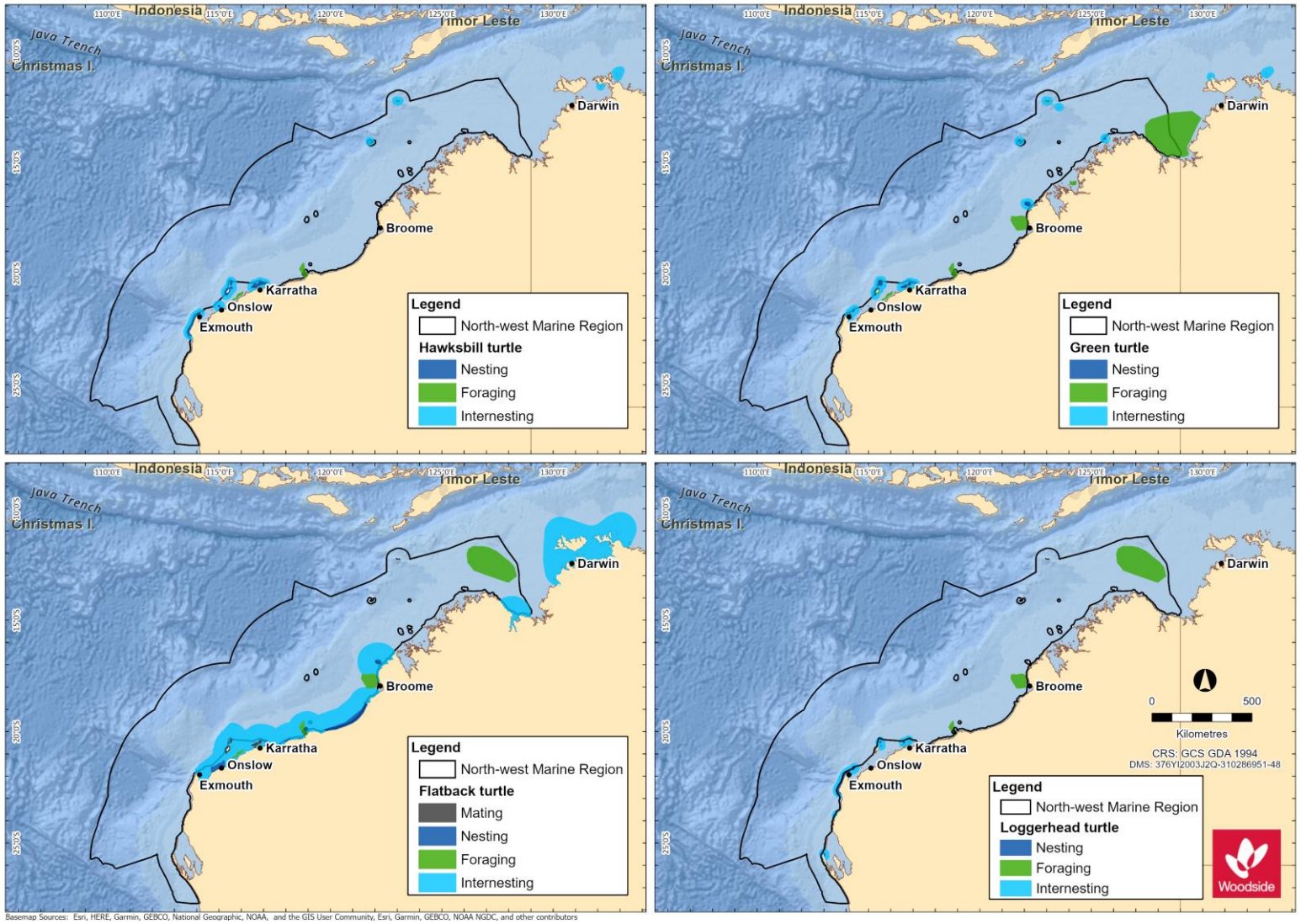

Figure 6-3 Marine turtle species BIAs within the NWMR

6.4 Marine Turtle Summary for NWMR

Six of the seven marine turtle species occur within the Woodside activity areas. Across all three areas, globally significant breeding populations of four marine turtle species; the green, hawksbill, flatback and loggerhead turtle, have been recorded.

However, offshore waters do not represent biologically important habitat for marine turtles in any of the three Woodside activity areas. Isolated records of transient individuals (on post-nesting migration) are expected, but there is no evidence of important habitat or behaviours for marine turtles in offshore, open water environment of the NWS, in general.

6.4.1 Browse

The proposed Browse activity area includes major nesting areas that support globally significant breeding populations of two marine turtle species:

- the green turtle, including two distinct genetic stocks (Ashmore Reef and Scott Reef-Browse Island); and
- the flatback turtle, Cape Domett genetic stock.

Locations of habitat critical for each of the two species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green and flatback turtle are outlined in **Table 6-3** and **Figure 6-3**.

Table 6-4 Marine turtle key information for Browse activity area

Species / Genetic Stock	Key Information
Green Turtle	
Ashmore Reef Stock (G-AR)	The G-AR stock nests in a localised area of the Indian Ocean in the Ashmore Reef and Cartier Island AMP areas. Population estimates are not available for Ashmore Reef, although annual breeding numbers are thought to be in the low hundreds (Whiting, 2000). Designated habitat critical for the G-AR stock are the nesting locations of Ashmore Reef and Cartier Reef, and an internesting buffer of 20 km radius around these rookeries, year-round with peak internesting activity occurring December to January (refer Table 6 of the Recovery Plan). Juvenile and adult turtles forage within the tidal/sub-tidal habitats of offshore islands and coastal waters with coral reef, mangrove, sand, rocky reefs, and mudflats where there are algal turfs or seagrass meadows present (Commonwealth of Australia, 2017).
Scott Reef-Browse Island Stock (G-ScBr)	The G-ScBr stock is a discrete unit known to nest at only two locations within the north-east Indian Ocean—Sandy Islet and Browse Island. There is currently very limited data available for the G-ScBr stock, therefore population numbers are not known. Designated habitat critical for the G-ScBr stock are the nesting locations of Sandy Islet and Browse Island, and an internesting buffer of 20 km radius around these rookeries, for the period November to March (refer Table 6 of the Recovery Plan). Surveys conducted at Scott Reef in 2006, 2008 and 2009 indicate that the summer months from late November to February are the preferred breeding season for green turtles at Sandy Islet (Guinea, 2009). Satellite tagging studies (Pendoley, 2005; Guinea, 2011) have provided an indication of the behaviour and migratory routes of adult green turtles leaving Scott Reef. Most animals appear to swim through South Reef lagoon and disperse toward the Western Australian mainland via two distinct post-nesting migration pathways; travelling east and north toward the Bonaparte Archipelago and then north along the coast to foraging areas in NT waters, or travelling south to Cape Leveque and then south along the coast to the Turtle Islands off the mouth of the De Grey River in the Pilbara region (Ferreira *et al*., 2021).

Species / Genetic Stock	Key Information
Flatback Turtle	
Cape Domett Stock (F-CD)	Cape Domett is an important high density nesting area. Combined with a smaller site at Lacrosse Island, the F-CD stock is one of the largest flatback turtle stocks in Australia. Average nesting abundance at Cape Domett is estimated at 3250 females per year (Whiting *et al.*, 2008). Designated habitat critical for the F-CD stock are the nesting locations of Cape Domett and Lacrosse Island, and an internesting buffer of 60 km radius around these rookeries, year-round with peak internesting activity occurring July to September. Extending further than the habitat critical internesting buffer, an internesting buffer BIA of 80 km is located at Cape Domett and Lacrosse Island.

6.4.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes major nesting areas that support globally significant breeding populations of three marine turtle species, representing four discreet genetic stocks:

- the green turtle, NWS genetic stock;
- the hawksbill turtle, WA genetic stock; and
- the flatback turtle, South-west Kimberley stock and Pilbara genetic stocks.

Locations of habitat critical for each of the four species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green, hawksbill, and flatback are outlined in **Table 6-3** and **Figure 6-3**.

Table 6-5 Marine turtle key information for NWS / Scarborough activity area

Species / Genetic Stock	Key Information
Green Turtle	
NWS Stock (G-NWS)	The G-NWS stock is one of the largest green turtle stocks in the world and the largest in the Indian Ocean. The G-NWS stock is estimated at approximately 20,000 individuals (DSEWPAC, 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia, 2017). Major rookeries of the G-NWS stock within the NWS / Scarborough activity area are located at Barrow Island and the Montebello Islands. These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries, November to March.
Hawksbill Turtle	
Western Australia Stock (H-WA)	The H-WA stock is the largest in the Indian Ocean. The majority of the nesting for this stock is located in the Pilbara. The Dampier Archipelago has the largest nesting aggregation recorded. In particular, Rosemary Island supports the most significant hawksbill turtle rookery in the WA region and one of the largest in the Indian Ocean; approximately 500-1000 females nest on the island annually, more than at any other WA rookery (Pendoley, 2005; Pendoley *et al*., 2016). Major rookeries of the H-WA stock within the NWS / Scarborough activity area are located at Rosemary Island, Delambre Island and the Montebello Islands. These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries, October to February.
Flatback Turtle	
South-west Kimberley Stock (F-swKim)	The genetic relationship between this nesting aggregation and the Cape Domett and Pilbara stocks is currently under review. Population numbers of the F-swKim stock are unknown. Major rookeries of the F-swKim stock are located at Eighty Mile Beach and Eco Beach. These areas are designated habitat critical for the stock and include an internesting buffer of 60 km radius around these rookeries, October to March.

Species / Genetic Stock	Key Information
Pilbara Stock (F-Pil)	The extent of genetic relatedness of flatback turtles along the WA coast is currently under review. Population numbers of the F-Pil stock are unknown. This stock nests on many islands in the Pilbara and southern Kimberley, with major rookeries at Mundabullangana Beach, Delambre Island and Barrow Island. These areas are designated habitat critical for the F-Pil stock and include an internesting buffer of 60 km radius around these rookeries, October to March. Extending further than the habitat critical internesting buffer, a year-round internesting buffer BIA of 80 km is located north and north-west of the Montebello Islands. However, use level for this BIA has been defined as very low (Commonwealth of Australia, 2017) and the habitat critical internesting buffer is the legally recognised area of protection under the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*. Post-nesting satellite tracking indicates foraging occurs along the WA coast in water shallower than 130 m and within 315 km of shore (Commonwealth of Australia, 2017).

6.4.3 North-west Cape

The North-west Cape activity area includes major nesting areas that support globally significant breeding populations of two marine turtle species, representing two discreet genetic stocks:

- the green turtle, NWS genetic stock; and
- the loggerhead turtle, Western Australia genetic stock.

Locations of habitat critical for each of the two species are outlined in **Table 6-2** and **Figure 6-2**.

BIAs for the green and loggerhead turtles are outlined in **Table 6-3** and **Figure 6-3**.

A 2018 survey, including on-beach monitoring of the Muiron Islands and Ningaloo Coast from North-west Cape to Bungelup (Rob *et al.*, 2019), supports the concept that North-west Cape and the Muiron Islands are major important nesting areas for green and loggerhead turtles, as identified in the Recovery Plan (Commonwealth of Australia, 2017).

Table 6-6 Marine turtle key information for North-west Cape activity area

Species / Genetic Stock	Key Information
Green Turtle	
NWS Stock (G-NWS)	The G-NWS stock is one of the largest green turtle stocks in the world and the largest in the Indian Ocean. The G-NWS stock is estimated at approximately 20,000 individuals (DSEWPAC, 2012a) and the trend for the stock is reported as stable (Commonwealth of Australia, 2017). There is one major rookery of the G-NWS stock located within the North-west Cape activity area. Located on the mainland coast of the North-west Cape, this area is designated habitat critical for the stock and includes an internesting buffer of 20 km radius around the rookery, November to March.
Loggerhead Turtle	
Western Australia Stock (LH-WA)	The LH-WA stock is one of the largest in the world (Limpus, 2009). The trend for the stock is reported as stable (Commonwealth of Australia, 2017). Major rookeries of the LH-WA stock are located at Dirk Hartog Island, Muiron Islands and Gnaraloo Bay. These areas are designated habitat critical for the stock and include an internesting buffer of 20 km radius around these rookeries, November to May. Dirk Hartog Island in the Shark Bay Marine Park, with an average of 122 nests per day over 2.1 km (Reinhold and Whiting, 2014), is recognised as the most important loggerhead turtle rookery in WA (Commonwealth of Australia, 2016; as cited in Rob *et al.*, 2019).

6.5 Sea Snakes

Sea snakes are commonly found in the NWMR and NMR, but less so in the SWMR, and occupy three broad habitat types: shallow water coral reef and seagrass habitats, deepwater soft bottom habitats away from reefs, and surface water pelagic habitats (Guinea, 2007a).

There are 25 listed species of sea snake reported within or adjacent to the NWMR (Guinea, 2007a; Udyawer *et al*., 2016), of which four are endemic to reef habitats in the remote parts of the region:

- dusky sea snake (*Aipysurus fuscus*);
- large headed sea snake (*Hydrophis pacificus*);
- short-nosed sea snake (*Aipysurus apraefrontalis*); and
- leaf-scaled sea snake (*Aipysurus foliosquama*).

The short-nosed sea snake and the leaf-scaled sea snake are listed threatened species (Critically Endangered) under the EPBC Act **(Table 6-7**).

There is currently limited knowledge about the ranges and distribution patterns of sea snake species in the NWMR, in addition to a lack of understanding of population status and threats. Recent findings of *A. apraefrontalis* and *A. foliosquama* in locations outside of their previously defined ranges have highlighted the lack of information on species distributions in the NWMR (Udyawer *et al.*, 2016). Udyawer *et al.* (2020) used a correlative modelling approach to understand habitat associations and identify suitable habitats for five sea snake species (*A. apraefrontalis, A. foliosquama, A. fuscus, A. l. pooleorum* and *A. tenuis*). Species-specific habitat suitability was modelled across 804,244 km^2 of coastal waters along the NWS, and the resulting habitat suitability maps enabled the identification of key locations of suitable habitat for these five species (refer **Table 6-6**).

No habitat critical to survival or BIAs for sea snake species have been identified in the NWMR. While the Ashmore Reef and Cartier Island AMPs have been recognised for their high diversity and density of sea snakes (DSEWPAC, 2012a), surveys have revealed a steep decline in sea snake numbers at Ashmore Reef (Guinea, 2007b; Lukoschek *et al.*, 2013). Leaf-scaled and short-nosed sea snakes have been absent from surveys at Ashmore Reef since 2001, despite an increase in survey intensity (Guinea, 2006, 2007b; Guinea and Whiting, 2005; Lukoschek *et al.*, 2013). The reason for the decline is unknown.

Table 6-7 Information on the two threatened sea snake species within the NWMR

Species	Preferred Habitat and Diet	Habitat Location
Short-nosed sea snake	Preferred habitat: Primarily on the reef flats or in shallow waters of the outer reef edges to depths of 10 m (Minton *et al*., 1975). Typically, movement is restricted to within 50 m of reef flat habitat (Guinea and Whiting, 2005). Diet: Primarily fishes and eels.	The short-nosed sea snake has been recorded from Exmouth Gulf to the reefs of the Sahul Shelf, although most records come from Ashmore and Hibernia reefs (Guinea and Whiting, 2005). Key locations of suitable habitat: Ashmore Reef, Exmouth Gulf, Muiron Islands, Montebello Islands (Udyawer *et al.*, 2020).
Leaf-scaled sea snake	Preferred habitat: The leaf-scaled sea snake occurs in shallow protected areas of reef flats, typically in water depth less than 10 m. Diet: Primarily shallow water coral-associated wrasse, gudgeons, clinids and eels (McCosker, 1975; Voris, 1972; Voris and Voris, 1983)	The leaf-scaled sea snake has only been recorded at Ashmore and Hibernia reefs (Guinea and Whiting, 2005), indicating it has a very limited distribution. Key locations of suitable habitat: Ashmore Reef, Shark Bay, Exmouth Gulf, Barrow Island and Montebello Islands (Udyawer *et al.*, 2020).

6.6 Crocodiles

The salt-water crocodile (*Crocodylus porosus*) is a listed migratory species under the EPBC Act known to occur within the NWMR. The species is found in most major river systems of the Kimberley, including the Ord, Patrick, Forrest, Durack, King, Pentecost, Prince Regent, Lawley, Mitchell, Hunter, Roe and Glenelg rivers. The largest populations occur in the rivers draining into the Cambridge Gulf and the Prince Regent River and Roe River systems. There have also been isolated records in rivers of the Pilbara region, around Derby near Broome and as far south as Carnarvon on the mid-west coast.

No BIAs for salt-water crocodile have been identified in the NWMR.

7. MARINE MAMMALS

7.1 Regional Context

The offshore waters of WA include important habitat for marine mammals, including areas that support key life stages such as breeding, foraging, and migration. Of the 45 species of cetacean occurring in Australian waters, 27 species occur regularly in the waters of the NWMR, nine species in the waters of the NMR and 33 species in the SWMR. The waters of the NWMR and the NMR also support significant populations of dugong (DSEWPAC, 2012a, c).

The NWMR is an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters of the NWMR for several cetacean species (DSEWPAC, 2012a). Numerous large mysticetes (baleen whale) species, in particular the humpback whale, are known to utilise the region for migration and calving, and the pygmy blue whale for foraging and as a migration pathway between southern feeding and northern breeding/feeding areas, north of the equator.

The SWMR is an important area for numerous marine mammal species including pinniped species, large, migratory whale species and resident coastal whale and dolphin species (DSEWPAC, 2012b).

The NMR and adjacent areas are important for several species of cetacean, particularly inshore dolphin species. These species, and other marine mammals, rely on the waters of the NMR and adjacent coastal areas for breeding and foraging. However, there is little knowledge of the seasonal movements, migrations and breeding seasonality for many of the marine mammal species in the NMR due to lack of extensive surveys (DSEWPAC, 2012c).

Table 7-1 outlines the threatened and migratory marine mammal species that may occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

Table 7-1 Marine mammal species identified by the EPBC Act PMST as occurring within the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Cetaceans - Mysticeti						
Balaenoptera musculus	Blue whale	Endangered	Migratory	Cetacean	Endangered	Conservation Management Plan for the Blue Whale - A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2015-2025 (Commonwealth of Australia, 2015a)
Eubalaena australis	Southern right whale	Endangered	Migratory	Cetacean	Vulnerable	Conservation Management Plan for the Southern Right Whale: A Recovery Plan under the *Environment Protection and Biodiversity Conservation Act 1999* 2011-2021 (DSEWPAC, 2012d)
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Cetacean	Endangered	Conservation Advice *Balaenoptera borealis* sei whale (Threatened Species Scientific Committee, 2015a)
Megaptera novaeangliae	Humpback whale	Vulnerable	Migratory	Cetacean	Conservation dependent	Conservation Advice *Megaptera novaeangliae* humpback whale (Threatened Species Scientific Committee, 2015b)
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Cetacean	Endangered	Conservation Advice *Balaenoptera physalus* fin whale (Threatened Species Scientific Committee, 2015c)
Balaenoptera edeni	Bryde's whale	N/A	Migratory	Cetacean	N/A	N/A
Balaenoptera bonaerensis	Antarctic minke whale	N/A	Migratory	Cetacean	N/A	N/A
Cetaceans - Odontoceti						
Physeter macrocephalus	Sperm whale	N/A	Migratory	Cetacean	Vulnerable	N/A
Orcinus orca	Killer whale	N/A	Migratory	Cetacean	N/A	N/A
Orcaella heinsohni	Australian snubfin dolphin	N/A	Migratory	Cetacean	Priority	N/A
Sousa chinensis	Indo-Pacific humpback dolphin	N/A	Migratory	Cetacean	Priority	N/A

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Tursiops aduncus	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	N/A	Migratory	Cetacean	N/A	N/A
Sirenians and Pinnipeds						
Dugong dugon	Dugong	N/A	Migratory	Marine	Other protected fauna	N/A
Neophoca cinerea	Australian sea lion	Endangered	N/A	Marine	Vulnerable	Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) 2013 (DSEWPAC, 2013a) Conservation Advice *Neophoca cinerea* Australian Sea Lion (Threatened Species Scientific Committee, 2020a) (in effect under the EPBC Act from 23-Dec-2020)

7.2 Cetaceans in the NWMR

Cetaceans are generally widely distributed and highly mobile. In general, distribution patterns reflect seasonal feeding areas, characterised by high productivity, and migration routes associated with reproductive patterns. The NWMR is thought to be an important migratory pathway between feeding grounds in the Southern Ocean and breeding grounds in tropical waters for several cetacean species (DSEWPAC, 2012a).

From the Protected Matters search, 34 EPBC Act listed species were recorded as potentially occurring or having habitat within the NWMR (**Appendix A**). Of those, 12 cetacean species are listed as threatened and/or migratory, including baleen whales, toothed whales and dolphins that occur within the NWMR (**Table 7-2**).

7.3 Dugongs in the NWMR

The dugong is listed as migratory under the EPBC Act. Dugongs inhabit seagrass meadows in coastal waters, estuarine creeks and streams, and reef systems (DSEWPAC, 2012a).

Some of the coastal waters adjacent to the NWMR support significant populations of dugongs, including Shark Bay, Exmouth Gulf, in and adjacent to Ningaloo Reef, in coastal waters along the Kimberley coast, and on the edge of the continental shelf at Ashmore Reef (DEWHA, 2008).

Although the patterns of dugong movement in WA are not well understood, it is thought that dugongs move in response to availability of seagrass (Marsh *et al.*, 1994; Preen *et al.*, 1997) and water temperature.

There are a number of BIAs for dugong within and adjacent to waters of the NWMR (refer **Section 7.5**).

7.4 Pinnipeds in the NWMR

The Australian sea lion is listed as a species that may occur, or may have habitat within the NWMR (Protected Matters search - **Appendix A**). It is included here as the Australian sea lion is the only pinniped endemic to Australia (Strahan, 1983) and has been recorded within the southern extent of the NWMR at Shark Bay, WA (Kirkwood *et al.*, 1992). The most northern known breeding colony is at the Houtman Abrolhos Islands in the SWMR. The Australian sea lion's breeding range extends from the Houtman Abrolhos Islands, WA to The Pages Island, east of Kangaroo Island, SA. The Australian sea lion was listed as endangered in 2020 (Threatened Species Scientific Committee, 2020a). An assessment of the status and trends in abundance of this endemic, coastal pinniped species (Goldsworthy *et al.* 2021) documented an overall reduction in pup abundance over three generations, providing strong evidence that the species meets IUCN endangered criteria.

There are no BIAs for the Australian sea lion in the NWMR.

Table 7-2 Information on the threatened/migratory marine mammal species within the NWMR

Species	Key Information
Baleen whales (Mysticeti)	
Humpback whale	In Australian waters two genetically distinct populations migrate annually along the west (Group IV) and east coasts (Group V) between May and November. In WA, the migration pathway for the Group IV population (also known as Breeding Stock D) extends from Albany to the Kimberley coastline, passing through the NWMR (Threatened Species Scientific Committee, 2015b). Since the 1982 moratorium on commercial whaling population numbers have recovered significantly; from approximately 2000 to 3000 individuals in 1991, to between 19,200–33,850 individuals in 2008 (Bannister and Hedley, 2001; Bejder *et al.*, 2019; Hedley *et al.*, 2011). Aerial surveys off the WA coast undertaken between 2000 and 2008 produced a population estimate for the Group IV population of 26,100 individuals (CI 20,152–33,272) in 2008 (Salgado Kent *et al.*, 2012). Current population growth for the Group IV population is estimated to be between 9.7 and 13% per annum (Threatened Species Scientific Committee, 2015b). Using the Salago-Kent *et al.* (2012) estimate of 26,100 individuals and an annual population growth rate of ~10%, current population size could be in excess of 75,000 individuals (Woodside, 2019). The Group IV population migrates northward from their Antarctic feeding grounds around May each year, reaching the NWMR around early June. The southward migration subsequently starts in mid-September, around the time of breeding and calving (typically August to September) (Threatened Species Scientific Committee, 2015b). Within the NWMR there are key calving areas between Broome and the northern end of Camden Sound, and resting areas in the southern Kimberley region, Exmouth Gulf and Shark Bay. In particular, high numbers of humpback whales are observed in Camden Sound and Pender Bay from June to September each year (Threatened Species Scientific Committee, 2015b). There are reports of neonates further south, suggesting that the calving areas may be poorly defined. Aerial photogrammetric surveys in 2013 and 2015 recorded large numbers of humpback whale calves along North-west Cape, with estimated minimum relative calf abundance of 463–603 in 2013 and 557–725 in 2015 (Irvine *et al.*, 2018). The majority of calves sighted in both years (85% in 2013; 94% in 2015) were neonates, and these observations indicate that a minimum of approximately 20% of the expected number of calves of this population are born near, or south of, North-west Cape. Thus, the calving grounds for the Group IV population extend south from Camden Sound to at least North-west Cape, 1000 km south-west of the currently recognized calving area (Irvine *et al.*, 2018). There are BIAs for migration and breeding and calving for the humpback whale along the WA coast and within the NWMR (refer **Table 7-3** and **Figure 7-1**).
Blue whale	There are two recognised sub-species of blue whale in the Southern Hemisphere, both of which are recorded in Australian waters. These are the southern (or 'true') blue whale (*Balaenoptera musculus*) and the 'pygmy' blue whale (*Balaenoptera musculus brevicauda*) (Commonwealth of Australia, 2015a). In general, southern blue whales occur in waters south of 60°S and pygmy blue whales occur in waters north of 55°S (i.e. not in the Antarctic). On this basis, nearly all blue whales sighted in the NWMR are likely to be pygmy blue whales. The East Indian Ocean (EIO) pygmy blue whale population is seasonally distributed from Indonesia (a potential breeding ground) to south-west of Australia and east across the Great Australian Bight and Bonney Upwelling to beyond the Bass Strait (Blue Planet Marine, 2020). Migration seems to be variable, with some individuals appearing as resident to areas of high productivity and others undertaking migrations across long distances (Commonwealth of Australia, 2015a). McCauley *et al.* (2018) describe three migratory stages around Australia for the EIO pygmy blue whale population: a 'southbound migratory stage' where whales travel southwards from Indonesian waters offshore from the WA coastline, mostly from October to December but possibly into January of the following year; a protracted 'southern Australian stage' (January to June) where animals spread across southern waters of the Indian Ocean and south of Australia; and a 'northbound migratory stage' (April to August) where animals travel north back to Indonesia again. There are currently insufficient data to accurately estimate population numbers of the pygmy blue whale in Australian waters (Blue Planet Marine, 2020; Commonwealth of Australia, 2015a). There are, however, two estimates of population size of the EIO pygmy blue whale for WA. McCauley and Jenner (2010) calculated the population to be between 662 and 1559 individuals in 2004 based on passive acoustics (whale vocalisations), and Jenner *et al.* (2008) (based on photographic mark and recapture) calculated between 712 and 1754 individuals, but both estimates did not account for animals

Species	Key Information
	travelling further west into the Indian Ocean (McCauley *et al.*, 2018). More recent passive acoustic data estimates a 4.3% growth rate that applies to the proportion of EIO pygmy blue whales seasonally present in offshore water of the south-eastern Australia and may not reflect the full population but does imply an increasing population (McCauley *et al.*, 2018). The pygmy blue whale is typically present in the Perth Canyon from November to June, with an observed peak between March and May (Commonwealth of Australia, 2015a; Blue Planet Marine, 2020). The pygmy blue whale feeds in the Perth Canyon at depths of 200 to 300 m, which overlaps the typical distribution of krill (200–500 m water depth (day) to surface (night) (McCauley *et al.*, 2004; Commonwealth of Australia, 2015a). Other possible feeding grounds off the WA coast include the wider area around the Perth Canyon, and possible foraging areas off the Ningaloo Coast and at Scott Reef (Commonwealth of Australia, 2015a). Refer **Table 7-3** and **Figure 7-2** for the location and type of BIAs for blue whales in the NWMR. There is a migratory BIA for the pygmy blue whale within WA waters, which extends for most of the length of the NWMR within offshore waters.
Bryde's whale	The Bryde's whale is the least migratory of its genus and is restricted geographically from the equator to approximately 40°N and S, or the 20° isotherm (Bannister *et al.*, 1996). The species is known to exhibit inshore and offshore forms in other international locations that vary in morphology and migratory behaviours (Bannister *et al.*, 1996). This appears to also be the case within Australian waters. Bryde's whales have been identified as occurring in both oceanic and inshore waters, with the only key localities recognised in WA being in the Houtman Abrolhos Islands and north of Shark Bay (Bannister *et al.*, 1996). Data suggests offshore whales migrate seasonally, heading towards warmer tropical waters during the winter; however, information about migration within the NWMR is not well known (McCauley and Duncan, 2011). McCauley (2011) detected Bryde's whales using acoustic loggers deployed in and around Scott Reef from 2006 to 2009. Other acoustic logger data of Bryde's whale vocalisations recorded between Ningaloo and north of Darwin showed no apparent trends or seasonality (McCauley, 2011). There are no identified BIAs for this species in the National Conservation Values Atlas.
Southern right whale	The southern right whale occurs primarily in waters between about 20°S and 60°S and moves from high latitude feeding grounds in summer to warmer, low latitude, coastal locations in winter (Bannister *et al.*, 1996). Southern right whales aggregate in calving areas along the south coast of WA outside of the NWMR. However, there have been sightings in waters of the NWMR as far north as Ningaloo (Bannister and Hedley, 2001), and a stranding record exists for the far north Kimberley coast (ALA, 2020). Southern right whale calving grounds are found at mid to lower latitudes and are occupied during the austral winter and early-mid spring. They are regularly present on the southern Australian coast from about mid-May to mid-November, and peak periods for mating are from mid-July through August. Mating occurs within these breeding grounds as evidenced by many observations of intromission and mating behaviours. Southern right whales in south-western Australia appear to be increasing at the maximum biological rate but there is limited evidence of increase in south-eastern Australian waters (DSEWPAC, 2012d). There are no identified BIAs for this species in the NWMR.
Antarctic minke whale	The Antarctic minke whale is distributed worldwide and has been recorded off all Australian states (but not in the NT), feeding in cold waters and migrating to warmer waters to breed. It is thought that the Antarctic minke whale migrates up the WA coast to about 20°S to feed and possibly breed (Bannister *et al.*, 1996); however, detailed information about timing and location of migrations and breeding grounds within the NWMR is not well known. In the high latitudinal winter breeding grounds in other regions, the species appears to be distributed off the continental shelf edge. No population estimates are available for Antarctic minke whales in Australian waters. There are no identified BIAs for this species in the National Conservation Values Atlas.
Sei whale	The sei whale is a baleen whale with a worldwide oceanic distribution and is expected to seasonally migrate between low latitude wintering areas and high latitude summer feeding grounds (Bannister *et al.*, 1996; Prieto *et al.*, 2012). There are no known mating or calving areas in Australian waters. The species has a preference for deep waters, typically occurs in oceanic basins and continental slopes (Prieto *et al.*, 2012), and exhibits a migration pathway influenced by seasonal feeding and breeding patterns. Sei whales have been infrequently recorded in Australian waters (Bannister *et al.*, 1996). Reliable estimates of the sei whale population size in Australian waters are currently not possible due to a lack of dedicated surveys and their elusive characteristics. Similarly, the extent of occurrence and area of occupancy of sei whales in Australian waters cannot be calculated due to the

Species	Key Information
	rarity of sighting records. They will typically travel in small pods of three to five individuals, with some segregation by age, sex and reproductive status. Calving grounds are presumed to exist in low latitudes with mating and calving potentially occurring during winter months (Threatened Species Scientific Committee, 2015a). There are no known mating or calving areas in Australian waters, and there are no identified BIAs for this species in the National Conservation Values Atlas.
Fin whale	The fin whale is a large baleen whale distributed worldwide. Fin whales migrate annually between high latitude summer feeding grounds and lower latitude over-wintering areas (Bannister *et al.*, 1996) and follow oceanic migration paths. The species is uncommonly encountered in coastal or continental shelf waters. Australian Antarctic waters are important feeding grounds for fin whales but there are no known mating or calving areas in Australian waters (Morrice *et al.*, 2004). The species has been observed in groups of six to 10 individuals, as well as in pairs and alone (Threatened Species Scientific Committee, 2015c). Accurate distribution patterns are not known within Australian waters and the majority of data are from stranding events. Fin whales have been recorded vocalising off the Perth Canyon, WA, between January and April 2000 (McCauley *et al.*, 2000). It is currently not possible to accurately estimate the population size of fin whales in Australian waters predominantly due to the species' behaviour and local ecology, as the proportion of time they spend at the surface varies greatly depending on these factors. In addition, natural fluctuations of fin whales in Australian waters are unknown; however, long-range movements do appear to be prey-related. A recent study by Aulich *et al.* (2019) used passive acoustic monitoring as a tool to identify the migratory movements of fin whales in Australian waters. On the west coast, the earliest arrival of these animals occurred at Cape Leeuwin in April, and between May and October they migrated along the WA coastline to the Perth Canyon, which likely acts as a way-station for feeding (Aulich *et al.*, 2019). Some whales were found to continue migrating as far north as Dampier (Aulich *et al.*, 2019). There are no identified BIAs for this species in the National Conservation Values Atlas.
Toothed whales (Odontoceti)	
Sperm whale	Sperm whales are the largest of the toothed whales and are distributed worldwide in deep waters (greater than 200 m) off continental shelves and sometimes near shelf edges (Bannister *et al.*, 1996). The species tends to inhabit offshore areas at depths of 600 m or more and is uncommon in waters less than 300 m deep (Ceccarelli *et al.*, 2011). There is limited information about sperm whale distribution in Australian waters, however, they are usually found in deep offshore waters, with more dense populations close to continental shelves and canyons. In the open ocean, there is a generalised movement of sperm whales southwards in summer, and corresponding movement northwards in winter, particularly for males. Detailed information about the distribution and migration patterns of sperm whales off the WA coast is not available. Females with young may reside within the NWMR all year round, males may migrate through the region and the species may be associated with canyon habitats (Ceccarelli *et al.*, 2011). Sperm whales have been recorded in deep waters off North-west Cape and appear to occasionally venture into shallower waters in other areas. Twenty-three (23) sightings of sperm whales (variable pod sizes, ranging from one to six animals) were recorded by marine mammal observers (MMOs) during the North West Cape MC3D marine seismic survey (December 2016 to April 2017) (Woodside, 2020). These animals were observed in deep, continental slope waters of the Montebello Saddle (maximum distance of approximately 90 km from North-west Cape), and the waters overlying the Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula KEF. The deep waters above the gully/saddle on the inner edge of the plateau (the Montebello Saddle) are thought to be important for sperm whales that may feed in the region (based on 19th Century whaling records; Townsend, 1935). There are no identified BIAs for this species in the NWMR.
Killer whale	The preferred habitat of killer whales includes oceanic, pelagic and neritic (relatively shallow waters over the continental shelf) regions, in both warm and cold waters. Killer whales appear to be more common in cold, deep waters; however, they have been observed along the continental slope and shelf, particularly near seal colonies, as well as in shallow coastal areas of WA (Bannister *et al.*, 1996; Thiele and Gill, 1999). The total number of killer whales in Australian waters is unknown, however, it may be that the total number of mature animals within waters around the continent is less than 10,000. Killer whales are known to make seasonal movements, and probably follow regular migratory routes, but no information is available for the

Species	Key Information
	species in Australian waters. Killer whales are top-level carnivores, and there are reports from around Australia of attacks on dolphins, juvenile humpback whales, blue whales, sperm whales, dugongs and Australian sea lions (Bannister *et al.*, 1996). Killer whales are known to target humpback whales, particularly calves, off Ningaloo Reef during the humpback southern migration season (Pitman *et al.*, 2015). Overall, observations suggest that humpback calves are a predictable, plentiful, and readily taken prey source for killer whales off Ningaloo Reef for at least five months of the year. Additionally, there are records of killer whales attacking dugongs in Shark Bay (Anderson and Prince, 1985). However, there are no recognised key localities or important habitats for killer whales within the NWMR (DSEWPAC, 2012a). There are no identified BIAs for this species in the NWMR.
Australian snubfin dolphin	Stranding and museum specimen records indicate that Australian snubfin dolphins occur only in waters off northern Australia, from approximately Broome on the west coast to the Brisbane River on the east coast (Parra *et al.*, 2002). Aerial and boat-based surveys indicate that Australian snubfin dolphins occur mostly in protected shallow waters close to the coast, and close to river and creek mouths (Parra, 2006; Parra *et al.*, 2006; Parra *et al.*, 2002). Within the NWMR, species has been found in the shallow coastal waters and estuaries along the Kimberley coast. Beagle and Pender bays on the Dampier Peninsula, and tidal creeks around Yampi Sound and between Kuri Bay and Cape Londonderry are important areas for Australian snubfin dolphins (DEWHA, 2008). Roebuck Bay has generally been considered the south-western limit of snubfin dolphin distribution across northern Australia, but the species has been recorded in Port Hedland harbour, the Dampier Archipelago, Montebello Islands, Exmouth Gulf and off North-west Cape (Allen *et al.*, 2012). A first comprehensive catalogue of snubfin dolphin sightings has been compiled for the Kimberley, north-west Western Australia (Bouchet *et al.* 2021) and documented that snubfin dolphins are consistently encountered in shallow water (<21 m depth) close to (<15 km) freshwater inputs with high detection rates in known hotspots such as Roebuck Bay and Cygnet Bay as well as suitable coastal habitat in the wider Kimberley region. Refer **Table 7-3** and **Figure 7-3** for the location and type of BIAs for Australian snubfin dolphins in the NWMR.
Indo-Pacific humpback dolphin (Australian humpback dolphin)	Previously included with *Sousa chinensis*, the Australian humpback dolphin (*S. sahulensis*) was elevated to a species in 2014. *S. chinensis* is now applied for humpback dolphins in the eastern Indian and western Pacific Oceans and *S. sahulensis* for humpback dolphins in the waters of the Sahul Shelf from northern Australia to southern New Guinea (Jefferson and Rosenbaum, 2014). The Australian humpback dolphin is listed as *S. chinensis* under EPBC Act. The Australian humpback dolphin (referred to as 'humpback dolphin' hereafter) inhabits the tropical/subtropical waters of the Sahul Shelf across northern Australia and southern Papua New Guinea (Jefferson and Rosenbaum, 2014). Based on historical stranding data, museum specimens and opportunistic sightings collected during aerial and boat-based surveys for other fauna it has been inferred that humpback dolphins occur from the WA/NT border south-west to Shark Bay (Hanf *et al.*, 2016). Allen *et al.* (2012) suggested that humpback dolphins use a range of inshore habitats, including both clear and turbid coastal waters across northern WA. The waters surrounding North-west Cape are an important area for the species. Boat-based surveys up to 5 km out from the coast (Brown *et al.*, 2012) recorded humpback dolphins from 0.3 to 4.5 km away from shore and in depths ranging from 1.2 to 20 m, with a mean of ~8 m. Other studies around North-west Cape, surveying waters up to 5 km from the coast, recorded humpback dolphins in water depths of up to 40 m (Hanf *et al.*, 2016). Based on density, site fidelity and residence patterns, North-west Cape is clearly an important habitat toward the south-western limit of this species' range (Hunt *et al.*, 2017). Aerial surveys targeting dugongs over the western Pilbara have recorded humpback dolphins more than 60 km from the mainland in shallow shelf waters (i.e. <30 m deep) near Barrow Island and the western Lowendal Islands (Hanf, 2015). The species has also been recorded in fringing coral reef and shallow, sheltered sandy lagoons at the Montebello Islands (Raudino *et al.*, 2018). Over the past ten years a number of studies have focused on populations of humpback dolphins along the Kimberley coast, including Roebuck Bay, the Dampier Peninsula, Cone Bay, Yampi Sound, Prince Regent River and the Cambridge Gulf (Brown *et al.*, 2016). Refer Table **Table 7-3** and **Figure 7-4** for the location and type of BIAs for Indo-Pacific humpback dolphins in the NWMR.
Indo-Pacific bottlenose dolphin (Spotted bottlenose dolphin)	There are four known sub-populations of spotted bottlenose dolphins, of which the Arafura/Timor Sea populations were identified as potentially occurring within the NWMR. The species is restricted to inshore areas such as bays and estuaries, nearshore waters, open coast environments, and shallow offshore waters including coastal areas around oceanic islands, from Shark Bay to the western edge of the Gulf of Carpentaria. The species

Species	Key Information
	forages in a range of habitats but is generally restricted to water depths of less than 200 m (DSEWPAC, 2012a). Important foraging/breeding areas include the shallow coastal waters and estuaries along the Kimberley coast and Roebuck Bay. Refer **Table 7-3** the location and type of BIAs for spotted bottlenose dolphins in the NWMR.
Sirenians	
Dugong	Dugongs are distributed along the WA coast throughout the Gascoyne, Pilbara and Kimberley. Specific areas supporting dugong populations include: Shark Bay; Ningaloo and Exmouth Gulf; the Pilbara coast (Exmouth Gulf to De Grey River [Marsh *et al.*, 2002]); and Eighty Mile Beach and the Kimberley coast, including Roebuck Bay (Brown *et al.*, 2014). Dugong distribution is correlated with the seagrass habitats upon which it feeds, although water temperature has also been correlated with dugong movements and distribution (Preen *et al.*, 1997; Preen, 2004). Dugongs are known to migrate between seagrass habitats (hundreds of kilometres) (Sheppard *et al.*, 2006), and in Shark Bay they exhibit seasonal movements as a behavioural thermoregulatory response to winter water temperatures (Holley *et al.*, 2006; Marsh *et al.*, 2011). Aerial surveys since the mid-1980s indicate that dugong populations are now stable at a regional scale in Shark Bay and in the Exmouth/Ningaloo Reef. Refer **Table 7-3** and **Figure 7-5** for the location and type of BIAs for dugong in the NWMR.
Pinnipeds	
Australian sea lion	The Australian sea lion is the only endemic pinniped (true seals, fur seals and sea lions) in Australian waters. It is a member of the Otariidae (eared seals) family. The birth interval in Australian sea lions is around 17–18 months. The Australian sea lion is unique among pinnipeds in being the only species that has a non-annual breeding cycle that is also temporally asynchronous across its range (DSEWPAC, 2013a; Threatened Species Scientific Committee, 2020a). This means the breeding period (copulation and birthing) in one colony will occur at different times to breeding in another colony. The Australian sea lion is considered to be a specialised benthic forager—that is, it feeds primarily on the sea floor. Studies have shown that the species will eat a range of prey, including fish, cephalopods (squid, cuttlefish and octopus), sharks, rays, rock lobsters and penguins (DSEWPAC, 2013a; Threatened Species Scientific Committee, 2020a). The Australian sea lion feeds on the continental shelf, most commonly in depths of 20–100 m, and they typically travel up to about 60 km from their colony on each foraging trip, with a maximum distance of around 190 km when over shelf waters. The current breeding distribution of the Australian sea lion extends from the Houtman Abrolhos Islands on the west coast of WA to the Pages Islands in SA. Sites for the 58 breeding colonies occurring in WA and SA are designated as habitat critical to the survival of the species under the Recovery Plan for the Australian sea lion (DSEWPAC, 2013a). Of these, four are located in the SWMR along the west coast of WA: Abrolhos Islands (Easter Group), Beagle Island, North Fisherman Island and Buller Island. There are also a number of foraging BIAs for both males and females along the west coast, extending from the Abrolhos Islands south to Rockingham. There is no designated habitat critical to survival or identified BIAs for this species in the NWMR. **Figure 7-6** shows the foraging BIAs for the Australian sea lion to the south of the NWMR.

7.5 Biological Important Areas in the NWMR

BIAs representing important life cycle stages and behaviours for six species of marine mammal in the NWMR: the humpback whale, the pygmy blue whale, Australian snubfin dolphin, Australian humpback dolphin, spotted bottlenose dolphin and dugong, are presented in **Table 7-3**.

Table 7-3 Marine mammal BIAs within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging	Breeding	Calving	Migration
Humpback whale[1]	✓	✓	✓	Shark Bay Exmouth Gulf (north migration – early June) (south migration – late Aug to Oct) Southern Kimberley region	No foraging BIA identified within the NWMR	Kimberley coast from the Lacepede Islands to north of Camden Sound (mid Aug – early Sept)	Core calving in waters off the Kimberley coast from the Lacepede Islands to north of Camden Sound (mid Aug – early Sept)	Southern border of the NWMR to north of the Kimberley (arrive June)
Blue whale and Pygmy blue whale [1] [2]	✓	✓	✓	No resting BIA identified within the NWMR	Possible foraging areas off Ningaloo and Scott Reef	No breeding BIA identified within the NWMR	No calving BIA identified within the NWMR	Augusta to Derby. Along the shelf edge at depths of 500 m to 1000 m; appear close to Ningaloo coast Montebello Islands area on southern migration (north: April – Aug) (south: Oct – late Dec)
Australian snubfin dolphin [1]	✓	✓	-	No resting BIA identified within the NWMR	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay, Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound Talbot Bay Maret Islands Bigge Island Admiralty Gulf Parry Harbour Bougainville Peninsula Vansittart Bay Anjo Peninsula Napier Broome Bay Deep Bay Prince Regent River	No migration BIA identified within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging	Breeding	Calving	Migration
					Broome Bay Deep Bay Prince Regent River King George River Cape Londonderry Ord River	Ord River	King George River Cape Londonderry Ord River	
Indo-Pacific humpback dolphin	✓	✓	-	No resting BIA identified within the NWMR	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island Maret Islands Bigge Island King Sound, southern sector Vansittart Bay, Anjo Peninsula	Roebuck Bay Willie Creek Prince Regent River King Sound (north) Yampi Sound Talbot Bay Walcott Inlet Doubtful Bay Deception Bay Augustus Island	Roebuck Bay Willie Creek Prince Regent River	No migration BIA identified within the NWMR
Spotted bottlenose dolphin	✓	✓	✓	No resting BIA identified within the NWMR	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound	Roebuck Bay Cambridge Gulf Camden Sound area King Sound (south) King Sound (north) Yampi Sound	No calving BIA identified within the NWMR	No migration BIA identified within the NWMR

Species	Woodside Activity Area			BIAs				
	Browse	NWS/S	NWC	Resting	Foraging	Breeding	Calving	Migration
Dugong[1]	✓	✓	✓	No resting BIA identified within the NWMR	Exmouth Gulf Ningaloo Reef Shark Bay Roebuck Bay Dampier Peninsula	No breeding BIA identified within the NWMR	Exmouth Gulf Ningaloo Reef Shark Bay	Not listed as a migratory species

1. *DSEWPAC (2012a)*

2. *Commonwealth of Australia (2015a)*

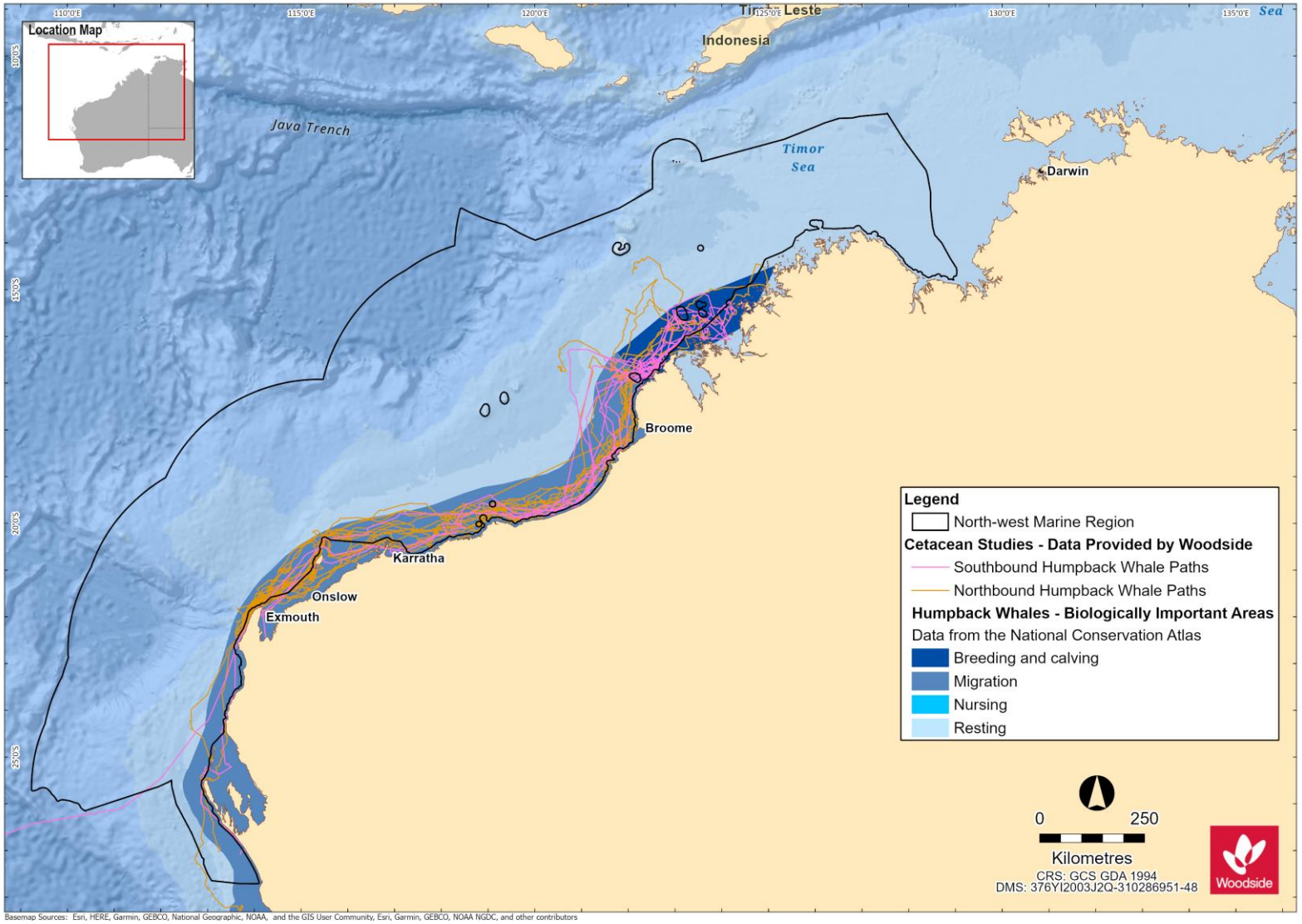

Figure 7-1 Humpback whale BIAs for the NWMR and tagged tracks for north and south bound migrations

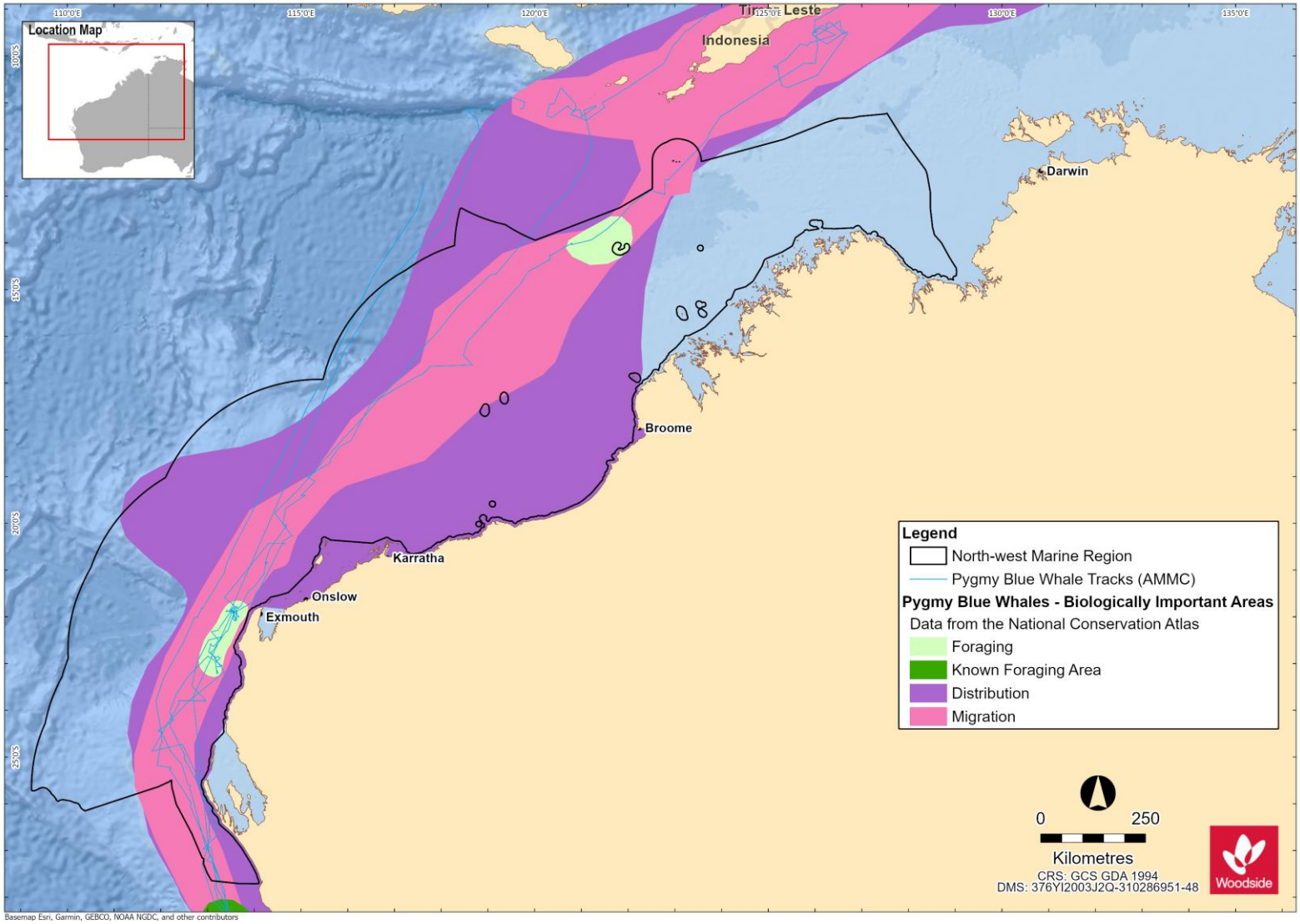

Figure 7-2 Pygmy blue whale BIAs for the NWMR and tagged whale tracks for northbound migration

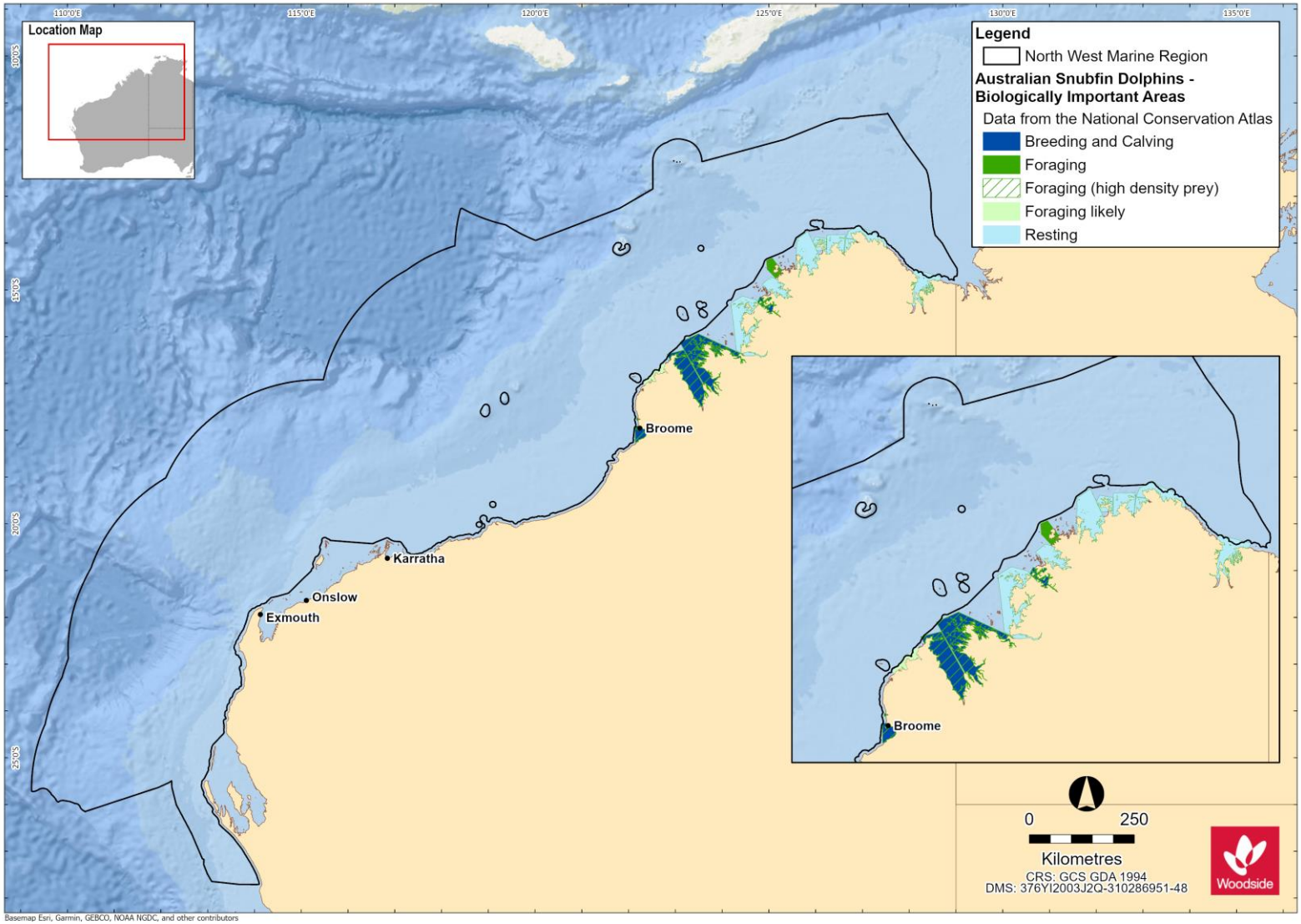

Figure 7-3 Australian snubfin dolphin BIAs for the NWMR

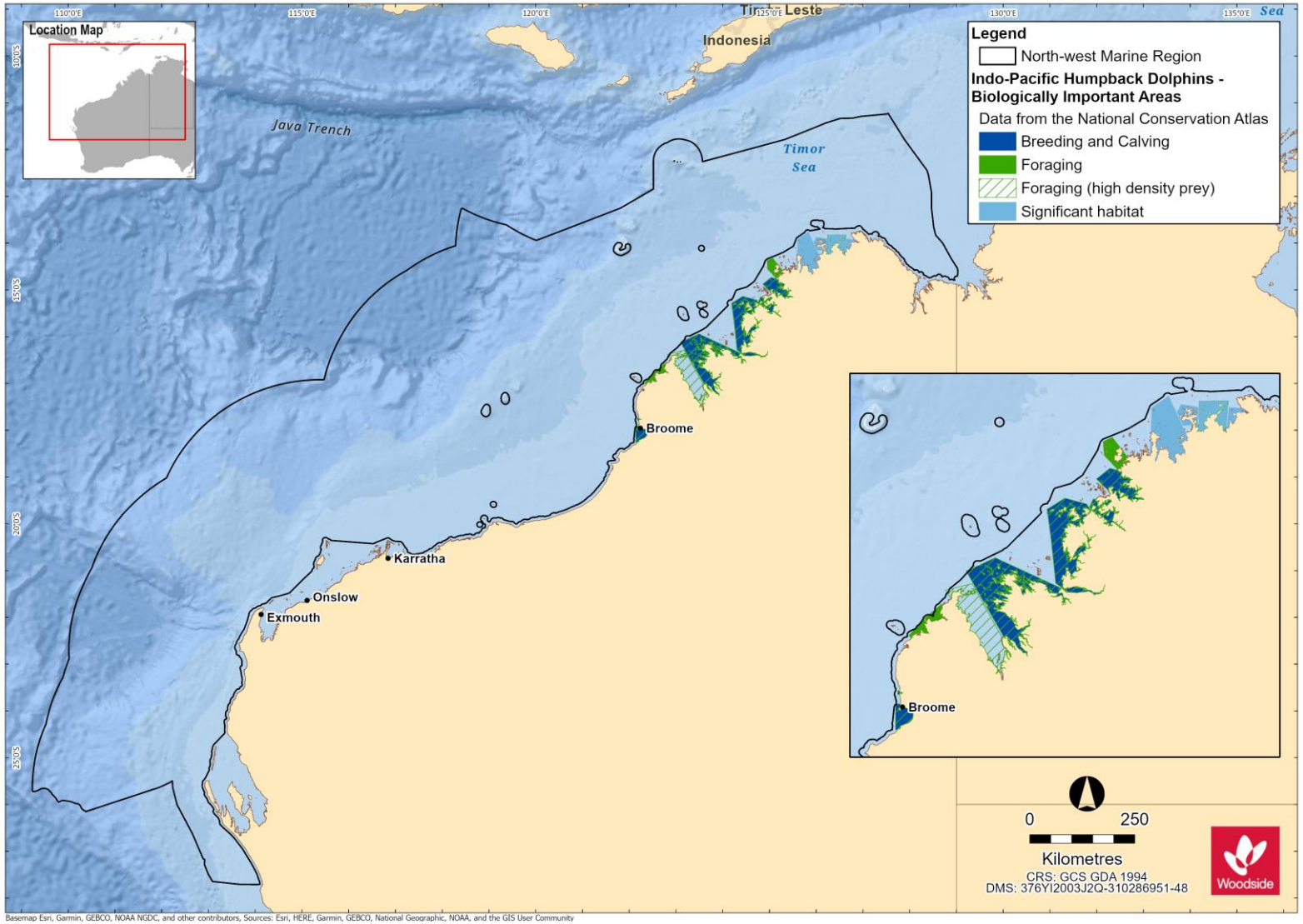

Figure 7-4 Indo-Pacific humpback dolphin BIAs for the NWMR

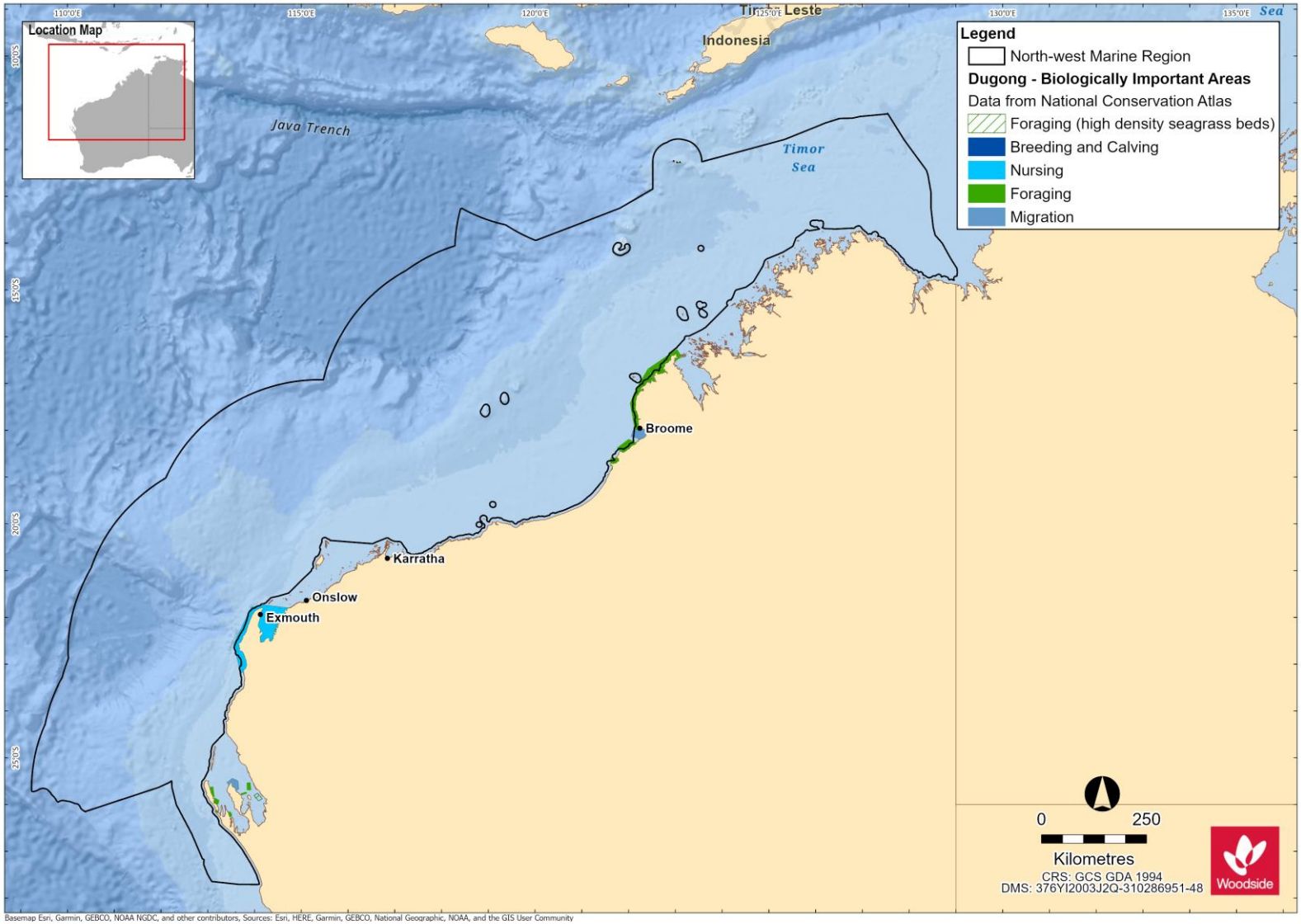

Figure 7-5 Dugong BIAs for the NWMR

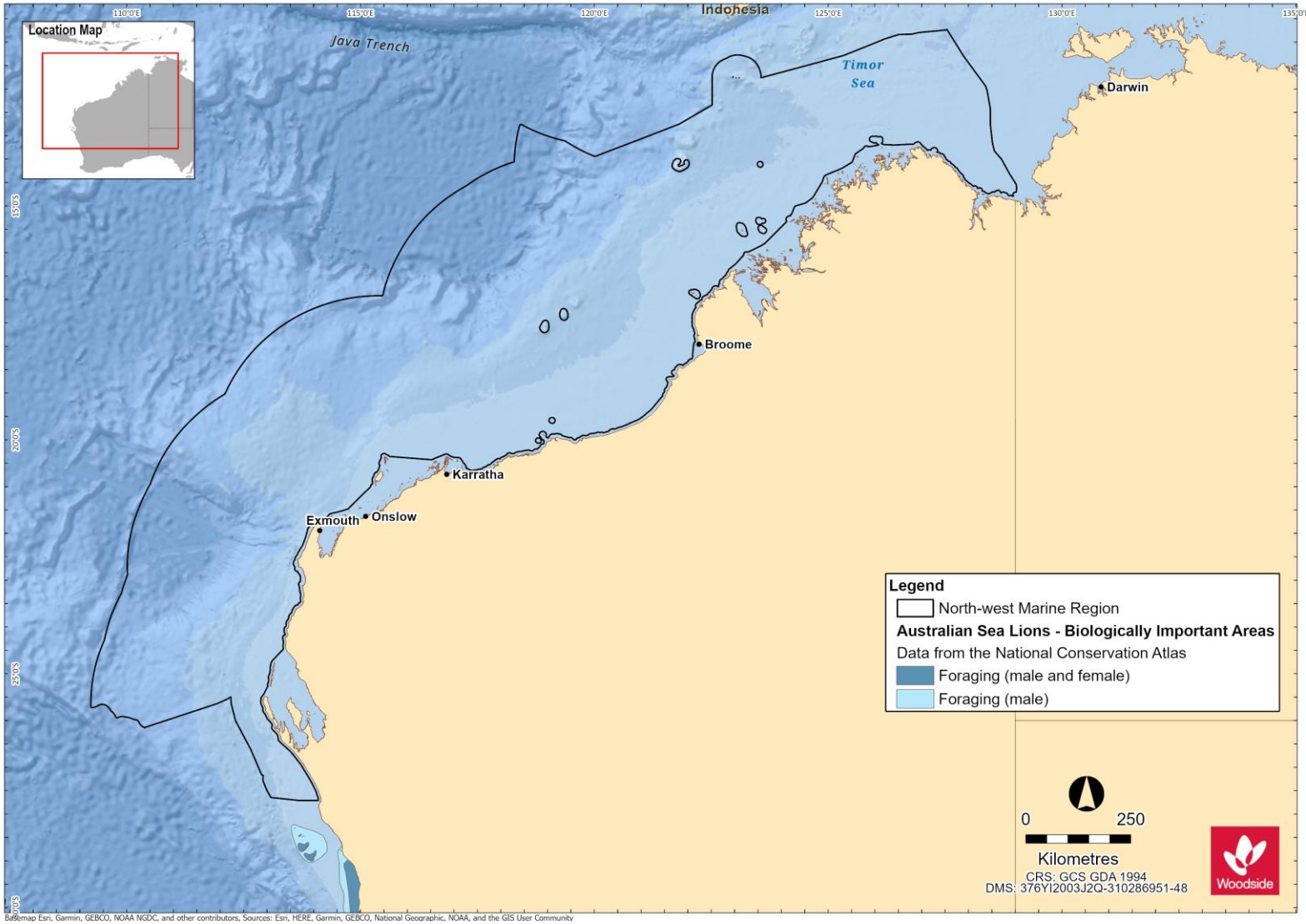

Figure 7-6 Australian sea lion BIAs in the northern extent of the SWMR closest to the NWMR

7.6 Marine Mammal Summary for the NWMR

7.6.1 Browse

The Browse activity area includes biologically important habitat for five threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (breeding, calving and migration areas);
- Indo-Pacific humpback dolphin (foraging, breeding and calving areas);
- Australian snubfin dolphin (foraging, breeding and calving areas); and
- dugong (foraging).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.6.2 North-west Shelf / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for five threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (resting and migration areas);
- Indo-Pacific humpback dolphin (foraging, breeding and calving areas);
- Australian snubfin dolphin (foraging, breeding and calving areas); and
- dugong (foraging and calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

7.6.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for three threatened and/or migratory marine mammal species:

- blue whale and pygmy blue whale (foraging and migration areas);
- humpback whale (resting and migration areas); and
- dugong (foraging and calving areas).

BIAs for the marine mammal species are outlined in **Table 7-3**.

8. SEABIRDS AND MIGRATORY SHOREBIRDS OF THE NWMR

8.1 Regional Context

The NWMR supports high numbers and species diversity of seabirds and migratory shorebirds including many that are EPBC Act listed, threatened and migratory. The NWMR marine bioregional plan reported 34 seabird species (listed as threatened, migratory and/or marine) that are known to occur, and 30 of 37 species of migratory shorebird species that regularly occur in Australia, are recorded at Ashmore Reef in the NWMR (DSEWPAC, 2012e). The NWMR marine bioregional plan also noted that Roebuck Bay and Eighty Mile Beach are internationally significant and recognised migratory shorebird locations.

Many migratory seabirds and shorebirds are protected through bilateral agreements between Australia and Japan (JAMBA), China (CAMBA) and the Republic of Korea (ROKAMBA), recognising the migratory route and important stopover and resting habitats of the East Asian-Australasian Flyway (EAAF). Important migratory bird habitats are also recognised as part of protected wetlands of the internationally significance under the Ramsar Convention. Important Bird Areas (IBAs) for the NWMR, which are also recognised as global Key Biodiversity Areas (KBAs) (BirdLife Australia[4]), include:

- Roebuck Bay KBA (and Ramsar site): Internationally significant migratory shorebird species.
- Mandora Marsh and Anna Plains KBA (adjacent to Eighty Mile Beach, Ramsar site): Internationally significant migratory shorebird species.
- Dampier Saltworks KBA: Internationally significant migratory shorebird species.
- Montebello Islands KBA: Shorebird and seabird species.
- Barrow Island KBA: Shorebird and seabird species.
- Exmouth Gulf Mangroves KBA: Internationally significant migratory shorebird species.

Table 8-1 presents a list of the threatened and migratory seabird and shorebird species that occur within the NWMR, with their conservation status and relevant recovery plans and/or conservation advice.

4 https://www.birdlife.org.au/projects/KBA#:~:text=The%20Key%20Biodiversity%20Areas%20(KBAs,of%20advocacy%20for%20protected%20areas. Accessed April, 2021.

Table 8-1. Bird species (threatened/migratory) identified by the EPBC Act PMST and other sources of information as potentially occurring within the NWMR

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Seabirds						
Macronectes giganteus	Southern giant petrel	Endangered	Migratory	Marine	Migratory	National recovery plan for threatened albatrosses and giant petrels 2011-2016 (DSEWPAC, 2011c)
Papasula abbotti	Abbott's booby	Endangered	N/A	Marine	N/A	Conservation Advice for the Abbott's booby - *Papasula abbotti* (Threatened Species Scientific Committee, 2020b)
Pterodroma mollis	Soft-plumaged petrel	Vulnerable	N/A	Marine	N/A	Conservation Advice *Pterodroma mollis* soft-plumaged petrel (Threatened Species Scientific Committee, 2015f)
Sternula nereis nereis	Australian fairy tern	Vulnerable	N/A	N/A	Vulnerable	Conservation Advice for *Sternula nereis nereis* (Fairy Tern) (DSEWPAC, 2011d)
Anous tenuirostris melanops	Australian lesser noddy	Vulnerable	N/A	Marine	Endangered	Conservation Advice *Anous tenuirostris melanops* Australian lesser noddy (Threatened Species Scientific Committee, 2015e)
Thalassarche carteri	Indian yellow-nosed albatross	Vulnerable	Migratory	Marine	Endangered	National recovery plan for threatened albatrosses and giant petrels 2011-2016 (DSEWPAC, 2011c)
Anous stolidus	Common noddy	N/A	Migratory	Marine	Migratory	Draft Wildlife Conservation Plan for Seabirds (Commonwealth of Australia, 2019)
Fregata ariel	Lesser frigatebird	N/A	Migratory	Marine	Migratory	
Fregata minor	Great frigatebird	N/A	Migratory	Marine	Migratory	
Sula leucogaster	Brown booby	N/A	Migratory	Marine	Migratory	
Sula sula	Red-footed booby	N/A	Migratory	Marine	Migratory	

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Onychiprion anaethetus (listed as *Sterna anaethetus)*	Bridled tern	N/A	Migratory	Marine	Migratory	
Thalasseus bergii	Greater crested tern	N/A	Migratory	Marine	Migratory	
Sternula albifrons	Little tern	N/A	Migratory	Marine	Migratory	
Sterna dougallii	Roseate tern	N/A	Migratory	Marine	Migratory	
Onychoprion fuscata	Sooty tern	N/A	N/A	Marine	N/A	
Hydroprogne caspia	Caspian tern	N/A	Migratory	Marine	Migratory	
Ardenna pacifica	Wedge-tailed shearwater	N/A	Migratory	Marine	Migratory	
Puffinus assimillis	Little shearwater	N/A	N/A	Marine	N/A	
Ardenna carneipes	Flesh-footed shearwater	N/A	Migratory	Marine	Vulnerable	
Calonectris leucomelas	Streaked shearwater	N/A	Migratory	Marine	Migratory	
Phaethon lepturus	White-tailed tropicbird	N/A	Migratory	Marine	Migratory	
Chroicocephalus novaehollandiase	Silver gull	N/A	N/A	Marine	N/A	
Migratory shorebirds						
Numenius madagascariensis	Eastern curlew, Far Eastern curlew	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice *Numenius madagascariensis* eastern curlew (DOE, 2015a)
Calidris ferruginea	Curlew sandpiper	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice *Calidris ferruginea* curlew sandpiper (DOE, 2015b)
Calidris tenuirostris	Great knot	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice *Calidris tenuirostris* Great knot (Threatened Species Scientific Committee, 2016a)
Limosa lapponica menzbieri	Bar-tailed godwit (*menzbieri*)	Critically endangered	Migratory	Marine	Critically endangered	Conservation Advice *Limosa lapponica menzbieri* Bar-tailed godwit (northern Siberia). (Threatened Species Scientific Committee, 2016c)

Species Name	Common Name	*Environment Protection and Biodiversity Conservation Act 1999*			WA *Biodiversity Conservation Act 2016*	EPBC Act Part 13 Statutory Instrument
		Threatened Status	Migratory Status	Listed	Conservation Status	
Calidris canutus	Red knot	Endangered	Migratory	Marine	Endangered	Conservation Advice *Calidris canutus* Red knot (Threatened Species Scientific Committee, 2016b)
Charadrius mongolus	Lesser sand plover	Endangered	Migratory	Marine	Endangered	Conservation Advice *Charadrius mongolus* Lesser sand plover (Threatened Species Scientific Committee, 2016e)
Charadrius leschenaultii	Greater sand plover	Vulnerable	Migratory	Marine	Vulnerable	Conservation Advice *Charadrius leschenaultia* Greater sand plover (Threatened Species Scientific Committee, 2016d)
All migratory shorebird species	Wildlife Conservation Plan for Migratory Shorebirds (Commonwealth of Australia, 2015c).					

8.2 Seabirds in the NWMR

Seabirds are birds that are adapted to life within the marine environment (oceanic and coastal) and are generally long-lived, have delayed breeding and have fewer young than other bird species (Commonwealth of Australia, 2019). At least 34 seabird species listed as threatened, migratory and/or marine under the EPBC Act are known to occur regularly in the NWMR and include a variety of species of terns, noddies, petrels, shearwaters, frigatebirds, and boobies. Many of these species spend most of their lives at sea (predominately pelagic species), ranging over large distances to forage. These pelagic species only come onshore to breed and raise chicks at natal or high-fidelity breeding colonies on remote, offshore island locations in and adjacent to the NWMR. Many species are ecologically significant to the NWMR, as they are endemic to the region, can be present in large numbers in breeding seasons and non-breeding seasons, and many exhibit extensive annual migrations that include marine areas outside the Australian EEZ (DSEWPAC, 2012e).

The presence of seabirds within the NWMR is influenced by seabird species that migrate and forage in the area during the non-breeding season and this includes many seabird species that breed on the Houtman Abrolhos in the SWMR. Pelagic seabirds have been documented foraging at current boundaries and seasonal upwellings within the NWMR (refer to Sutton *et al*., 2019). The Houtman Abrolhos Islands National Park located in the SWMR, is one of the most significant seabird breeding locations in the eastern Indian Ocean. Sixteen (16) species of seabirds breed there. Eighty percent of common (brown) noddies, 40% of sooty terns and all the lesser noddies found in Australia nest at the Houtman Abrolhos (Surman, 2019). Important seabird areas in the NWMR are as identified by the KBAs (refer to **Section 8.1**) and the information on a select number of seabird species documented for the NWMR (based on the screening criteria presented in **Section 3**), as presented in **Table 8-2**.

Table 8-2 Information on threatened/migratory seabird species of the NWMR

Species	Key Information
Seabirds	
Southern giant petrel	This species is included in the National recovery plan for threatened albatrosses and giant petrels. Habitat critical to survival is defined for breeding and foraging. There are six known breeding localities under Australian jurisdiction (for all species giant petrels) and all are located in the Southern Ocean including islands off Tasmania and within the Australian Antarctic Territory (DSEWPAC, 2011c). Habitat critical to survival identified for foraging is defined as waters south of 25 degrees latitude. The giant petrel species distribution is mainly within the Southern Ocean but this species does migrate into subtropical waters during the winter and its distribution includes the southern extent of the NWMR. No BIAs for this species are located in the NWMR.
Abbott's booby	The Abbott's booby is a large, long-lived seabird known to nest only at Christmas Island. The recovery of this species is strongly dependent on the protection of breeding habitat defined habitat critical to the survival of this species on Christmas Island (Threatened Species Scientific Committee, 2020b). This species spends much of its time at sea and known to forage over large distances offshore when nesting and its range includes off the coast of Java, near the Chagos and in the Banda Sea, and may possibly extend into the north-western extent of the NWMR. No BIAs for this species are located in the NWMR.
Soft-plumaged petrel	This petrel species breeds only at two locations in Australian waters within the Southern Ocean (one off Tasmania and Macquarie Island) (Threatened Species Scientific Committee, 2015f). As a mainly sub-Antarctic species they are usually distributed in cooler seas but distribution extents into subtropical waters and its known distribution includes the southern extent of the NWMR. No BIAs for this species are located in the NWMR.
Australian fairy tern	The Australian fairy tern is listed as Vulnerable for the sub-species only recorded for WA. It has a coastal distribution from Sydney, south to Tasmania and around southern WA up to the Dampier Archipelago and out on the offshore island groups of Barrow, Montebello and the Lowendals (DSEWPAC, 2011d). The Australian fairy tern feeds on small baitfish and roosts and nests on sandy beaches below vegetation. These behaviours, generally, occur in inshore waters of island archipelagos and on the Australian mainland shores and adjacent wetlands. Fairy terns breed from August to February. The Australian fairy tern is unlikely to be present

Species	Key Information
	within the offshore environment of the NWMR. The largest breeding colony in Western Australia for this species is in the Houtman Abrolhos Islands, SWMR (Surman, 2019). For the description and location of BIAs in the NWMR, refer to **Table 8-3** and **Figure 8-2**.
Australian lesser noddy	The Houtman Abrolhos, WA is an important breeding habitat for the Australian lesser noddy in the eastern Indian Ocean. This species exhibits nesting habitat specialisation (white mangrove stands) and has a limited foraging range during the breeding season. Furthermore, the lesser noddy forages over shelf waters and appears not to disperse over their non-breeding period as they remain largely in the general vicinity or slightly to the south of the colony in the non-breeding season (February to September; Surman *et al*., 2018). No BIAs for this species are located in the NWMR.
Indian yellow-nosed albatross	This species is included in the National recovery plan for threatened albatrosses and giant petrels. Habitat critical to survival is defined for breeding and foraging. There are six known breeding localities under Australian jurisdiction (for all species of albatrosses) and all are located in the Southern Ocean including islands off Tasmania and within the Australian Antarctic Territory (DSEWPAC, 2011c). Habitat critical to survival identified for foraging is defined as waters south of 25 degrees latitude. All albatross species distribution (including the Indian yellow-nose albatross) is mainly within the Southern Ocean but this species does migrate into subtropical waters during the winter and its distribution includes the southern extent of the NWMR. No BIAs for this species are located in the NWMR.
Common noddy	This species is listed as migratory and marine. The common (or brown) noddy is the largest species of noddy found in Australian waters. The species is widespread in tropical and subtropical areas beyond Australia. This seabird species is gregarious and normally occurs in flocks, up to hundreds of individuals, when feeding or roosting. The Houtman Abrolhos, WA is the primary breeding habitat for the common noddy in the Eastern Indian Ocean. This species spends their non-breeding season (March to August) in the NWS area, around 950 km north from the breeding colony (Surman *et al*. 2018). The species occurs within NWMR waters, particularly around offshore islands such as the Montebello Island group. This species is recorded on unmanned oil and gas platforms within the NWS. No BIAs for this species are located in the NWMR.
Lesser frigatebird **Great frigatebird**	Both species of frigatebird are listed as migratory and marine. Within the NWMR, the lesser frigatebird is known to breed on Adele, Bedout and West Lacepede islands, Ashmore Reef and Cartier Island (Commonwealth of Australia, 2019). The lesser frigatebird feeds mostly on fish and sometimes cephalopods, and all food is taken while the bird is in flight. Lesser frigatebirds generally forage close to breeding colonies. Breeding/foraging BIAs for the lesser frigatebird are located in the NWMR; refer to **Table 8-3**.
Brown booby	The brown booby is the most common booby, occurring throughout all tropical oceans bounded by latitudes 30º N and 30º S. There are large colonies on offshore islands within the NWMR such as the Lacepede Islands (one of the largest colonies in the world), Ashmore Reef, and other offshore Kimberley islands. This seabird species is a specialised plunge diver, mostly eating fish and some cephalopods (Commonwealth of Australia, 2019). Breeding/foraging BIAs for the brown booby are located in the NWMR; refer to **Table 8-3** and **Figure 8-3**.
Red-footed booby	Within the NWMR, its known breeding sites for this species include Ashmore Reef and Cartier Island. It is a pelagic species and generally occurs away from land. It mainly eats flying fish and squid. Prey abundance is reliant on the high productivity in slope areas off remote islands where the birds breed (Commonwealth of Australia, 2019). Breeding/foraging BIAs for the red-footed booby are located in the NWMR; refer to **Table 8-3** and **Figure 8-3**.
Greater crested tern	The greater crested tern has a widespread distribution recorded on islands and coastlines of tropical and subtropical areas, ranging from the Atlantic coast of South Africa, Indian Ocean and through south-east Asia and Australia. Outside the breeding season it can be found at sea throughout its range, with the exception of the central Indian Ocean (Commonwealth of Australia, 2019). The largest breeding colony in WA for this species is the Houtman Abrolhos Islands, SWMR (Surman, 2019). No BIAs for this species are located in the NWMR.
Little tern	There are three sub-populations of this species in Australia and two of these occur in the NWMR: northern Australian breeding sub-population occurring around Broome and extending across in to the NMR, and an east Asian breeding sub-population, with the terns present from Shark Bay to south-eastern Queensland during the austral summer. Little terns

Species	Key Information
	usually forage close to breeding colonies in the shallow water of estuaries (Commonwealth of Australia, 2019). For the description and location of BIAs in the NWMR, refer to **Table 8-3** and **Figure 8-2**.
Roseate tern	This species is generally tropical in distribution and there are many breeding populations in the NWMR, including Ashmore Reef, Napier Broome Bay, Bonaparte Archipelago, Lacepede Islands, Dampier Archipelago and the Lowendal Islands. A large number of non-breeding roseate terns have been observed at several remote locations in the Kimberley and there are high numbers also recorded for Eighty Mile Beach Ramsar site. The Kimberley colonies are likely to be another sub-species that breeds in east Asia. Roseate terns predominately eat small pelagic fish (Commonwealth of Australia, 2019). The largest breeding colony in Western Australia for this species is in the Houtman Abrolhos Islands, SWMR (Surman, 2019). For the description and location of BIAs in the NWMR, refer to **Table 8-3** and **Figure 8-2**.
Wedge-tailed shearwater	The wedge-tailed shearwater is a pelagic, marine seabird known from tropical and subtropical waters. Its distribution is widespread across the Indian and Pacific oceans. It is known to breed on the east and west coasts (and offshore islands) of Australia. This species is known to consume fish, cephalopods, and other biota primarily via contact-dipping. Wedge-tailed shearwaters are now understood to undertake extensive foraging trips (over thousands of kilometres over periods of days when chicking and provisioning young) and much longer and extensive pelagic travels over the north-west Indian Ocean during the non-breeding season, targeting current boundaries and upwellings. The species breeds throughout its range, mainly on vegetated islands, atolls and cays and excavates burrows in the ground where chicks are raised (Commonwealth of Australia, 2019). Large breeding colonies of the wedge-tailed shearwater are located on the Houtman Abrolhos islands (SWMR) (Surman *et al*., 2018) and several locations in the NWMR including: Muiron Islands (North-west Cape), Varanus Island and the Dampier Archipelago in the Pilbara where burrow numbers were estimated to several hundred thousand to half a million such as on the Muiron Islands, though it is not known if all burrows are utilised on an annual basis (Birdlife Australia, 2018; Surman *et al.*, 2018). Cannell *et al* (2019) satellite tracked adult wedge-tailed shearwaters during egg incubation and chick rearing on the Muiron Islands in January 2018. For the incubation trips, there was a strong consistency for the birds to travel towards seamounts, typically located north-west of the Muiron Islands, between Australia and Indonesia. One bird however remained south-west of the islands, in the Cape Range Canyon. A similar pattern to utilise areas associated with sea mounts was also observed for the long foraging trips during chick rearing, though some of the foraging was concentrated in deeper waters. A bimodal foraging strategy during chick-rearing was observed, with adults undertaking long foraging trips after a series of shorter foraging trips within the NWMR. Surman *et al*. (2018) reported most wedge-tailed shearwaters from the breeding colonies on the Houtman Abrolhos undertook extensive non-breeding migrations. This seabird species occupied waters adjacent or to the north of their nesting sites or migrated 4200 km north-west into the equatorial central Indian Ocean near the Ninety East Ridge during the non-breeding season (later April to mid-November). For the description and location of BIAs in the NWMR, refer to **Table 8-3** and **Figure 8-1**.
Flesh-footed shearwater	The species mainly occurs in the subtropics, over continental shelves and slopes and occasionally inshore waters, with individual birds pass through the tropics and over deeper waters during migration to the North Pacific and Indian oceans (Commonwealth of Australia, 2019). They are a common visitor to the waters off southern Australia, from south-western WA to south-eastern Queensland. The fleshy-footed shearwater is a trans-equatorial migrant, breeding from late September to May off south-western Australia, and migrating north by early May, across the southern Indian and possibly Indonesia to the northern Pacific Ocean. No BIAs for the flesh-footed shearwater are located in the NWMR.
Streaked shearwater	The streaked shearwater has a broad distribution in the western Pacific Ocean, breeding on the coast and offshore islands of Japan, Russia, China and the Korean Peninsula. During winter months (non-breeding season), the species undertakes trans-equatorial migration to the coasts of Vietnam, New Guinea, the Philippines, Australia, southern India and Sri Lanka. The streaked shearwater feeds mainly on fish and squid that it catches by surface-seizing and shallow plunges (Commonwealth of Australia, 2019). No BIAs for the streaked shearwater are located in the NWMR.
White-tailed tropicbird	Tropicbirds are predominately pelagic species and the white-tailed tropicbird forages in warm waters and over long distances (pan-tropical). The species is most common off north-west Australia. In the NWMR, this species is considered a sub-species and are limited in number and distribution. Nesting sites are known for Clerke Reef (Rowley Shoals) and Ashmore

Species	Key Information
	Reef. Christmas Island is also a known nesting site and the species can disperse several thousand kilometres during foraging trips. This species feeds mainly on fish and cephalopods, captured by deep plunge diving (Commonwealth of Australia, 2019). There are breeding BIAs at the Rowley Shoals and Ashmore Reef within the NWMR for the white-tailed tropicbird; refer to **Table 8-3**.
Silver gull	The silver gull is typically described as an inshore and coastal foraging seabird and has an Australian-wide distribution including locations within the NWMR. It is noted as it has been recorded on unmanned oil and gas platforms located within the NWS.

8.2.1 Biologically Important Areas in the NWMR

BIAs representing important life cycle stages and behaviours for eight species of seabird in the NWMR are presented in **Table 8-3**.

Table 8-3 Seabird BIAs within the NWMR

Seabird Species	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Breeding/foraging	Foraging	Breeding	Resting
Australia fairy tern	-	✓	✓	-	No foraging BIAs in the NWMR Foraging in high numbers: the BIA is located in the SWMR including the Houtman Abrolhos Islands	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and barrier island of Shark Bay	-
Wedge-tailed shearwater	✓	✓	✓	Widespread area of the NWMR offshore and inshore waters	Foraging in high numbers: the BIA is located in the SWMR including the Houtman Abrolhos Islands	-	-
Great frigatebird	✓	-	-	Ashmore Reef, Adele Island	-	-	-
Lesser frigatebird	✓	✓	-	Off Eighty Mile Beach, Lacepedes, Adele Island, North Kimberley and Ashmore Reef	-	-	-
Brown booby	✓	✓	-	Off Eighty Mile Beach, Lacepedes, Adele Island, North Kimberley and Ashmore Reef	-	-	-
Red-footed booby	✓	-	-	Adele Island, Ashmore Reef	-	-	-
Little tern	✓	✓	-	Rowley Shoals, Adele Island	-	-	-
Roseate tern	✓	✓	✓	-	No foraging BIAs in the NWMR Foraging (provisioning young) and foraging BIAs located in the SWMR – Houtman Abrolhos Islands the	Dampier Archipelago, Montebello, Lowendal and Barrow Island Groups, south Ningaloo and barrier island of Shark Bay	Eighty Mile Beach

Seabird Species	Woodside Activity Area			BIAs			
	Browse	NWS/S	NWC	Breeding/foraging	Foraging	Breeding	Resting
					nearest BIA to the NWMR		
White-tailed tropicbird	✓	-	-			Rowley Shoals Ashmore Reef	

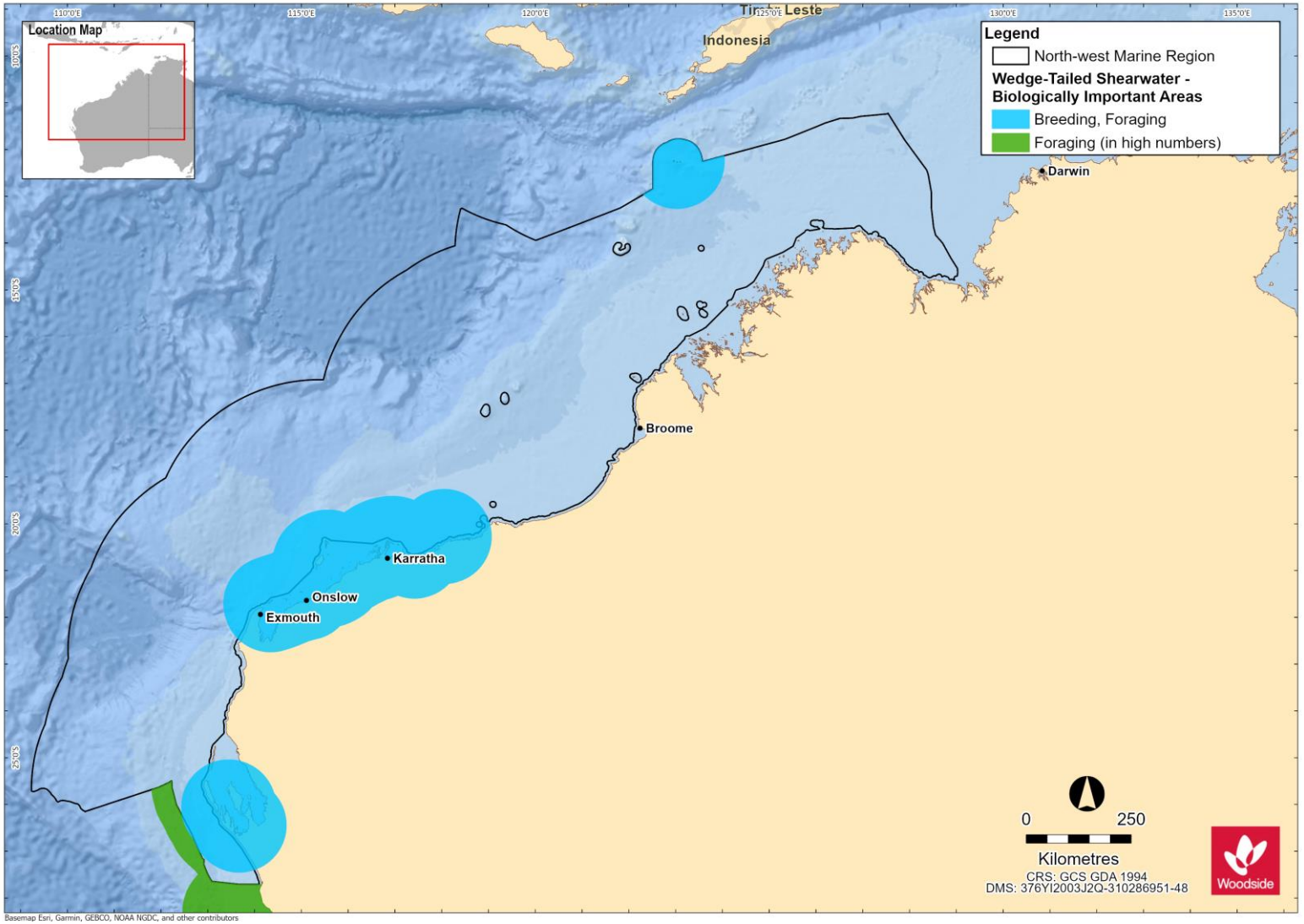

Figure 8-1 Wedge-tailed shearwater BIAs for the NWMR

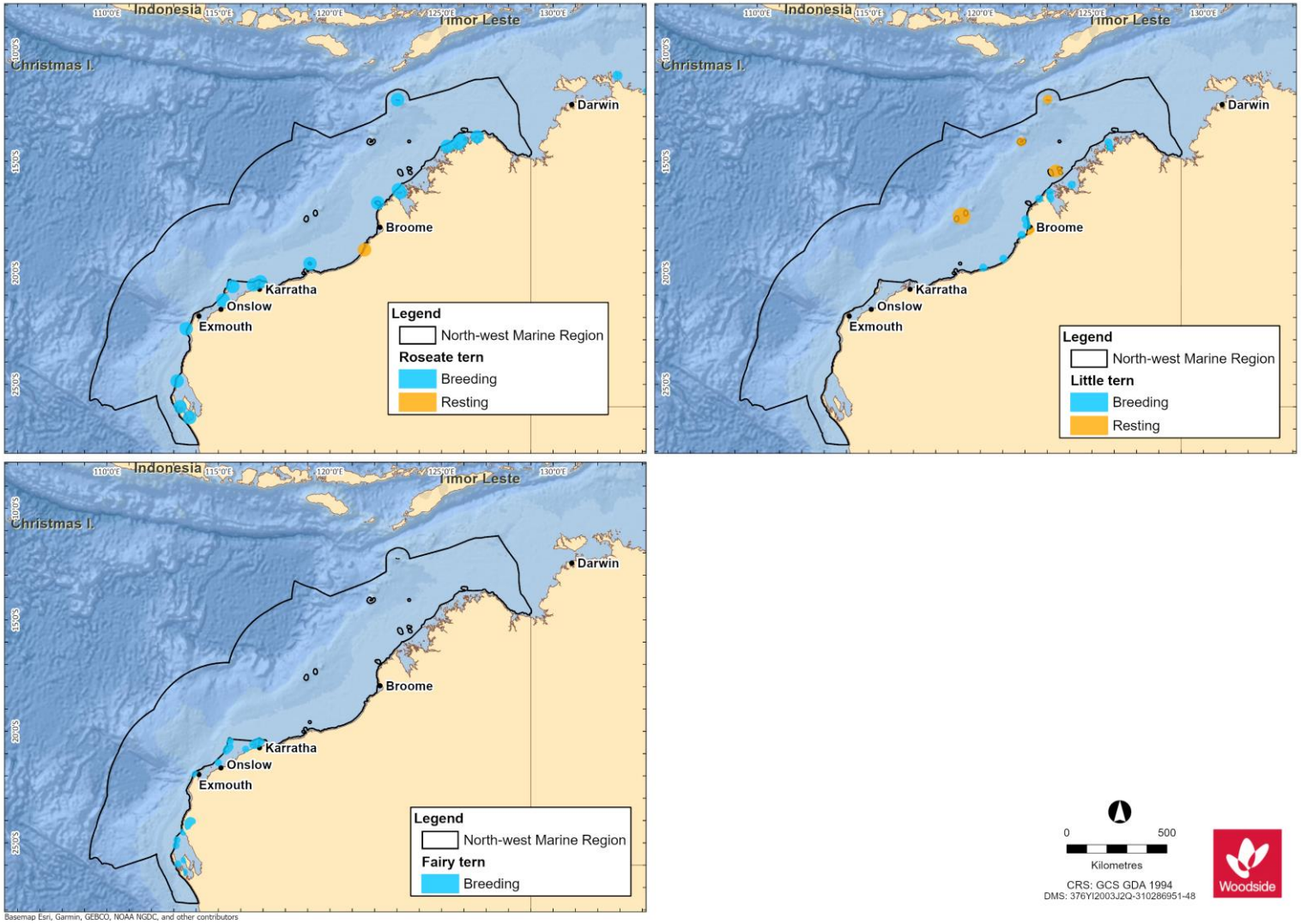

Figure 8-2 Tern species BIAs for the NWMR

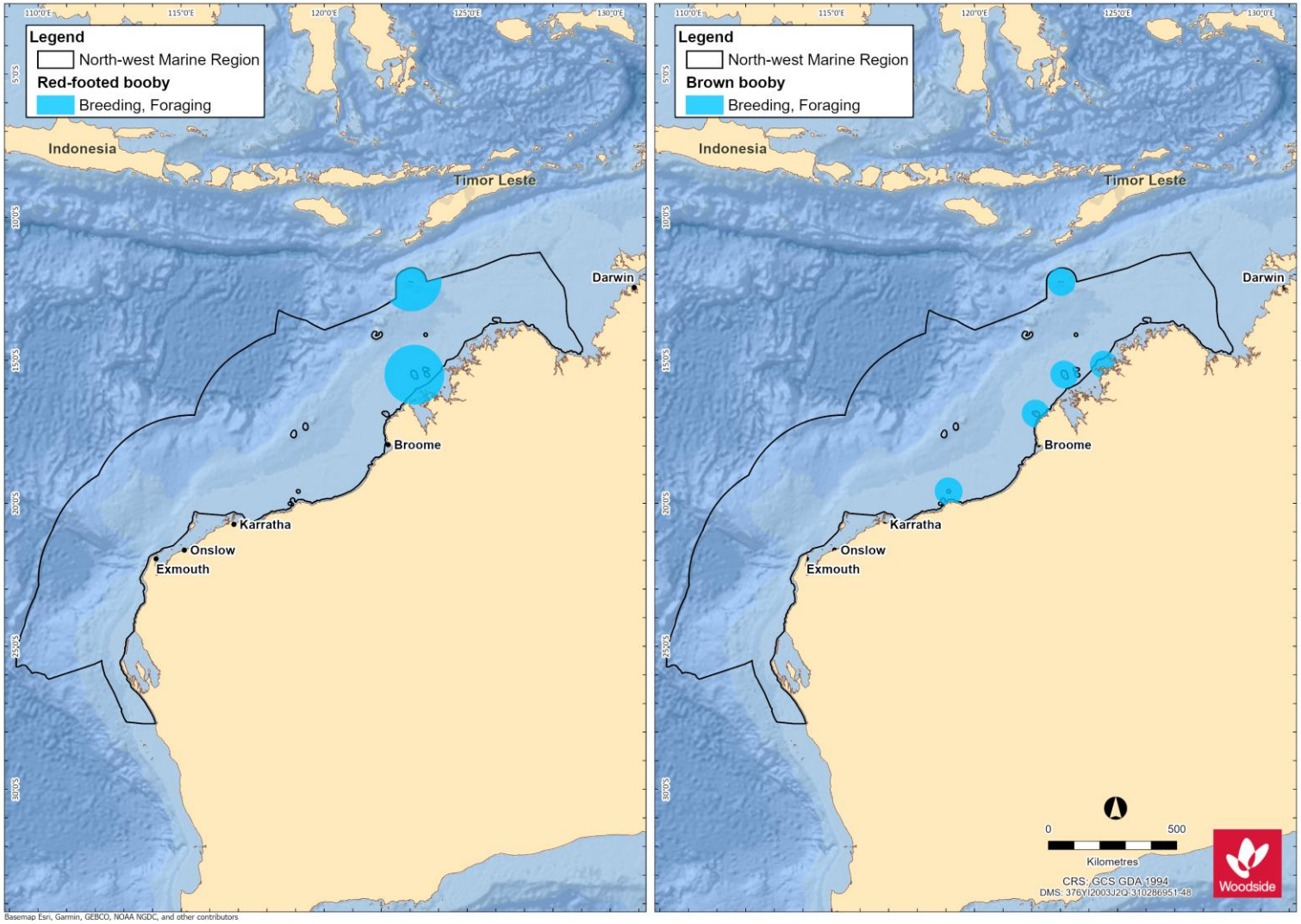

Figure 8-3 Red-footed and brown booby BIAs for the NWMR

8.2.2 Seabird Summary for NWMR

8.2.2.1 Browse

The Browse activity area includes biologically important habitat for seven threatened and/or migratory seabird species:

- wedge-tailed shearwater (breeding/foraging);
- great and lesser frigatebirds (breeding/foraging);
- brown booby (breeding/foraging);
- red-footed booby (breeding/foraging);
- little tern (breeding/foraging);
- roseate tern (breeding and resting); and,
- white-tailed tropicbird (breeding).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.2.2 NWS / Scarborough

The NWS / Scarborough activity area includes biologically important habitat for five threatened and/or migratory seabird species:

- wedge-tailed shearwater (breeding/foraging);
- lesser frigatebird (breeding/foraging);
- brown booby (breeding/foraging);
- little tern (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are outlined in **Table 8-3**.

8.2.2.3 North-west Cape

The North-west Cape activity area includes biologically important habitat for five threatened and/or migratory seabird species:

- Australian fairy tern (breeding);
- wedge-tailed shearwater (breeding/foraging); and
- roseate tern (breeding and resting).

BIAs for the seabird species are outlined in **Table 8-3**.

8.3 Shorebirds

Shorebirds (migratory and resident species) are generally associated with wetland or coastal environments, and the NWMR hosts a large number of many shorebird species, particularly in the Austral summer (refer to **Appendix A** for the EPBC Act PMST reports on listed species of shorebirds). Shorebirds may use coastal environments for feeding, nesting or migratory stopovers. In coastal environments, shorebirds generally feed during low tide on exposed intertidal mud and sand flats, and roost in suitable habitat above the high water mark. Many shorebird species undergo annual migrations, typically breeding at high latitudes of the Northern Hemisphere and migrating south for the non-breeding season and Australia is part of the East Asian-Australasian Flyway (EAAF). The EAAF extends from breeding grounds in the Russian tundra, Mongolia and Alaska

southwards through east and south-east Asia, to non-breeding areas of Indonesia, Papua New Guinea, Australia and New Zealand (Weller and Lee, 2017). The EAAF is of most relevance to the NWMR. There are 37 species of shorebird which annually migrate to Australia via the EAAF and 36 of these species spend the austral summer (non-breeding season) foraging and roosting in coastal and wetland habitats (Commonwealth of Australia, 2015c; Weller and Lee, 2017).

Ashmore Reef is documented as a BIA for migratory shorebirds in the NWMR (DSEWPAC, 2012a).

Table 8-4. Information on threatened/migratory shorebird species of the NWMR

Species	Key Information
Shorebirds	
Eastern curlew, Far eastern curlew	This species is the largest, migratory shorebird in the world, with a long neck, long legs and a very long downcurved bill and is a long-haul flyer. The eastern curlew is a coastal species with a continuous distribution north from Barrow Island to the Kimberley region. The species is endemic to the EAAF and is a non-breeding visitor to Australia from August to March, primarily foraging on crabs and molluscs in intertidal mudflats. During the non-breeding season in Australia, this species is most associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (DOE, 2015a).
Curlew sandpiper	The curlew sandpiper breeds in northern Siberia but has a non-breeding range that extends from western Africa to Australia, with small numbers reaching New Zealand (Bamford *et al*., 2008). In Australia, curlew sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states and the NT during the non-breeding period, and also during the breeding season when many non-breeding one-year old birds remain in Australia rather than migrating north along the EAAF. The species preferred habitat for foraging is mudflats and nearby shallow waters in sheltered coastal areas such as estuaries, bay, inlets and lagoons (DOE, 2015b).
Great knot	The great knot breeds in the Northern Hemisphere and undertakes biannual migrations along the EAAF to non-breeding habitat in Australia. The great knot winters in Australia and has been recorded around the entirety of the Australian coast the greatest numbers are found in northern Western Australia (Pilbara (Dampier Archipelago) and Kimberley and the Northern Territory. In Australia, this species prefers sheltered, coastal habitat with large intertidal mudflats or sandflats (inkling inlets, bays, harbours, estuaries and lagoons). High numbers (exceeding several thousand birds are regularly recorded from Roebuck Bay. The great knot feeds on a variety of invertebrates by pecking at or just below the surface of moist mud or sand (Threatened Species Scientific Committee, 2016a).
Bar-tailed godwit (*menzbieri*)	The bar-tailed godwit is a large, migratory shorebird and there are two sub-species in the EAAF (*Limosa lapponica baueri* and *L. l. menzbieri*). The sub-species *L. l. menzbieri* breeds in northern Siberia and spends its non-breeding period mostly in the north of WA but also in South-east Asia. The bar-tailed godwit (*menzbieri*) usually forages near the water in shallow water, mainly in tidal estuaries and harbours with a preference for exposed sandy or soft mud substrates on intertidal flats, banks and beaches (Threatened Species Scientific Committee, 2016c).
Red knot (*piersmai*)	This species is a small to medium migratory shorebird. There are two sub-species that cannot be distinguished from each other in nonbreeding plumage, however, *Calidris canutus piersmai* tend to overwinter almost exclusively in north-west Australia. The red knot migrates long distances from breeding grounds in high northern latitudes, where it breeds during the boreal summer, to the Southern Hemisphere during the austral summer with migration along the EAAF. Very large numbers are recorded for the north-west Australia and is common in all suitable habitats around the coast, including inland clay pans near Roebuck Bay (where the species roosts). The red knot usually forages in soft substrate along the waters edge on intertidal mudflats, sandflats and sandy beaches of sheltered coasts (Threatened Species Scientific Committee, 2016b).
Lesser sand plover	The lesser sand plover is a small to medium shorebird and one of 36 migratory shorebirds that breed in the Northern Hemisphere during the boreal summer and are known to annually migrate to the non-breeding grounds of Australia along the EAAF for the austral summer. There are five different sub-species and it is most likely the non-breeding ranges of the sub-species *Charadrius m. mongolus* overlaps with the NWMR. This species is widespread in coastal regions, preferring sandy beaches, mudflats of coastal bays and estuaries (Threatened Species Scientific Committee, 2016e).
Greater sand plover	The greater sand plover is a small to medium shorebird and in its non-breeding plumage is difficult to distinguish from the lesser sand plover. This species breeds in the Northern

Species	Key Information
	Hemisphere and undertakes annual migrations to and from Southern Hemisphere feeding grounds in the austral summer along the EAAF. The species distribution in Australia during the non-breeding season is widespread, in WA the greater sand plover is widespread between Northwest Cape and Roebuck Bay (Threatened Species Scientific Committee, 2016d).

9. KEY ECOLOGICAL FEATURES

Key ecological features (KEFs) are elements of the Commonwealth marine environment that are considered to be important for a marine region's biodiversity or ecosystem function and integrity. KEFs have been identified by the Australian Government based on advice from scientists about the ecological processes and characteristics of the area.

KEFs meet one or more of the following criteria:

- a species, group of species, or a community with a regionally important ecological role (e.g. a predator, prey that affects a large biomass or number of other marine species),
- a species, group of species or a community that is nationally or regionally important for biodiversity,
- an area or habitat that is nationally or regionally important for:
  - enhanced or high productivity (such as predictable upwellings – an upwelling occurs when cold nutrient-rich waters from the bottom of the ocean rise to the surface),
  - aggregations of marine life (such as feeding, resting, breeding or nursery areas), or
  - biodiversity and endemism (species which only occur in a specific area),
- a unique seafloor feature, with known or presumed ecological properties of regional significance.

Thirteen KEFs are designated within the NWMR, twelve KEFs within the SWMR and eight KEFs within the NMR. These KEFs have been identified in the Protected Matters search (**Appendix A**) and outlined in **Table 9-1, Table 9-2** and **Table 9-3,** and **Figure 9-1, Figure 9-2** and **Figure 9-3**.

Table 9-1 Key Ecological Features (KEF) within the NWMR

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Carbonate bank and terrace system of the Sahul Shelf	✓	-	-	Unique seafloor feature with ecological properties of regional significance Regionally important because of their role in enhancing biodiversity and local productivity relative to their surrounds. The carbonate banks and terraces provide areas of hard substrate in an otherwise soft sediment environment which are important for sessile species	The Carbonate banks and terrace system of the Sahul Shelf are located in the western Joseph Bonaparte Gulf and to the north of Cape Bougainville and Cape Londonderry. The carbonate banks and terraces are part of a larger complex of banks and terraces that occurs on the Van Diemen Rise in the adjacent NMR. The bank and terrace system of the Van Diemen Rise covers approximately 31,278 km^2 and forms part of the larger system associated with the Sahul Banks to the north and Londonderry Rise to the east. The feature is characterised by terrace, banks, channels and valleys (DSEWPAC, 2012c). The banks, ridges and terraces of the Van Diemen Rise are raised geomorphic features with relatively high proportions of hard substrate that support sponge and octocoral gardens. These, in turn, provide habitat to other epifauna, by providing structure in an otherwise flat environment (Przeslawski *et al.*, 2011). Plains and valleys are characterised by scattered epifauna and infauna that include polychaetes and ascidians. These epibenthic communities support higher order species such as olive ridley turtles, sea snakes and sharks (DSEWPAC, 2012c)
Pinnacles of the Bonaparte Basin	✓	-	-	Unique seafloor feature with ecological properties of regional significance Provide areas of hard substrate in an otherwise soft sediment environment and so are important for sessile species Recognised as a biodiversity hotspot for sponges The Pinnacles of the Bonaparte Basin KEF is located within both the NWMR and NMR (refer **Table 9-3**)	The Pinnacles of the Bonaparte Basin provide areas of hard substrate in an otherwise relatively featureless environment, the pinnacles are likely to support a high number of species, although a better understanding of the species richness and diversity associated with these structures is required (DSEWPAC, 2012a, 2012c). Covering >520 km^2 within the Bonaparte Basin, this feature contains the largest concentration of pinnacles along the Australian margin. The Pinnacles of the Bonaparte Basin are thought to be the eroded remnants of underlying strata; it is likely that the vertical walls generate local upwelling of nutrient-rich water, leading to phytoplankton productivity that attracts aggregations of planktivorous and predatory fish, seabirds, and foraging turtles (DSEWPAC, 2012a, 2012c).
Ashmore Reef and Cartier Island and surrounding Commonwealth waters	✓	-	-	High productivity, biodiversity and aggregation of marine life that apply to both the benthic and pelagic habitats within the feature	Ashmore Reef is the largest of only three emergent oceanic reefs present in the north-eastern Indian Ocean and is the only oceanic reef in the region with vegetated islands. Ashmore contains a large reef shelf, two large lagoons, several channelled carbonate sand flats, shifting sand cays, an extensive reef flat, three vegetated islands—East, Middle and West islands—and

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
					surrounding waters. Rising from a depth of more than 100 m, the reef platform is at the edge of the NWS and covers an area of 239 km². Ashmore Reef and Cartier Island and the surrounding Commonwealth waters are regionally important for feeding and breeding aggregations of birds and other marine life; they are areas of enhanced primary productivity in an otherwise low-nutrient environment (DSEWPAC, 2012a). Ashmore Reef supports the highest number of coral species of any reef off the WA coast.
Seringapatam Reef and the Commonwealth waters in the Scott Reef complex	✓	-	-	Support diverse aggregations of marine life, have high primary productivity relative to other parts of the region, are relatively pristine and have high species richness, which apply to both the benthic and pelagic habitats within the feature	Seringapatam Reef and the Commonwealth waters in the Scott Reef complex are regionally important in supporting the diverse aggregations of marine life, high primary productivity, and high species richness associated with the reefs themselves. As two of the few offshore reefs in the north-west, they provide an important biophysical environment in the region (DSEWPAC, 2012a).
Continental slope demersal fish communities	✓	✓	✓	High biodiversity of demersal fish assemblages, including high levels of endemism	The diversity of demersal fish assemblages on the continental slope in the Timor Province, the Northwest Transition and the North-west Province is high compared to elsewhere along the Australian continental slope (DSEWPAC, 2012a). The continental slope between North-west Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Last *et al.*, 2005). The slope of the Timor Province and the Northwest Transition also contains more than 500 species of demersal fishes of which 64 are considered endemic (Last *et al.*, 2005), making it the second richest area for demersal fishes throughout the whole continental slope. Demersal fish species occupy two distinct demersal biomes associated with the upper slope (225–500 m water depths) and the mid-slope (750–1000 m). Although poorly known, it is suggested that the demersal slope communities rely on bacteria and detritus-based systems comprised of infauna and epifauna, which in turn become prey for a range of teleost fishes, molluscs and crustaceans (Brewer *et al.*, 2007). Higher-order consumers may include carnivorous fishes, deepwater sharks, large squid, and toothed whales (Brewer *et al.*, 2007). Pelagic production is phytoplankton-based, with hot spots around oceanic reefs and islands (Brewer *et al.*, 2007).

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Ancient coastline at 125 m depth contour	✓	✓	✓	Unique seafloor feature with ecological properties of regional significance Provides areas of hard substrate and therefore may provide sites for higher diversity and enhanced species richness relative to surrounding areas of predominantly soft sediment	Several steps and terraces as a result of Holocene sea level changes occur in the region, with the most prominent of these features occurring as an escarpment along the NWMR and Sahul Shelf at a water depth of 125 m. The Ancient Coastline is not continuous throughout the NWMR and coincides with a well-documented eustatic stillstand at about 130 m worldwide (Falkner *et al.*, 2009). Where the Ancient Coastline provides areas of hard substrate, it may contribute to higher diversity and enhanced species richness relative to soft sediment habitat (Falkner *et al.*, 2009). Parts of the Ancient Coastline, represented as rocky escarpment, are considered to provide biologically important habitat in an area predominantly made up of soft sediment. The escarpment type features may also potentially facilitate mixing within the water column due to upwelling, providing a nutrient-rich environment. Although the Ancient Coastline adds additional habitat types to a representative system, the habitat types are not unique to the coastline as they are widespread on the upper shelf (Falkner *et al.*, 2009)
Canyons linking the Argo Abyssal Plain and Scott Plateau	-	✓	-	Facilitates nutrient upwelling, creating enhanced productivity and encouraging diverse aggregations of marine life	Interactions with the Leeuwin Current and strong internal tides are thought to result in upwelling at the canyon heads, thus creating conditions for enhanced productivity in the region (Brewer *et al.*, 2007). As a result, aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, predatory fishes and seabirds are known to occur in the area due to its enhanced productivity (Sleeman *et al.*, 2007).
Glomar Shoal	-	✓	-	An area of high productivity and aggregations of marine life including commercial and recreational fish species	Glomar Shoal is a submerged littoral feature located about 150 km north of Dampier on the Rowley shelf at depths of 33–77 m (Falkner *et al.*, 2009). Studies by Abdul Wahab *et al.* (2018) found a number of hard coral and sponge species in water depths less than 40 m. One hundred and seventy (170) different species of fishes were detected with greatest species richness and abundance in shallow habitats (Abdul Wahab *et al.*, 2018). Fish species present include a number of commercial and recreational species such as Rankin cod, brown striped snapper, red emperor, crimson snapper, bream and yellow-spotted triggerfish (Falkner *et al.*, 2009; Fletcher and Santoro, 2009). These species have recorded high catch rates associated with Glomar Shoal, indicating that the shoal is likely to be an area of high productivity.

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	-	✓	-	Regionally important in supporting high species richness, higher productivity and aggregations of marine life	The Mermaid Reef and Commonwealth waters surrounding the Rowley Shoals KEF and is adjacent to the three nautical mile State waters limit surrounding Clerke and Imperieuse reefs, and include the Mermaid Reef Marine Park as described in **Section 10**. The reefs provide a distinctive biophysical environment in the region. They have steep and distinct reef slopes and associated fish communities. In evolutionary terms, the reefs may play a role in supplying coral and fish larvae to reefs further south via the southward flowing Indonesian Throughflow. Both coral communities and fish assemblages differ from similar habitats in eastern Australia (Done *et al.*, 1994).
Exmouth Plateau	-	✓	✓	Unique seafloor feature with ecological properties of regional significance, which apply to both benthic and pelagic habitats Likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of approximately 1000 m	The Exmouth Plateau is a large, mid-slope, continental margin plateau that lies off the northwest coast of Australia. It ranges in depth from about 500 to more than 5000 m and is a major structural element of the Carnarvon Basin (Miyazaki and Stagg, 2013). The large size of the Exmouth Plateau and its expansive surface may modify deep water flow and be associated with the generation of internal tides; both of which may subsequently contribute to the upwelling of deeper, nutrient-rich waters closer to the surface (Brewer *et al.*, 2007). Satellite observations suggest that productivity is enhanced along the northern and southern boundaries of the plateau (Brewer *et al.*, 2007). Sediments on the plateau suggest that biological communities include scavengers, benthic filter feeders and epifauna (DSEWPAC, 2012a). Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton attracted to seasonal upwellings, as well as larger predators such as billfishes, sharks and dolphins (Brewer *et al.*, 2007). Protected and migratory species are also known to pass through the region, including whale sharks and cetaceans.
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	-	-	✓	Unique seafloor feature with ecological properties of regional significance The feature is an area of moderately enhanced productivity, attracting aggregations of fish and higher-order consumers such as large predatory	The canyons are associated with upwelling as they channel deep water from the Cuvier Abyssal Plain up onto the slope. This nutrient-rich water interacts with the Leeuwin Current at the canyon heads (DSEWPAC, 2012a). Aggregations of whale sharks, manta rays, sea snakes, sharks, large predatory fish, and seabirds are known to occur in this area.

KEF Name	Woodside Activity Area			Values[1]	Description
	Browse	NWS/S	NW Cape		
				fish, sharks, toothed whales and dolphins Likely to be important due to their historical association with sperm whale aggregations	
Commonwealth waters adjacent to Ningaloo Reef	-	-	✓	High productivity and diverse aggregations of marine life The Commonwealth waters adjacent to Ningaloo Reef and associated canyons and plateau are interconnected and support the high productivity and species richness of Ningaloo Reef, globally significant as the only extensive coral reef in the world that fringes the west coast of a continent	The Leeuwin and Ningaloo currents interact, leading to areas of enhanced productivity in the Commonwealth waters adjacent to Ningaloo Reef. Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish, and seabirds are known to occur in this area (DSEWPAC, 2012a). The spatial boundary of this KEF, as defined in the NCVA, is defined as the waters contained in the existing Ningaloo AMP provided in **Section 10**.
Wallaby Saddle	-	-	✓	High productivity and aggregations of marine life: Representing almost the entire area of this type of geomorphic feature in the NWMR. It is a unique habitat that neither occurs anywhere else nearby (within hundreds of kilometres) nor with as large an area (Falkner *et al.* 2009)	The Wallaby Saddle may be an area of enhanced productivity. Historical whaling records provide evidence of sperm whale aggregations in the area of the Wallaby Saddle, possibly due to the enhanced productivity of the area and aggregations of baitfish (DSEWPAC, 2012a).

[1] Values description sourced from Marine bioregional plan for the North-west Marine Region (DSEWPAC, 2012a) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database.

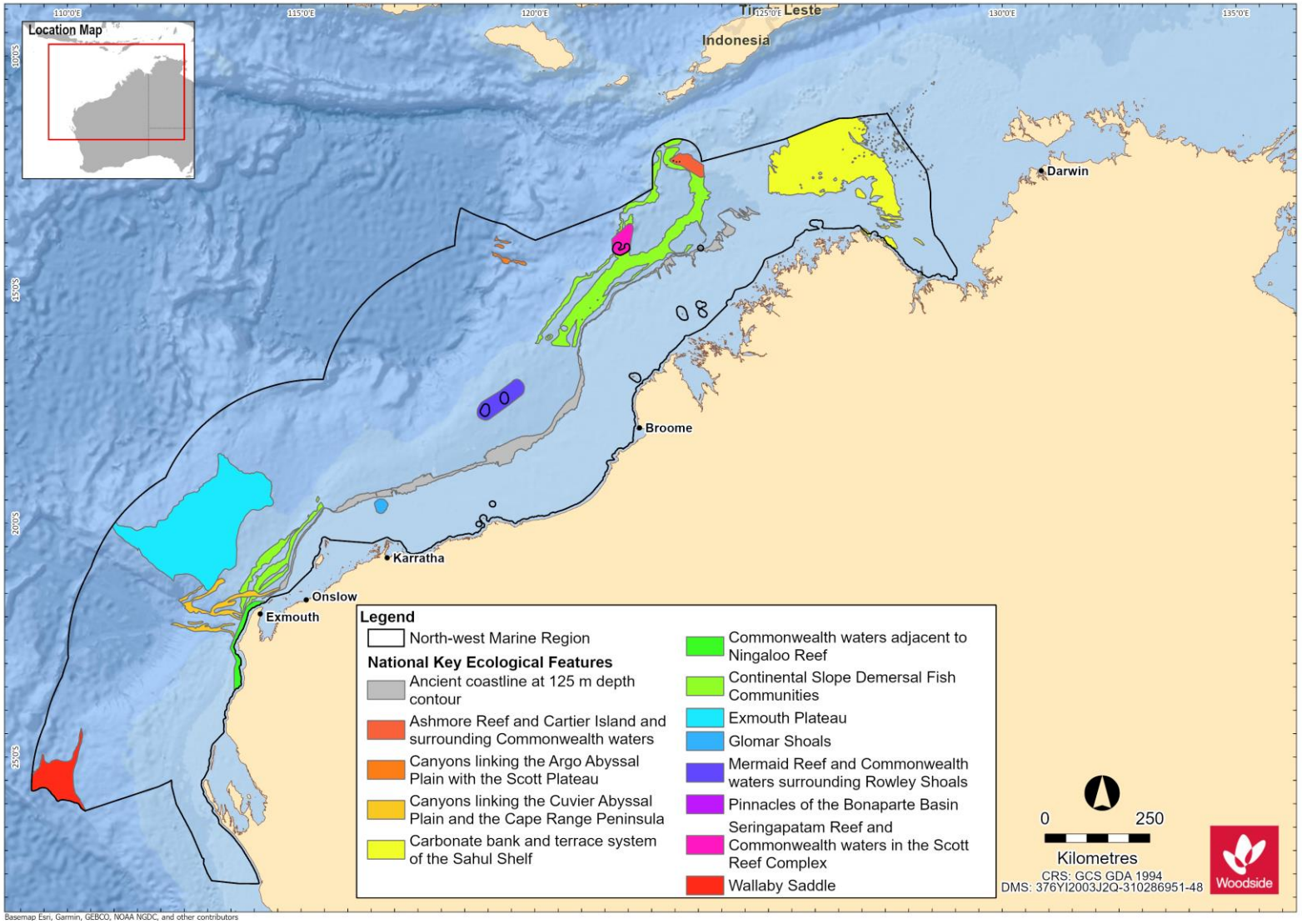

Figure 9-1 Key Ecological Features (KEFs) within the NWMR.

Table 9-2 Key Ecological Features (KEF) within the SWMR

KEF Name	Values[1]	Description
Albany Canyons group and adjacent shelf break	High productivity and aggregations of marine life, and unique seafloor feature with ecological properties of regional significance Both benthic and demersal habitats within the feature are of conservation value	The Albany Canyons group is thought to be associated with small, periodic subsurface upwelling events, which may drive localised regions of high productivity. The canyons are known to be a feeding area for sperm whale and sites of orange roughy aggregations. Anecdotal evidence also indicates that this area supports fish aggregations that attract large predatory fish and sharks.
Ancient coastline at 90-120 m depth	Relatively high productivity and aggregations of marine life, and high levels of biodiversity and endemism The feature creates topographic complexity, that may facilitate benthic biodiversity and enhanced biological productivity	Benthic biodiversity and productivity occur where the ancient coastline forms a prominent escarpment, such as in the western Great Australian Bight, where the sea floor is dominated by sponge communities of significant biodiversity and structural complexity.
Cape Mentelle upwelling	Facilitates nutrient upwelling, supporting high productivity and diverse aggregations of marine life	The Cape Mentelle upwelling draws relatively nutrient-rich water from the base of the Leeuwin Current, up the continental slope and onto the inner continental shelf, where it results in phytoplankton blooms at the surface. The phytoplankton blooms provide the basis for an extended food chain characterised by feeding aggregations of small pelagic fish, larger predatory fish, seabirds, dolphins and sharks.
Commonwealth marine environment surrounding the Houtman Abrolhos Islands (and adjacent shelf break)	High levels of biodiversity and endemism within benthic and pelagic habitats	The Houtman Abrolhos Islands and surrounding reefs support a unique mix of temperate and tropical species, resulting from the southward transport of species by the Leeuwin Current over thousands of years. The Houtman Abrolhos Islands are the largest seabird breeding station in the eastern Indian Ocean. They support more than one million pairs of breeding seabirds.

KEF Name	Values[1]	Description
Commonwealth marine environment surrounding the Recherche Archipelago	Aggregations of marine life and high levels of biodiversity and endemism within benthic and demersal communities	The Recherche Archipelago is the most extensive area of reef in the SWMR. Its reef and seagrass habitat supports a high species diversity of warm temperate species, including 263 known species of fish, 347 known species of molluscs, 300 known species of sponges, and 242 known species of macroalgae. The islands also provide haul-out (resting areas) and breeding sites for Australian sea lions and New Zealand fur seals.
Commonwealth marine environment within and adjacent to the west-coast inshore lagoons	High productivity and aggregations of marine life within benthic and pelagic habitats Important for benthic productivity and recruitment for a range of marine species	These lagoons are important for benthic productivity, including macroalgae and seagrass communities, and breeding and nursery aggregations for many temperate and tropical marine species. They are important areas for the recruitment of commercially and recreationally important fish species. Extensive schools of migratory fish visit the area annually, including herring, garfish, tailor and Australian salmon.
Commonwealth marine environment within and adjacent to Geographe Bay	High productivity and aggregations of marine life, and high levels of biodiversity, recruitment within benthic and pelagic communities	Geographe Bay is known for its extensive beds of tropical and temperate seagrass that support a diversity of species, many of them not found anywhere else. The bay provides important nursery habitat for many species. Juvenile dusky whaler sharks use the shallow seagrass habitat as nursery grounds for several years, before ranging out to adult feeding grounds along the shelf break. The seagrass also provides valuable habitat for fish and invertebrates (Carruthers *et al.*, 2007). It is also an important resting area for migratory humpback whales.
Diamantina Fracture Zone	Unique seafloor feature with ecological properties of regional significance which apply to its benthic and demersal habitats	The Diamantina Fracture Zone is a rugged, deep- water environment of seamounts and numerous closely spaced troughs and ridges. Very little is known about the ecology of this remote, deep- water feature, but marine experts suggest that its size and physical complexity mean that it is likely to support deep-water communities characterised by high species diversity, with many species found nowhere else.
Naturaliste Plateau	Unique seafloor feature with ecological properties of regional significance including high species diversity and endemism which apply to its benthic and demersal habitats	The Naturaliste Plateau is Australia's deepest temperate marginal plateau. The combination of its structural complexity, mixed water dynamics and relative isolation indicate that it supports deep- water communities with high species diversity and endemism.
Perth Canyon and adjacent shelf break, and other west-coast canyons	An area of higher productivity that attracts feeding aggregations of deep-diving mammals and large predatory fish. It is also recognised as a unique seafloor feature with ecological properties of regional significance	The Perth Canyon is the largest known undersea canyon in Australian waters. Deep ocean currents rise to the surface, creating a nutrient-rich cold- water habitat attracting feeding aggregations of deep-diving mammals, such as pygmy blue whales and large predatory fish that feed on aggregations of small fish, krill and squid.

KEF Name	Values[1]	Description
Western demersal slope and associated fish communities of the Central Western Province	Provides important habitat for demersal fish communities and supports species groups that are nationally or regionally important to biodiversity	The western demersal slope provides important habitat for demersal fish communities, with a high level of diversity and endemism. A diverse assemblage of demersal fish species below a depth of 400 m is dominated by relatively small benthic species such as grenadiers, dogfish and cucumber fish. Unlike other slope fish communities in Australia, many of these species display unique physical adaptations to feed on the sea floor (such as a mouth position adapted to bottom feeding), and many do not appear to migrate vertically in their daily feeding habits.
Western rock lobster	A species that plays a regionally important ecological role	This species is the dominant large benthic invertebrate in the region. The lobster plays an important trophic role in many of the inshore ecosystems of the SWMR. Western rock lobsters are an important part of the food web on the inner shelf, particularly as juveniles.

1. Values description sourced from Marine bioregional plan for the South-west Marine Region (DSEWPAC, 2012b) and the Department of Agriculture, Water and the Environment (DAWE) SPRAT database

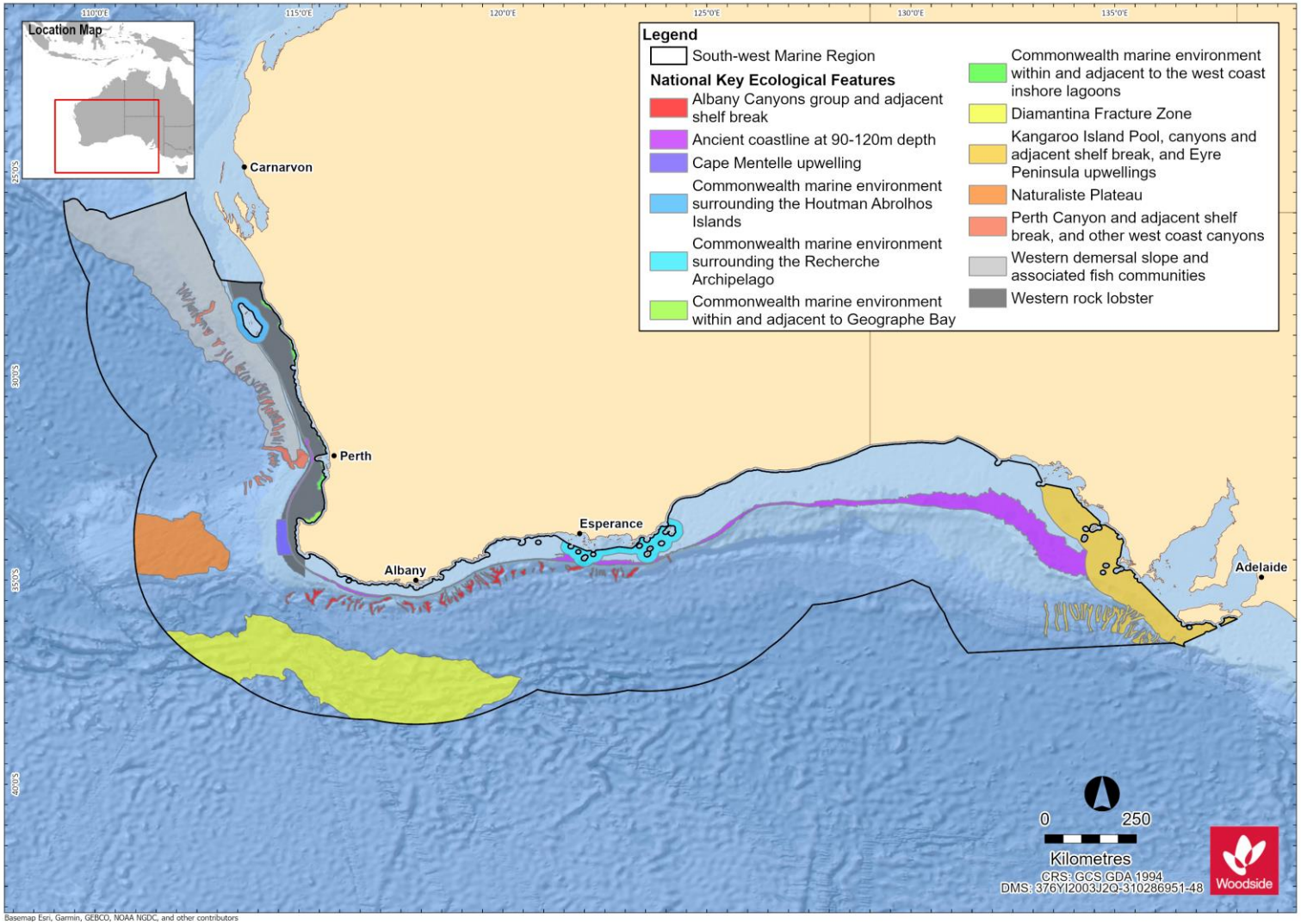

Figure 9-2. Key Ecological Features (KEFs) within the SWMR

Table 9-3 Key Ecological Features (KEF) within the NMR

KEF Name	Values[1]	Description
Carbonate bank and terrace system of the Van Diemen Rise	Important for its role in enhancing biodiversity and local productivity relative to its surrounds and for supporting relatively high species diversity The feature has been identified as a sponge biodiversity hotspot (Przeslawski *et al.* 2014)	The bank and terrace system of the Van Diemen Rise is part of the larger system associated with the Sahul Banks to the north and Londonderry Rise to the east; it is characterised by terrace, banks, channels and valleys. The variability in water depth and substrate composition may contribute to the presence of unique ecosystems in the channels. Species present include sponges, soft corals and other sessile filter feeders associated with hard substrate sediments of the deep channels; epifauna and infauna include polychaetes and ascidians. Olive ridley turtles, sea snakes and sharks are also found associated with this feature.
Gulf of Carpentaria basin	Regional importance for biodiversity, endemism and aggregations of marine life relevant to benthic and pelagic habitats	The Gulf of Carpentaria basin is one of the few remaining near-pristine marine environments in the world. Primary productivity in the Gulf of Carpentaria basin is mainly driven by cyanobacteria that fix nitrogen but is also strongly influenced by seasonal processes. The soft sediments of the basin are characterised by moderately abundant and diverse communities of infauna and mobile epifauna dominated by polychaetes, crustaceans, molluscs, and echinoderms. The basin also supports assemblages of pelagic fish species including planktivorous and schooling fish, with top predators such as shark, snapper, tuna, and mackerel.
Gulf of Carpentaria coastal zone	High productivity, aggregations of marine life (including several endemic species) and high biodiversity compared to broader region	Nutrient inflow from rivers adjacent to the NMR generates higher productivity and more diverse and abundant biota within the Gulf of Carpentaria coastal zone than elsewhere in the region. The coastal zone is near pristine and supports many protected species such as marine turtles, dugongs, and sawfishes. Ecosystem processes and connectivity remain intact; river flows are mostly uninterrupted by artificial barriers and healthy, diverse estuarine and coastal ecosystems support many species that move between freshwater and saltwater environments.
Pinnacles of the Bonaparte Basin	Unique seafloor feature with ecological properties of regional significance Provide areas of hard substrate in an otherwise soft sediment environment and so are important for sessile species Recognised as a biodiversity hotspot for sponges The Pinnacles of the Bonaparte Basin KEF is located within both the NWMR and NMR (refer **Table 9-1**)	Covering more than 520 km^2 within the Bonaparte Basin, this feature contains the largest concentration of pinnacles along the Australian margin. The Pinnacles of the Bonaparte Basin are thought to be the eroded remnants of underlying strata; it is likely that the vertical walls generate local upwelling of nutrient-rich water, leading to phytoplankton productivity that attracts aggregations of planktivorous and predatory fish, seabirds and foraging turtles.

KEF Name	Values[1]	Description
Plateaux and saddle north-west of the Wellesley Islands	High species abundance, diversity and endemism of marine life	Abundance and species density are high in the plateaux and saddle as a result of increased biological productivity associated with habitats rather than currents. Submerged reefs support corals that are typical of northern Australia, including corals that have bleach-resistant zooxanthellae; and particular reef fish species that are different to those found elsewhere in the Gulf of Carpentaria. Species present include marine turtles and reef fish such as coral trout, cod, mackerel, and shark. Seabirds frequent the plateaux and saddle, most likely due to the presence of predictable food resources for feeding offspring.
Shelf break and slope of the Arafura Shelf	The Shelf break and slope of the Arafura Shelf is defined as a key ecological feature for its ecological significance associated with productivity emanating from the slope It also forms part of a unique biogeographic province (Last *et al.*, 2005)	The shelf break and slope of the Arafura Shelf is characterised by continental slope and patch reefs and hard substrate pinnacles. The ecosystem processes of the feature are largely unknown in the region; however, the Indonesian Throughflow and surface wind-driven circulation are likely to influence nutrients, pelagic dispersal and species and biological productivity in the region. Biota associated with the feature is largely of Timor–Indonesian Malay affinity.
Submerged coral reefs of the Gulf of Carpentaria	High aggregations of marine life, biodiversity and endemism Twenty per cent of the reefs found in the NMR are situated within this KEF (Harris *et al.*, 2007)	The submerged coral reefs of the Gulf of Carpentaria are characterised by submerged patch, platform and barrier reefs that form a broken margin around the perimeter of the Gulf of Carpentaria basin, rising from the sea floor at depths of 30–50 m. These reefs provide breeding and aggregation areas for many fish species including mackerel and snapper and offer refuges for sea snakes and apex predators such as sharks. Coral trout species that inhabit the submerged reefs are smaller than those found in the Great Barrier Reef and may prove to be an endemic sub-species.
Tributary Canyons of the Arafura Depression	High productivity and high levels of species diversity and endemism of marine life within the benthic and pelagic habitats of the feature	The tributary canyons are approximately 80–100 m deep and 20 km wide. The largest of the canyons extend some 400 km from Cape Wessel into the Arafura Depression, and are the remnants of a drowned river system that existed during the Pleistocene era. Sediments in this feature are mainly calcium-carbonate rich, although sediment type varies from sandy substrate to soft muddy sediments and hard, rocky substrate. Marine turtles, deep sea sponges, barnacles and stalked crinoids have all been identified in the area.

[1] *Values description sourced from Marine bioregional plan for the North Marine Region (DSEWPAC, 2012c) and Department of Agriculture, Water and the Environment (DAWE) SPRAT database.*

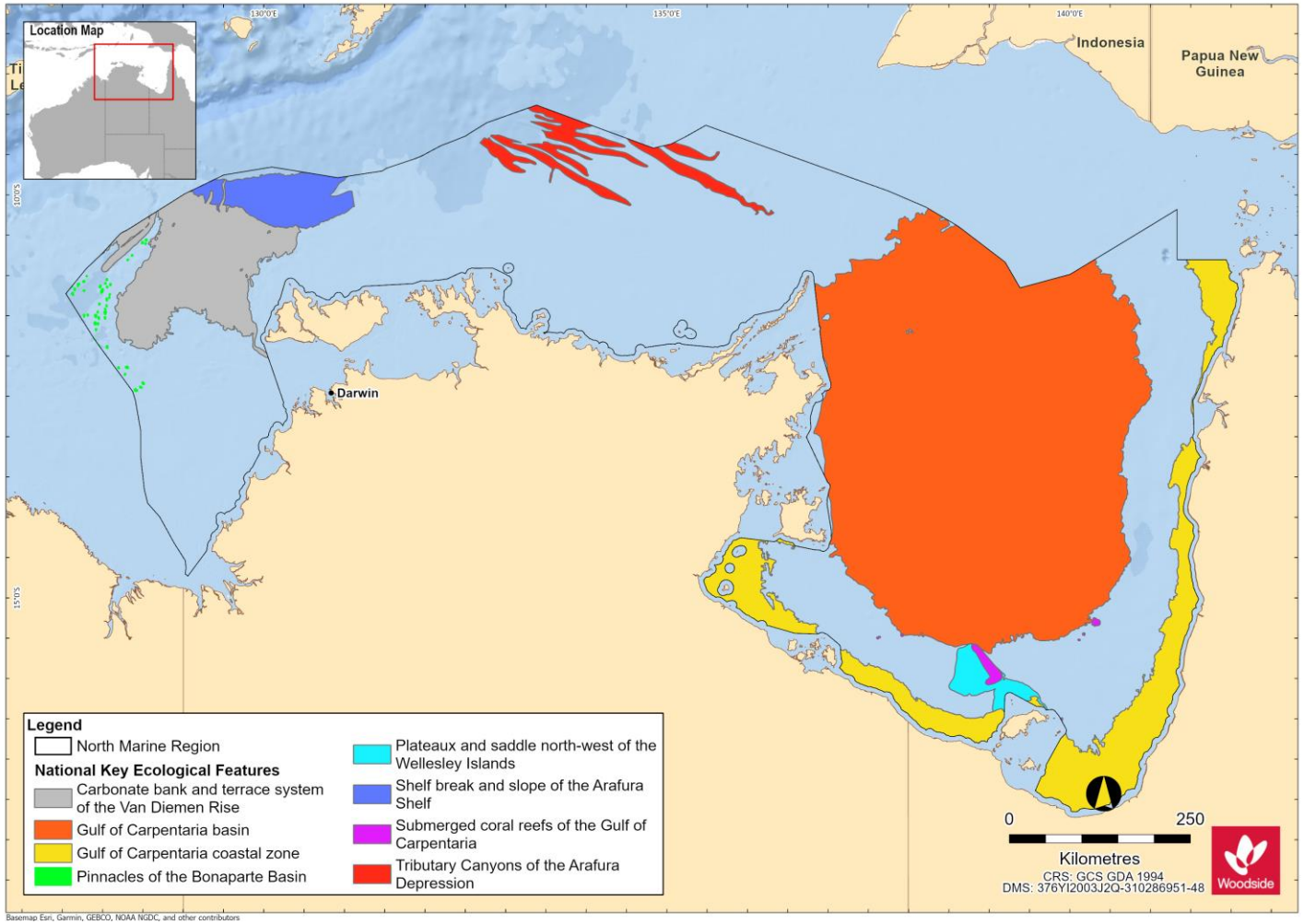

Figure 9-3. Key Ecological Features (KEFs) within the NMR

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10. PROTECTED AREAS

10.1 Regional Context

Protected areas included World Heritage Properties, National Heritage Places, Wetlands of International Importance, Australian Marine Parks, State Marine Parks and Reserves, Threatened Ecological Communities and the Australian Whale Sanctuary. The PMST Reports (**Appendix A**) shows that there are twenty-nine protected areas found in the NWMR, eighteen in the SWMR and nine in the NMR.

Table 10-1, Table 10-2 and **Table 10-3** outline the protected areas of each of the marine regions NWMR, SWMR and NMR, respectively.

10.2 World Heritage Properties

Properties nominated for World Heritage listing are inscribed on the list only after they have been carefully assessed as representing the best examples of the world's cultural and natural heritage. Only World Heritage listings classed as natural are discussed in this section. World Heritage sites classed as cultural are discussed in **Section 11**.

The list of Australia's World Heritage Properties and the PMST Reports (**Appendix A**) show two World Heritage Properties within the NWMR (**Table 10-1**), no World Heritage Properties within the SWMR (**Table 10-2),** and though not reported in the NMR PMST Report, Kakadu National Park and World Heritage Area is included in **Table 10-3**.

10.3 National and Commonwealth Heritage Places - Natural

The National Heritage List is Australia's list of natural, historic, and Indigenous places of outstanding significance to the nation. The National Heritage List Spatial Database describes the place name, class (Indigenous, natural, historic), and status. Commonwealth Heritage Places are a collection of sites recognised for their Indigenous, historical and/or natural values which are owned or controlled by the Australian Government.

Only National and Commonwealth Heritage Places classed as natural are discussed in this section. Heritage Places classed as indigenous or historic are discussed in **Section 11**.

A search of the National Heritage List Spatial Database and the PMST Reports (**Appendix A**) identified three natural National Heritage Places in the NWMR (**Table 10-1**), three in the SWMR (**Table 10-2**) and for the NMR, Kakadu National Park (not included in the PMST report) is included in **Table 10-3**.

A search of the Commonwealth Heritage List identified four natural commonwealth heritage places within the NWMR (**Table 10-1**).

10.4 Wetlands of International Importance (listed under the Ramsar Convention)

Australia has 65 Ramsar wetlands that cover >8.3 million ha. Ramsar wetlands are those that are representative, rare, or unique wetlands, or that are important for conserving biological diversity.

The List of Wetlands of International Importance held under the Ramsar Convention and the PMST Reports (**Appendix A**) identified four Ramsar Sites with coastal features within the NWMR (**Table 10-1**), four in the SWMR (**Table 10-2**) and two for the New Territory, included for the NMR (**Table 10-3**).

10.5 Australian Marine Parks

Australian Marine Parks (AMPs), proclaimed under the EPBC Act in 2007 and 2013, are located in Commonwealth waters that start at the outer edge of State and Territory waters, generally three

nautical miles (~5.5 km) from the shore, and extend to the outer boundary of Australia's EEZ, 200 nm (~370 km) from the shore.

PMST Reports (**Appendix A**) show sixteen AMPs within the NWMR (**Table 10-1**), ten within the SWMR (**Table 10-2**) and eight within the NMR (**Table 10-3**).

10.6 Threatened Ecological Communities

No Threatened Ecological Communities (TECs) as listed under the EPBC Act are known to occur within the marine waters of the NWMR, SWMR or NMR as indicated by the PMST Reports (**Appendix A**).

10.7 Australian Whale Sanctuary

The Australian Whale Sanctuary has been established to protect all whales and dolphins found in Australian waters. Under the EPBC Act all cetaceans (whales, dolphins and porpoises) are protected in Australian waters.

The Australian Whale Sanctuary includes all Commonwealth waters from the three nautical mile State/Territory waters limit out to the boundary of the EEZ (i.e. out to 200 nm and further in some places). Within the Sanctuary it is an offence to kill, injure or interfere with a cetacean. Severe penalties apply to anyone convicted of such offences.

10.8 State Marine Parks and Reserves

State Marine Parks and Reserves, proclaimed under the *Conservation and Land Management Act 1984* (CALM Act), are located in State waters and vested in the WA Conservation and Parks Commission. State Marine Parks and Reserves of Western Australia have been considered, with 14 occurring in the NWMR (**Table 10-1**) and six occurring in the SWMR (**Table 10-2**).

10.9 Summary of Protected Areas within the NWMR

Table 10-1 Protected Areas within the NWMR

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
World Heritage Properties						
Shark Bay World Heritage Property	-	-	✓		The Shark Bay World Heritage Property is adjacent to the Shark Bay AMP and was included on the World Heritage List in 1991.	Universal values of the Shark Bay World Heritage Property include large and diverse seagrass beds, stromatolites and populations of dugong and threatened species. Inscribed under Natural Criteria vii, viii, ix and x.
The Ningaloo Coast World Heritage Property	-	-	✓		The Ningaloo Coast World Heritage Property lies within the Ningaloo AMP and was included on the World Heritage List in 2011.	Universal values of the Ningaloo Coast World Heritage Property include high marine species diversity and abundance; in particular, Ningaloo Reef supports both tropical and temperate marine reptiles and mammals. Inscribed under Natural Criteria vii and x.
National Heritage Places - Natural						
Shark Bay	-	-	✓		The Shark Bay National Heritage Place consists of the same area included in the Shark Bay World Heritage Property (refer above) and was established on the National Heritage List in 2007.	The national heritage place has a number of exceptional natural features, including one of the largest and most diverse seagrass beds in the world, colonies of stromatolites and rich marine life including a large population of dugongs, and also provides a refuge for a number of other globally threatened species. Shark Bay meets the national heritage listing criteria a, b, c, d, e, f, g, h and i.
The Ningaloo Coast	-	-	✓		The Ningaloo Coast National Heritage Place consists of the same area included in the Ningaloo	The Ningaloo Coast contains one of the best developed near-shore reefs in the world, being home to rugged limestone peninsulas, spectacular coral and sponge gardens and the whale shark.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					Coast World Heritage Property (refer above) and was established on the National Heritage List in 2010.	The Ningaloo Coast meets the national heritage listing criteria a, b, c, d, and f.
The West Kimberley	✓	✓	-		The West Kimberley National Heritage Place covers an area of around 192,000 km^2 located in the north-west of Australia from Broome to Wyndham, and was established on the National Heritage List in 2011.	The Kimberley plateau, north-western coastline and northern rivers of the West Kimberley provide a vital refuge for many native plants and animals that are found nowhere else or which have disappeared from much of the rest of Australia. In addition, Roebuck Bay is internationally recognised as one of Australia's most significant sites for migratory wading birds. The national heritage place also contains a remarkable history of Aboriginal occupation, with many places of indigenous sacred value. The West Kimberley meets the national heritage listing criteria a, b, c, d, e, f, g, h and i.
Commonwealth Heritage Places - Natural						
Mermaid Reef – Rowley Shoals	-	✓	-	N/A	The Mermaid Reef – Rowley Shoals Commonwealth Heritage Place is located within the boundary of the Mermaid Reef Marine National Nature Reserve. The site was listed as a Commonwealth Heritage Place in 2004.	The Mermaid Reef-Rowley Shoals Commonwealth Heritage Place is regionally important for the diversity of its fauna and together with Clerke and Imperieuse reefs, has biogeographical significance due to the presence of species which are at, or close to, the limits of their geographic ranges, including fishes known previously only from Indonesian waters. Rowley Shoals is important for benchmark studies as one of the few places off the north-west coast of Western Australia which have been the site of major biological collection trips by the WA Museum.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Ashmore Reef National Nature Reserve	✓	-	-		The Ashmore Reef Commonwealth Heritage Place is located within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage Place in 2004.	Ashmore Reef has major significance as a staging point for wading birds migrating between Australia and the Northern Hemisphere and supports high concentrations of breeding seabirds, many of which are nomadic and typically breed on small isolated islands. Ashmore Reef is an important scientific reference area for migratory seabirds, sea snakes and marine invertebrates. The Ashmore Reef Commonwealth Heritage Place is significant for its history of human occupation and use. The island is believed to have been visited by Indonesian fisherman since the early eighteenth century. The islands were used both for fishing and as a staging point for voyages to the southern reefs off Australia's coast.
Scott Reef and Surrounds – Commonwealth Area	✓	-	-		Scott Reef and Surrounds Commonwealth Heritage Place is located within the Western Australian Coastal Waters surrounding North and South Scott Reef. The site was listed as a Commonwealth Heritage Place in 2004.	The Scott Reef and Surrounds Commonwealth Heritage Place is regionally important for the diversity of its fauna and has biogeographical significance due to the presence of species which are at, or close to, the limits of their geographic ranges, including fish known previously only from Indonesian waters. Scott Reef is recognised as important for scientific research and benchmark studies due to its age, the extensive documentation of its geophysical and physical environmental characteristics and its use as a site of major biological collection trips and surveys by the WA Museum and the Australian Institute of Marine Science.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Ningaloo Marine Area – Commonwealth Waters	-	-	✓		The Ningaloo Marine Area Commonwealth Heritage Place is located within the Commonwealth waters of the Ningaloo Marine Park (refer AMPs below). The site was listed as a Commonwealth Heritage Place in 2004.	The Ningaloo Marine Area Commonwealth Heritage Place provides a migratory pathway for humpback whales and foraging habitat for whale sharks. The place is an important breeding area for billfish and manta ray. The Ningaloo Marine Area provides opportunities for scientific research relating to aspects of the area's unique features including tourism (marine ecology, whales, turtles, whale sharks, fish and oceanography.
Wetlands of International Importance (Ramsar)						
Ashmore Reef National Nature Reserve	✓	-	-	Ramsar	The Ashmore Reef Ramsar site is located within the boundary of the Ashmore Reef Marine Park (refer AMPs below). The site was listed under the Ramsar Convention in 2002.	Ashmore Reef Ramsar site supports internationally significant populations of seabirds and shorebirds, is important for turtles (green, hawksbill and loggerhead) and dugong, and has the highest diversity of hermatypic (reef-building) corals on the WA coast. It is known for its abundance and diversity of sea snakes. However, since 1998 populations of sea snakes at Ashmore Reef have been in decline.
Eighty Mile Beach	-	✓	-	Ramsar	The Eighty Mile Beach Ramsar site covers an area of 1250 km^2, located along a long section of the Western Australian coastline adjacent to the Eighty Mile Beach AMP (refer below).	The Eighty Mile Beach Ramsar site includes saltmarsh and a raised peat bog more than 7000 years old. The site contains the most important wetland for waders in north-western Australia, supporting up to 336,000 birds, and is especially important as a land fall for waders migrating south for the austral summer.
Roebuck Bay	-	✓	-	Ramsar	The Roebuck Bay Ramsar site covers an area of 550	The Roebuck Bay Ramsar site is recognised as one of the most important areas for migratory shorebirds in Australia.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					km^2, located south of Broome and adjacent to the Roebuck AMP (refer below).	The site regularly supports over 100,000 waterbirds, with numbers being highest in the austral spring when migrant species breeding in the Palearctic stop to feed during migration.
Ord River Floodplain	✓			Ramsar	The Ord River Floodplain Ramsar Site is in the East Kimberley region and encompasses an extensive system of river, seasonal creek, tidal mudflat, and floodplain wetlands. The Ramsar Site is a nursery, feeding and/or breeding ground for migratory birds, waterbirds, fish, crabs, prawns, and crocodiles.	The site represents the best example of wetlands associated with the floodplain and estuary of a tropical river system in the Tanami-Timor Sea Coast Bioregion in the Kimberley. In addition, the False Mouths of the Ord are the most extensive mudflat and tidal waterway complex in Western Australia.
Wetlands of National Importance (DAWE, 2019)						
Ashmore Reef	✓	-	-		Ashmore Reef is a shelf-edge platform reef located among the Sahul Banks of north-western Australia. It covers an area of 583 km^2 and consists of three islets surrounded by intertidal reef and sand flats.	These islets are major seabird nesting sites with 20 breeding species recorded to date. The total bird population has been estimated to exceed 100,000 during the peak breeding season. The marine reserve also has the highest diversity of marine fauna of the reefs on the NWS and differs from other reefs and coastal areas in the region. The area meets criteria 1, 3, 4 and 5 for inclusion on the Directory of Important Wetlands in Australia.
Mermaid Reef	-	✓	-		Mermaid Reef Marine Park covers an area of around 540 km^2, located ~280 km west north-west of Broome, and is the most north-easterly atoll of the Rowley Shoals.	The reefs of the Mermaid Reef Marine Park have biogeographic value due to the presence of species that are at or close to the limit of their distribution. The coral communities are one of the special values of Mermaid Reef. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Exmouth Gulf East	-	-	✓		Exmouth Gulf East covers an area of 800 km^2 and includes wetlands in the eastern part of Exmouth Gulf, from Giralia Bay; to Urala Creek, Locker Point.	The Exmouth Gulf East is an outstanding example of tidal wetland systems of low coast of north-west Australia, with well- developed tidal creeks, extensive mangrove swamps and broad saline coastal flats. The site is one of the major population centres for dugong in WA and its seagrass beds and extensive mangroves provide nursery and feeding areas for marine fishes and crustaceans in the Gulf. The area meets criteria 1, 2 and 3 for inclusion on the Directory of Important Wetlands in Australia.
Hamelin Pool	-	-	✓		Hamelin Pool covers an area of 900 km^2 in the far south-east part of Shark Bay.	Hamelin Pool is an outstanding example of a hypersaline marine embayment and supports extensive microbialite (subtidal stromatolite) formations, which are the most abundant and diverse examples of growing marine microbialites in the world. The area meets criteria 1 and 6 for inclusion on the Directory of Important Wetlands in Australia.
Shark Bay East	-	-	✓		Shark Bay East covers a 250 km area of coastline comprising tidal wetlands, and marine waters less than 6 m deep at low tide, in the east arm of Shark Bay.	The site is an outstanding example of a very large, shallow marine embayment, with particularly extensive occurrence of seagrass beds and substantial areas of intertidal mud/sandflats and mangrove swamp. The site supports what is probably the world's largest discrete population of dugong; it is also a major nursery and/or feeding area for turtles, rays, sharks, other fishes, prawns and other marine fauna; and is a major migration stop-over area for shorebirds. The area meets criteria 1, 2, 3, 4, 5 and 6 for inclusion on the Directory of Important Wetlands in Australia.
Australian Marine Parks (DNP, 2018a)						
Abrolhos Marine Park	-	-	✓	II, IV, VI	Abrolhos Marine Park is located adjacent to the WA Houtman Abrolhos Islands, covering a large offshore	Abrolhos Marine Park is significant because it contains habitats, species and ecological communities associated with four bioregions:

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					area of 88,060 km^2 extending from the WA State waters boundary to the edge of Australia's EEZ. The Abrolhos Marine Park is located within both the NWMR and SWMR.	• Central Western Province • Central Western Shelf Province • Central Western Transition • South-west Shelf Transition It includes seven KEFs: Commonwealth marine environment surrounding the Houtman Abrolhos Islands; Demersal slope and associated fish communities of the Central Western Province; Mesoscale eddies; Perth Canyon and adjacent shelf break, and other west-coast canyons; Western rock lobster; Ancient coastline at 90-120 m depth; and Wallaby Saddle. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging and breeding habitat for seabirds, foraging habitat for Australian sea lions and white sharks, and a migratory pathway for humpback and pygmy blue whales. The AMP is adjacent to the northernmost Australian sea lion breeding colony in Australia on the Houtman Abrolhos Islands.
Carnarvon Canyon Marine Park	-	-	✓	IV	Carnarvon Canyon Marine Park covers an area of 6177 km^2, located ~300 km north-west of Carnarvon.	Carnarvon Canyon Marine Park is significant because it contains habitats, species and ecological communities associated with the Central Western Transition bioregion. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. There is limited information about species' use of this AMP.
Shark Bay Marine Park	-	-	✓	VI	Shark Bay Marine Park covers an area of 7443 km^2 located ~60 km offshore of Carnarvon, adjacent to the Shark Bay World Heritage Property and National Heritage Place.	Shark Bay Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: • Central Western Shelf Province • Central Western Transition. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
						the EPBC Act. BIAs within the AMP include breeding habitat for seabirds, internesting habitat for marine turtles, and a migratory pathway for humpback whales.
Gascoyne Marine Park	-	-	✓	II, IV, VI	Gascoyne Marine Park covers an area of 81,766 km^2, located ~20 km off the west coast of the Cape Range Peninsula, adjacent to the Ningaloo Marine Park.	Gascoyne Marine Park is significant because it contains habitats, species and ecological communities associated with three bioregions: • Central Western Shelf Transition • Central Western Transition • Northwest Province. It includes four KEFs: Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; Commonwealth waters adjacent to Ningaloo Reef; Continental slope demersal fish communities; and Exmouth Plateau. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds, internesting habitat for marine turtles, a migratory pathway for humpback whales, and foraging habitat and migratory pathway for pygmy blue whales.
Ningaloo Marine Park	-	-	✓	II, IV	Ningaloo Marine Park covers an area of 2435 km^2, stretching ~300 km along the west coast of the Cape Range Peninsula, and is adjacent to the WA Ningaloo Marine Park and Gascoyne Marine Park.	Ningaloo Marine Park is significant because it contains habitats, species and ecological communities associated with four bioregions: • Central Western Shelf Transition • Central Western Transition • Northwest Province • Northwest Shelf Province. It includes three KEFs: Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula; Commonwealth waters adjacent to Ningaloo Reef; and Continental slope demersal fish communities. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
						or foraging habitat for seabirds, internesting habitat for marine turtles, a migratory pathway for humpback whales, foraging habitat and migratory pathway for pygmy blue whales, breeding, calving, foraging and nursing habitat for dugong and foraging habitat for whale sharks.
Montebello Marine Park	-	✓	-	VI	Montebello Marine Park covers an area of 3413 km^2, located offshore of Barrow Island and 80 km west of Dampier extending from the WA State waters boundary, and is adjacent to the WA Barrow Island and Montebello Islands Marine Parks.	Montebello Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province bioregion. It includes one KEF: Ancient coastline at 125 m depth contour. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds, internesting, foraging, mating, and nesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for whale sharks.
Dampier Marine Park	-	✓	-	II, IV, VI	Dampier Marine Park covers an area of 1252 km^2, located ~10 km north-east of Cape Lambert and 40 km from Dampier extending from the WA State waters boundary.	Dampier Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province bioregion. The AMP provides protection for offshore shelf habitats adjacent to the Dampier Archipelago, and the area between Dampier and Port Hedland, and is a hotspot for sponge biodiversity. The AMP supports a range of species including those listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging habitat for seabirds, internesting habitat for marine turtles and a migratory pathway for humpback whales.
Eighty Mile Beach Marine Park	-	✓	-	VI	Eighty Mile Beach Marine Park covers an area of 10,785 km^2, located ~74 km north-east of Port Hedland, adjacent to the	Eighty Mile Beach Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province and consists of shallow shelf habitats, including terrace, banks and shoals.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					WA Eighty Mile Beach Marine Park.	The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding, foraging and resting habitat for seabirds, internesting and nesting habitat for marine turtles, foraging, nursing and pupping habitat for sawfishes and a migratory pathway for humpback whales.
Argo – Rowley Terrace Marine Park	✓	✓	-	II, VI, VI (Trawl)	Argo-Rowley Terrace Marine Park covers an area of 146,003 km^2, located ~270 km north-west of Broome, and extends to the limit of Australia's EEZ. The AMP is adjacent to the Mermaid Reef Marine Park and the WA Rowley Shoals Marine Park.	Argo–Rowley Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: • Northwest Transition • Timor Province. It includes two KEFs: Canyons linking the Argo Abyssal Plain with the Scott Plateau; and Mermaid Reef and Commonwealth waters surrounding Rowley Shoals. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include resting and breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.
Mermaid Reef Marine Park	-	✓	-	II	Mermaid Reef Marine Park covers an area of 540 km^2, located ~280 km north-west of Broome, adjacent to the Argo–Rowley Terrace Marine Park and ~13 km from the WA Rowley Shoals Marine Park. Mermaid Reef is one of three reefs forming the Rowley Shoals. The other two are Clerke Reef and Imperieuse Reef, to the	Mermaid Reef Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Transition. It includes one KEF: Mermaid Reef and Commonwealth waters surrounding Rowley Shoals. The Rowley Shoals have been described as the best geological examples of shelf atolls in Australian waters. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds and a migratory pathway for the pygmy blue whale.

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					south-west of the AMP, which are included in the WA Rowley Shoals Marine Park.	
Roebuck Marine Park	-	✓	-	VI	Roebuck Marine Park covers an area of 304 km^2, located ~12 km offshore of Broome, and is adjacent to the WA Yawuru Nagulagun/Roebuck Bay Marine Park.	Roebuck Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Province and consists entirely of shallow continental shelf habitat. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and resting habitat for seabirds, foraging and internesting habitat for marine turtles, a migratory pathway for humpback whales and foraging habitat for dugong.
Kimberley Marine Park	✓	✓	-	II, IV, VI	Kimberley Marine Park covers an area of 74,469 km^2, located ~100 km north of Broome, extending from the WA State waters boundary north from the Lacepede Islands to the Holothuria Banks offshore from Cape Bougainville.	Kimberley Marine Park is significant because it includes habitats, species and ecological communities associated with three bioregions: • Northwest Shelf Province • Northwest Shelf Transition • Timor Province. It includes two KEFs: Ancient coastline at 125 m depth contour; and Continental slope demersal fish communities. The AMP supports a range of species, including protected species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging habitat for seabirds, internesting and nesting habitat for marine turtles, breeding, calving and foraging habitat for inshore dolphins, calving, migratory pathway and nursing habitat for humpback whales, migratory pathway for pygmy blue whales, foraging habitat for dugong and foraging habitat for whale sharks.
Ashmore Reef Marine Park	✓	-	-	Ia, IV	Ashmore Reef Marine Park covers an area of 583 km^2, located ~630 km north of	Ashmore Reef Marine Park is significant because it includes habitats, species and ecological communities associated with the Timor Province. It includes two KEFs:

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					Broome and 110 km south of the Indonesian island of Roti. The AMP is located in Australia's External Territory of Ashmore and Cartier Islands and is within an area subject to a Memorandum of Understanding (MoU) between Indonesia and Australia, known as the MoU Box.	Ashmore Reef and Cartier Island and surrounding Commonwealth waters; and Continental slope demersal fish communities. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding, foraging and resting habitat for seabirds, resting and foraging habitat for migratory shorebirds, foraging, mating, nesting and internesting habitat for marine turtles, foraging habitat for dugong, and a migratory pathway for pygmy blue whales.
Cartier Island Marine Park	✓	-	-	Ia	Cartier Island Marine Park covers an area of 172 km^2, located ~45 km south-east of Ashmore Reef Marine Park and 610 km north of Broome. It is also located in Australia's External Territory of Ashmore and Cartier Islands and within an area subject to an MoU between Indonesia and Australia, known as the MoU Box.	Cartier Island Marine Park is significant because it includes habitats, species and ecological communities associated with the Timor Province. It includes two key ecological features: Ashmore Reef and Cartier Island and surrounding Commonwealth waters and continental slope demersal fish communities. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging habitat for seabirds, internesting, nesting and foraging habitat for marine turtles and foraging habitat for whale sharks. The AMP is also internationally significant for its abundance and diversity of sea snakes, some of which are listed species under the EPBC Act.
Joseph Bonaparte Gulf Marine Park	✓	-	-	VI	Joseph Bonaparte Gulf Marine Park covers an area of 8597 km^2 and is located ~15 km west of Wadeye, NT, and ~90 km north of Wyndham, WA, in the Joseph Bonaparte Gulf.	Joseph Bonaparte Gulf Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Transition bioregion. It includes one KEF: Carbonate bank and terrace system of the Sahul Shelf. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					It is adjacent to the WA North Kimberley Marine Park. The Joseph Bonaparte Gulf Marine Park is located within both the NWMR and NMR.	the EPBC Act. BIAs within the AMP include foraging habitat for marine turtles and the Australian snubfin dolphin.
Oceanic Shoals Marine Park	✓	-	-	II, IV, VI	Oceanic Shoals Marine Park covers an area of 71,743 km^2 and is located west of the Tiwi Islands, ~155 km north-west of Darwin, NT and 305 km north of Wyndham, WA. The Oceanic Shoals Marine Park is located within both the NWMR and NMR.	Oceanic Shoals Marine Park is significant because it contains habitats, species and ecological communities associated with the Northwest Shelf Transition bioregion. It contains four KEFs: Carbonate bank and terrace systems of the Van Diemen Rise; Carbonate bank and terrace systems of the Sahul Shelf; Pinnacles of the Bonaparte Basin; and Shelf break and slope of the Arafura Shelf. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging and internesting habitat for marine turtles.
State Marine Parks and Reserves						
North Kimberley Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	The North Kimberley Marine Park covers approx. 18,450 km^2 with its south-western boundary located ~270 km north-east of Derby.	The coral reefs of the north Kimberley have the greatest diversity in Western Australia and are some of the most pristine and remarkable reefs in the world. The park surrounds more than 1000 islands and is home to listed species such as dugongs, marine turtles, and sawfishes (DPAW, 2016a).
Lalang-garram / Horizontal Falls Marine Park and North Lalang-garram Marine Park (jointly managed)	✓	-	-	Sanctuary, Special Purpose and General Use Zones	The Lalang-garram / Horizontal Falls Marine Park covers ~3530 km^2 from Talbot Bay in the west and Glenelg River in the east. The North Lalang-garram Marine Park covers ~1100	The Lalang-garram / Horizontal Falls Marine Park's most celebrated attraction is created by massive tides of up to 10 m and narrow gaps in two parallel tongues of land meaning the tide falls faster than the water can escape, producing 'horizontal falls'. There are also islands with fringing coral reefs and mangrove-lined creeks and bays. The North Lalang-garram Marine Park has a number of islands fringed with coral reef and has been identified as an

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
					km^2 between Camden Sound and North Kimberley Marine Parks.	ecological hotspot and supports more than 1% of the world's population of brown boobies, with up to 2000 breeding pairs. About 500 pairs of crested terns also nest on the island (DPAW, 2016b).
Lalang-garram / Camden Sound Marine Park	✓	-	-	Sanctuary, Special Purpose and General Use Zones	Lalang-garram / Camden Sound Marine Park covers 7050 km^2 located about 150 km north of Derby.	The Lalang-garram / Camden Sound Marine Park is the most important humpback whale nursery in the Southern Hemisphere. It also features the spectacular coastal Montgomery Reef. The marine park is home to six species of threatened marine turtle. Australian snubfin and Indo-Pacific humpback dolphins, dugongs, saltwater crocodiles, and several species of sawfish (DPAW, 2013).
Rowley Shoals Marine Park	-	✓	-	Sanctuary, Recreation and General Use Zones	The Rowley Shoals comprise of three reef systems, Mermaid Reef, Clerke Reef and Imperieuse Reef, all 30-40 km apart. These reef systems are located ~300 km west north-west of Broome.	The three coral atolls of the Rowley Shoals Marine Park comprise of shallow lagoons inhabited by diverse corals and abundant marine life, each covering around 80 km^2 at the edge of Australia's continental shelf. Further offshore, the seafloor slopes away to the abyssal plain, some 6000 m below. Undersea canyons slice the slope; these features are commonly associated with diverse communities of deep-water corals and sponges and create localised upwellings that aggregate pelagic species like tunas and billfish (DEC, 2007a).
Yawuru Nagulagun / Roebuck Bay Marine Park	-	✓	-	Special Purpose Zone	Yawuru Nagulagun / Roebuck Bay Marine Park is a series of intertidal flats lying on the coast to the south-east of Broome.	Roebuck Bay is an internationally significant wetland and one of the most important feeding grounds for migratory shorebirds in Australia. Australian snubfin and Australian humpback dolphins frequent the waters and humpback whales pass through on their annual migration. Flatback turtles nest on the shores and are found in the bay's waters with other sea turtle species. Seagrass and macroalgae communities provide food for protected species such as the dugong and flatback turtle (DPAW, 2016c).
Eighty Mile Beach Marine Park	-	✓	-	Sanctuary, Recreation, Special	Eighty Mile Beach Marine Park covers ~2000 km^2 stretching across 220km of	Eighty Mile Beach Marine Park is one of the world's most important feeding grounds for small wading birds that migrate to the area each summer, travelling from countries

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
				Purpose and General Use Zones	coastline between Port Hedland and Broome.	thousands of kilometres away. The marine park is a major nesting area for flatback turtles which are found only in northern Australia. Sawfishes, dugongs, dolphins and millions of invertebrates inhabit the sand and mud flats, seagrass meadows, coral reefs and mangroves (DPAW, 2014).
Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area (jointly managed)	-	✓	-	Sanctuary, Recreation, General Use and Special Purpose Zones	The Montebello Islands Marine Park, Barrow Island Marine Park and Barrow Island Marine Management Area are located off the north-west coast of WA, ~1600 km north of Perth, and cover areas of ~583 km^2, 42 km^2 and 1,147 km^2, respectively.	The Montebello/Barrow islands marine conservation reserves have very complex seabed and island topography, resulting in a myriad of different habitats subtidal coral reefs, macroalgal and seagrass communities, subtidal soft-bottom communities, rocky shores and intertidal reef platforms, which support a rich diversity of invertebrates and finfish. The reserves are important breeding areas for several species of marine turtles and seabirds, which use the undisturbed sandy beaches for nesting. Humpback whales migrate through the reserves and dugongs occur in the shallow warm waters (DEC, 2007b).
Ningaloo Marine Park and Muiron Islands Marine Management Area (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	The Ningaloo Marine Park and Muiron Islands Marine Management Area are located off the North-west Cape of WA, ~1200 km north of Perth, and cover areas of ~2633 km^2 and 286 km^2, respectively.	Ningaloo Reef is the largest fringing coral reef in Australia. Temperate and tropical currents converge in the Ningaloo region resulting in highly diverse marine life including spectacular coral reefs, abundant fishes and species with special conservation significance such as turtles, whale sharks, dugongs, whales and dolphins. The region has diverse marine communities including mangroves, algae and filter-feeding communities and has high water quality. These values contribute to the Ningaloo Marine Park being regarded as the State's premier marine conservation icon. The Muiron Islands Marine Management Area is also important, containing a very diverse marine environment, with coral reefs, filter-feeding communities and macroalgal beds. In addition, the Islands are important seabird and green turtle nesting areas. (CALM, 2005a).

Protected Area	Woodside Activity Area			IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
	Browse	NWS/S	NW Cape			
Shark Bay Marine Park and Hamelin Pool Marine Nature Reserve (jointly managed)	-	-	✓	Sanctuary, Recreation, General Use and Special Purpose Zones	The Shark Bay Marine Park and Hamelin Pool Marine Nature Reserves are located 400 km north of Geraldton, covering areas of ~7487 km^2 and 1270 km^2, respectively.	Seagrass covers over 4000 km^2 of the Shark Bay Marine Park, with 12 different species making it one of the most diverse seagrass assemblages in the world. Dugongs regularly use this habitat, with the bay containing one of the largest dugong populations in the world. Humpback whales also use the bay as a staging post in their migration along the coast. Green and loggerhead turtles occur in the bay with Dirk Hartog Island providing the most important nesting site for loggerheads in Western Australia. Hamelin Pool contains the most diverse and abundant examples of stromatolites found in the world. These are living representatives of stromatolites that existed some 3500 million years ago (CALM, 1996).

**Conservation objectives for IUCN categories include:*

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: national Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

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

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

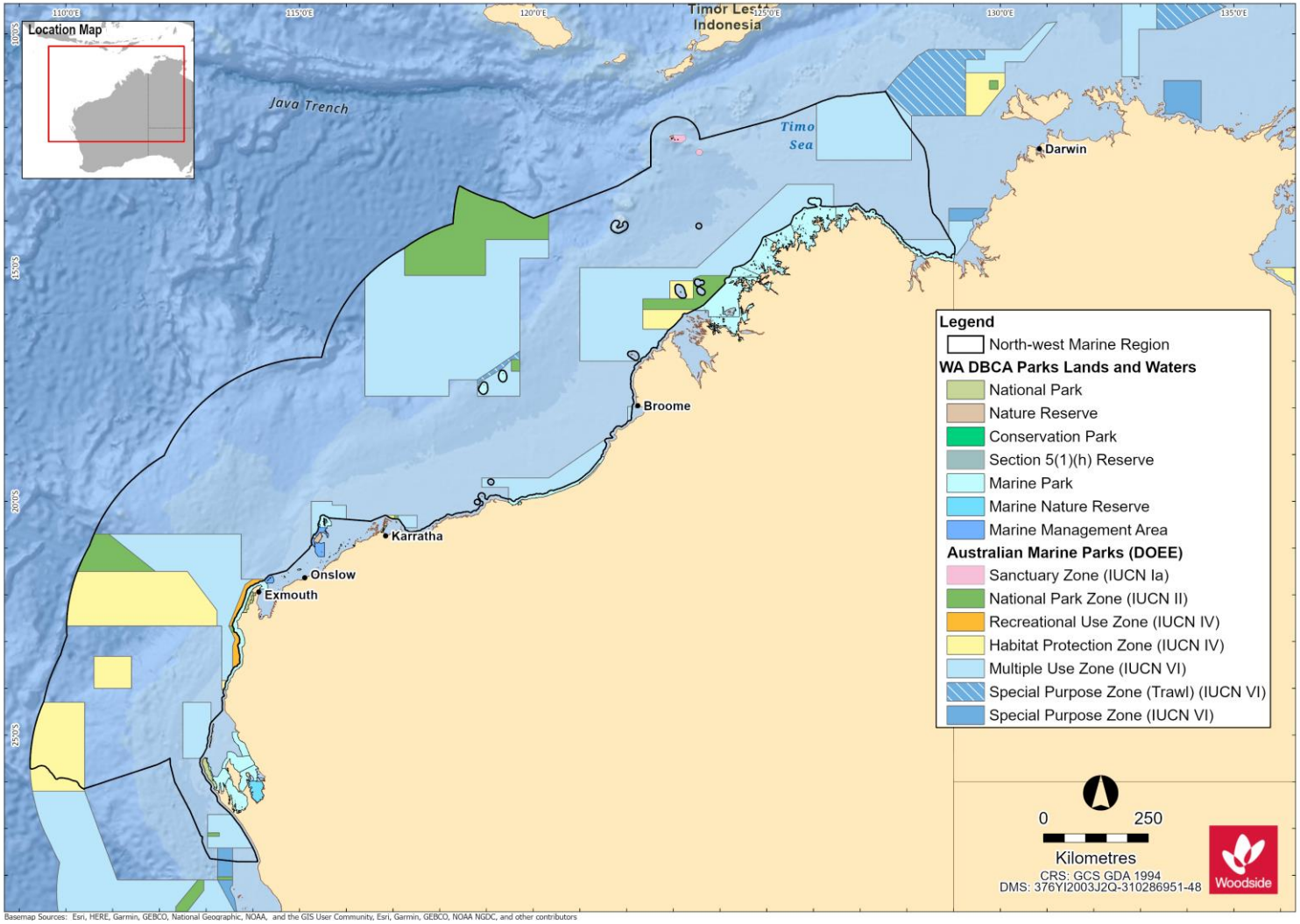

Figure 10-1 Commonwealth and State Marine Protected Areas for the NWMR

10.10 Summary of Protected Areas within the SWMR

Table 10-2 Protected Areas within the SWMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
World Heritage Properties			
N/A			
National Heritage Places - Natural			
N/A			
Commonwealth Heritage Places - Natural			
N/A			
Wetlands of International Importance (Ramsar)			
Beecher Point Wetlands	Ramsar	Beecher Point Wetlands is a system of about sixty small wetlands located near Rockingham in south-west WA, covering an area of around 7 km^2. The site was listed under the Ramsar Convention in 2001.	The wetlands support sedgelands, herblands, grasslands, open-shrublands and low open-forests. The sedgelands that occur within the linear wetland depressions of the Ramsar site are a nationally listed TEC. At least four species of amphibians and twenty-one (21) species of reptiles have been recorded on the site. The site also supports the southern brown bandicoot. The site meets criteria 1 and 2 of the Ramsar Convention.
Forrestdale and Thomsons Lakes	Ramsar	Forrestdale Lake is located in the City of Armadale and Thomsons Lake is located in the City of Cockburn both of which lie within the southern Perth metropolitan area, in Western Australia. The site was listed under the Ramsar Convention in 1990.	The lakes are surrounded by medium density urban development and some agricultural land. The sediments of Thomsons Lake are between 30,000 and 40,000 years old, which are the oldest lake sediments discovered in WA to date. These lakes are the best remaining examples of brackish, seasonal lakes with extensive fringing sedgeland, typical of the Swan Coastal Plain. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention.
Peel-Yalgorup System	Ramsar	Peel-Yalgorup System, located adjacent to the City of Mandurah in	Peel-Yalgorup System Ramsar site is the most important area for waterbirds in south-western Australia. It supports a large number of waterbirds, and a

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		WA, is a large and diverse system of shallow estuaries, coastal saline lakes and freshwater marshes. The site was listed under the Ramsar Convention in 1990.	wide variety of waterbird species. It also supports a wide variety of invertebrates, and estuarine and marine fish. The site meets criteria 1, 3, 5 and 6 of the Ramsar Convention.
Vasse-wonnerup system	Ramsar	Vasse-Wonnerup System Ramsar wetland is situated in the Perth Basin, south-western WA. The site was listed under the Ramsar Convention in 1990.	Vasse-Wonnerup System is an extensive, shallow, nutrient-enriched wetland system of highly varied salinities. Large areas of the wetland dry out in late summer. Vasse-Wonnerup System supports tens of thousands of resident and migrant waterbirds of a wide variety of species. More than 80 species of waterbird have been recorded in the System such as red-necked avocets and black-winged stilts, wood sandpiper, sharp-tailed sandpiper, long-toed stint, curlew sandpiper and common greenshank. Thirteen waterbird species are also known to breed at the Ramsar site, including the largest regular breeding colony of black swans in south-western Australia. The site meets criteria 5 and 6 of the Ramsar Convention.
Wetlands of National Importance (DAWE, 2019)			
Rottnest Island Lakes		The Rottnest Island Lakes site is the cluster of 18 lakes and swamps on the north-east part of Rottnest Island.	An outstanding example of a series of lakes/swamps of varied depth and salinity located on an offshore island; the only island among 200 plus in WA exceeding 10 ha in area, that has a salt-lake complex; the only known example of seasonally meromictic lakes in Australia. The area meets criteria 1, 2, 3 and 6 for inclusion on the Directory of Important Wetlands in Australia.
Australian Marine Parks (DNP, 2018b)			
Abrolhos Marine Park	II, IV, VI	The Abrolhos Marine Park is located within both the NWMR and SWMR. Refer **Table 10-1** for description and conservation values.	
Bremer Marine Park	II, VI	Bremer Marine Park covers an area of 4472 km^2 and is located approximately half-way between Albany and Esperance, offshore from the Fitzgerald River National Park, extending from the WA State waters boundary.	Bremer Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: • Southern Province • South-west Shelf Province. It includes two KEFs: Albany Canyon group and adjacent shelf break; and Ancient coastline at 90-120 m depth.

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
			The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions, and white sharks, a migratory pathway for humpback whales, and a significant calving area for southern right whales. The AMP includes canyons—important aggregation areas for killer whales.
Eastern Recherche Marine Park	II, VI	Eastern Recherche Marine Park covers an area of 20,575 km^2 and is located ~135 km east of Esperance, adjacent to the Recherche Archipelago, close to the WA Cape Arid National Park.	Eastern Recherche Marine Park is significant because it contains habitats, species and ecological communities associated with three bioregions: • South-west Shelf Province • Southern Province • Great Australian Bight Shelf Transition. It includes three KEFs: Mesoscale eddies; Ancient coastline at 90-120 m depth; and Commonwealth marine environment surrounding the Recherche Archipelago. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right whales.
Geographe Marine Park	II, IV, VI	Geographe Marine Park covers an area of 977 km^2 and is located in Geographe Bay, ~8 km west of Bunbury and 8 km north of Busselton, adjacent to the WA Ngari Capes Marine Park.	Geographe Marine Park is significant because it contains habitats, species and ecological communities associated with the South-west Shelf Province bioregion. It includes two KEFs: Commonwealth marine environment within and adjacent to Geographe Bay; and Western rock lobster. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right whales.
Great Australian Bight Marine Park	II, VI	Great Australian Bight Marine Park covers an area of 45,822 km^2 and is located ~12 km south-east of Eucla and 174 km west of Ceduna, adjacent to the SA Far West Coast and Nuyts Archipelago Marine Parks.	Great Australian Bight Marine Park is significant because it contains habitats, species and ecological communities associated with two bioregions: • Great Australian Bight Shelf Transition • Southern Province. It includes three KEFs: Ancient coastline at 90-120 m depth; Benthic invertebrate communities of the eastern Great Australian Bight; and Small pelagic fish of the South-west Marine Region. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions, white sharks and

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
			pygmy blue and sperm whales, and a calving area, migratory pathway and large aggregation area for southern right whales.
Jurien Marine Park	II, VI	Jurien Marine Park covers an area of 1851 km^2 and is located ~148 km north of Perth and 155 km south of Geraldton, adjacent to the WA Jurien Bay Marine Park.	Jurien Marine Park is significant because it includes habitats, species and ecological communities associated with two bioregions: • South-west Shelf Transition • Central Western Province. It includes three KEFs: Ancient coastline at 90-120 m depth; Demersal slope and associated fish communities of the Central Western Province; and Western rock lobster The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions and white sharks, and a migratory pathway for humpback and pygmy blue whales.
Perth Canyon Marine Park	II, IV, VI	Perth Canyon Marine Park covers an area of 7409 km^2 and is located ~52 km west of Perth and ~19 km west of Rottnest Island.	Perth Canyon Marine Park is significant because it includes habitats, species and ecological communities associated with four bioregions: • Central Western Province • South-west Shelf Province • Southwest Transition • South-west Shelf Transition. It includes four KEFs: Perth Canyon and adjacent shelf break, and other west-coast canyons; Demersal slope and associated fish communities of the Central Western Province; Western rock lobster; and Mesoscale eddies. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Antarctic blue, pygmy blue and sperm whales, a migratory pathway for humpback, Antarctic blue and pygmy blue whales, and a calving buffer area for southern right whales.
South-west Corner Marine Park	II, IV, VI	South-west Corner Marine Park covers an area of 271,833 km^2 and is located adjacent to the WA Ngari Capes Marine Park. It covers an extensive offshore area that is closest to WA State waters ~48 km west of Esperance, 73 km west of Albany and 68 km west of Bunbury.	South-west Corner Marine Park is significant because it contains habitats, species and ecological communities associated with three bioregions: • Southern Province • South-west Transition • South-west Shelf Province. It includes six KEFs: Albany Canyon group and adjacent shelf break; Cape Mentelle upwelling; Diamantina Fracture Zone; Naturaliste Plateau; Western rock lobster; and Ancient coastline at 90 m-120 m depth.

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
			The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions, white sharks and sperm whales, a migratory pathway for Antarctic blue, pygmy blue and humpback whales, and a calving buffer area for southern right whales.
Twilight Marine Park	II, VI	Twilight Marine Park covers an area of 4641 km^2 and is located ~245 km south-west of Eucla and 373 km north-east of Esperance, adjacent to the WA State waters boundary.	Twilight Marine Park is significant because it contains habitats, species and ecological communities associated with the Great Australian Bight Shelf Transition bioregion. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds, Australian sea lions and white sharks, and a calving buffer area for southern right whales.
Two Rocks Marine Park	II, VI	Two Rocks Marine Park covers an area of 882 km^2 and is located ~25 km north-west of Perth, to the north-west of the WA Marmion Marine Park.	Two Rocks Marine Park is significant because it includes habitats, species and ecological communities associated with the South-west Shelf Transition bioregion. It includes three KEFs: Commonwealth marine environment within and adjacent to the west-coast inshore lagoons; Western rock lobster; and Ancient coastline at 90-120 m depth. The AMP supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat for seabirds and Australian sea lions, a migratory pathway for humpback and pygmy blue whales, and a calving buffer area for southern right whales.
State Marine Parks and Reserves			
Jurien Bay Marine Park	Sanctuary, Special Purpose and General Use Zones.	The Jurien Bay Marine Park is located on the central west coast of WA ~200 km north of Perth and covers an area of 824 km^2.	An extensive limestone reef system parallel to the shore has created a huge shallow lagoon that provides perfect habitat for Australian sea lions, dolphins and a myriad of juvenile fish. Extensive seagrass meadows inside the reef shelter many marine animals such as western rock lobsters, octopus and cuttlefish that make up the diet of young sea lions. The marine park also surrounds dozens of ecologically important islands that contain rare and endangered animals found nowhere else in the world (CALM, 2005b).
Marmion Marine Park	Sanctuary, Recreation and Special Use Zones.	The Marmion Marine Park lies within State waters between Trigg Island and Burns Beach and encompasses a coastal area of ~95 km^2. Marmion	The marine park has a number of sanctuary zones including Little Island, The Lumps and the Boyinaboat Reef protecting a variety of habitats from limestone reefs, seagrass beds and clear shallow lagoons that support a diversity of marine life. In addition, to a general use zone and the Waterman Recreation Area. The marine park contains important habitat for the endemic Australian

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		Marine Park was the State's first marine park, declared in 1987.	sea lion, an array of seabird species migratory whales are regular visitors (CALM, 1992; DPAW, 2016d).
Swan Estuary Marine Park	Special Purpose and Nature Reserve Zones.	Three biologically important areas of Perth's Swan River make up the Swan Estuary Marine Park, including Alfred Cove, Pelican Point and Crawley. These three sites cover a total area of 3.4 km^2.	The sand flats, mud flats and beaches at the three locations of the Swan Estuary Marine Park provide the only remaining significant feeding and resting areas in the Swan Estuary, for trans-equatorial migratory wading and waterbirds. The Park and adjacent reserves also provide habitat for a diverse assemblage of aquatic and terrestrial flora and fauna (CALM, 1999).
Shoalwater Islands Marine Park	Sanctuary, Special Purpose and General Use Zones.	The Shoalwater Islands Maine Park is located adjacent to Rockingham on the south-west coast of WA, ~50 km south of Perth and covers an area of ~66 km^2.	The Shoalwater Islands Marine Park consists of a complex seabed and coastal topography consisting of islands, limestone ridges and reef platforms, protected inshore areas and deeper basins, sandbars and beaches, and is home to five species of cetacean and 14 species of sea and shore bird. The waters of the marine park are also used to access feeding grounds for the little penguin (*Eudyptula minor*) colony on Penguin Island, which is close to the northernmost limit of the species' range and is the largest known breeding colony in Western Australia (DEC, 2007c).
Ngari Capes Marine Park	Sanctuary, Special Purpose and Recreation Zones.	The Ngari Capes Marine Park is located off the south-west coast of WA, ~250 km south of Perth, covering ~1238 km^2.	The Ngari Capes Marine Park consists of a complex arrangement of sandy bays, high energy limestone and granite reefs bordered by headlands and cliffs and two weathered capes. Coral communities consist of both tropical and temperate species. Cetaceans and pinnipeds are resident in and/or transient through the marine park as well as a diverse range of seabirds and shorebirds (DEC, 2013).
Walpole and Nornalup Inlets Marine Park	Recreation Zone.	The Walpole and Nornalup Inlets Marine Park is located adjacent to the towns of Walpole and Nornalup on the south coast of WA, ~120 km west of Albany, and covers ~14 km^2.	The Walpole and Nornalup Inlets Marine Park consists of a geologically complex lagoonal estuarine system comprising three significant rivers and two connected inlets that are permanently open to the ocean. Approximately 40 marine and estuarine finfish species commonly inhabit the inlet system, as well as a variety of shark and ray species and numerous seabirds and shorebirds. The sandy beaches and shoreline vegetation of the inlet system are of high ecological and social importance to the marine park (DEC, 2009).

**Conservation objectives for IUCN categories include:*

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: national Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

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

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

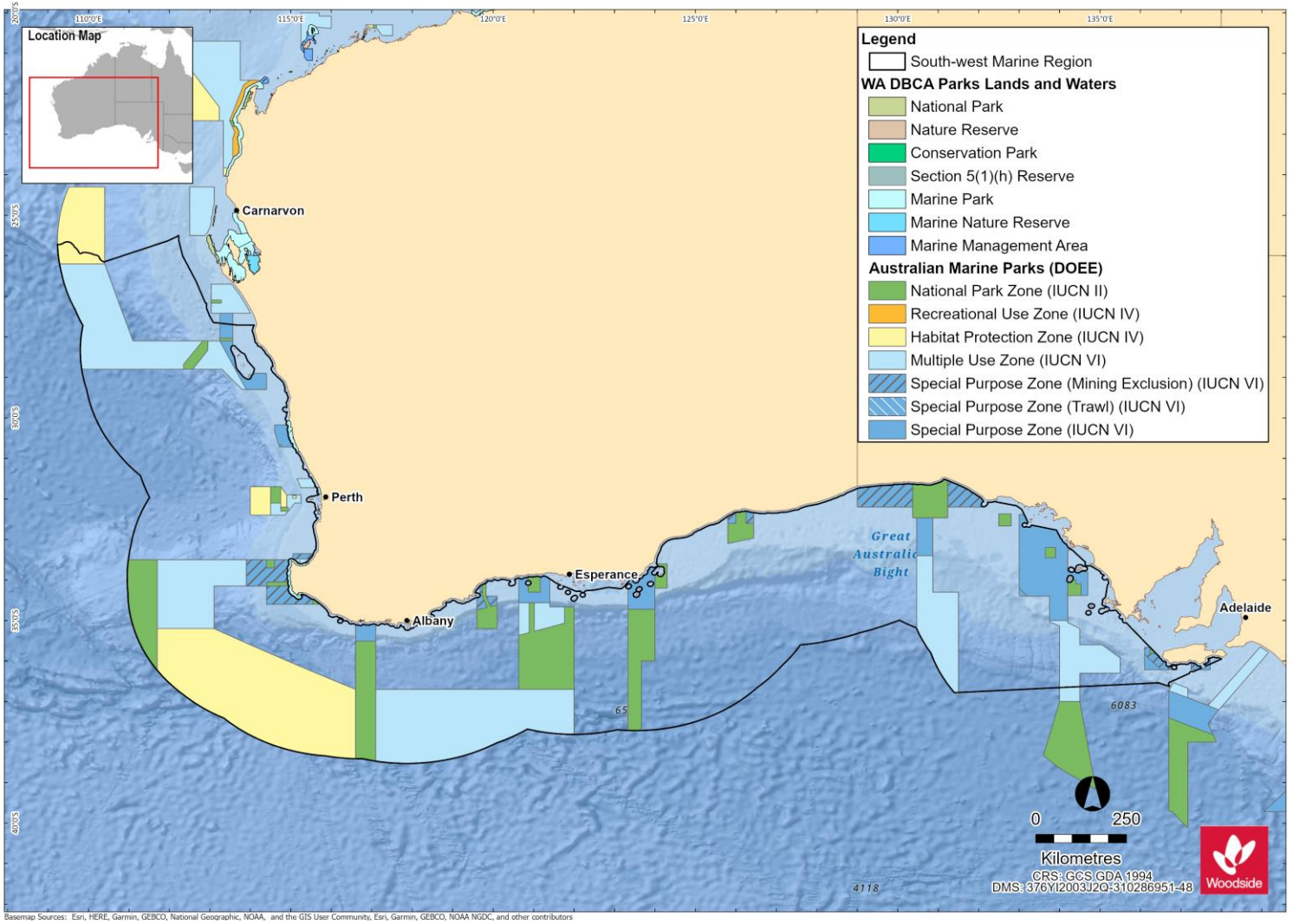

Figure 10-2. Commonwealth and State Marine Protected Areas for the SWMR

10.11 Summary of Protected Areas within the NMR

Table 10-3 Protected Areas within the NMR

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
World Heritage Properties			
Kakadu National Park		Kakadu National Park is a living landscape with exceptional natural and cultural values. It is the largest National Park in Australia and preserves the greatest variety of ecosystems on the Australian continent including extensive areas of floodplains, mangroves, tidal mudflats, coastal areas and monsoon forests. The park was inscribed the World Heritage list in three stages over 11 years. It is located in tropical north Australia covering a total area of 19,804 square kilometres.	The conservation values reflect the WHA Criterion: (i), (vi), (vii) and (ix): Natural features relate to Criterion (vii) – the remarkable contrast between the internationally recognised Ramsar-listed wetlands and the spectacular rocky escarpment and its outliers and Criterion (ix) – four major river systems of tropical Australia and floodplains that are dynamic environments, shaped by changing sea levels and big floods every wet season. These floodplains illustrate the ecological and geomorphological effects that have accompanied Holocene climate change and sea level rise. Kakadu National Park contains important and significant habitats supporting a diverse range of flora and fauna.
National Heritage Places - Natural			
Kakadu National Park		Refer to World Heritage property description above.	Refer to World Heritage property conservation values above
Commonwealth Heritage Places - Natural			
N/A			
Wetlands of International Importance (Ramsar)			
Kakadu National Park		Australian Ramsar site number 2. The stage 1 and 2 Ramsar sites, established in 1980, 1985 and 1989, respectfully were combined into a single Ramsar site in 2010.	The Kakadu National Park Ramsar site straddles the western edge of the Arnhem Land Plateau encompassing a range of landforms and extensive floodplains. It is a mosaic of contiguous wetlands comprising the catchments of two large river systems, the East and South Alligator rivers and encompasses extensive tidal mudflat areas. It is an internationally important site for migratory shorebirds as part of the EAAF.

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
Cobourg Peninsula		Australian Ramsar site number 1 established in 1974. This Ramsar site includes freshwater and extensive intertidal areas but excludes subtidal areas. It is in a remote location and there has been minimal human impact on the site.	The wetlands encompassed in the Ramsar site are some of the better protected and near-natural wetlands in the bioregion and there is a diverse array of wetland in a confined area. The site supports important turtle nesting habitat and habitat for coastal dolphin species and is an internationally significant migratory shorebird habitat as part of the EAAF and an important location for seabird breeding colonies.
Wetlands of National Importance (DAWE, 2019)			
Southern Gulf Aggregation		The site is a complex continuous wetland aggregation in the Gulf of Carpentaria, covering an area of ~5460 km^2 located 58 km east of Burketown, Queensland.	The Southern Gulf Aggregation is the largest continuous estuarine wetland aggregation of its type in northern Australia. It is one of the three most important areas for shorebirds in Australia. The area meets criteria 1, 2, 3, 4, 5 and 6 for inclusion on the Directory of Important Wetlands in Australia.
Australian Marine Parks (DNP, 2018c)			
Arafura Marine Park	VI	Arafura Marine Park covers an area of 22,924 km^2 is located ~256 km north-east of Darwin and 8 km offshore of Croker Island, NT. It extends from NT waters to the limit of Australia's EEZ.	The AMP is significant because it contains habitats, species and ecological communities associated with two bioregions: • Northern Shelf Province • Timor Transition. It includes one KEF: Tributary canyons of the Arafura Depression. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include internesting habitat for marine turtles and important foraging and breeding habitat for seabirds.
Arnhem Marine Park	VI	Arnhem Marine Park covers an area of 7125 km^2 and is located ~100 km south-east of Croker Island and 60 km south-east of the Arafura Marine Park. It extends from NT waters surrounding the Goulburn Islands, to the waters north of Maningrida.	Arnhem Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf Province bioregion. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include foraging habitat and a migratory pathway for marine turtles and seabirds.
Gulf of Carpentaria Marine Park	II, VI	Gulf of Carpentaria Marine Park covers an area of 23,771 km^2 and is located ~90 km north-west of Karumba, Queensland and is adjacent to the Wellesley Islands in	Gulf of Carpentaria Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf Province bioregion.

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		the south of the Gulf of Carpentaria basin.	It includes four KEFs: Gulf of Carpentaria basin; Gulf of Carpentaria coastal zone; Plateaux and saddle north-west of the Wellesley Islands; and Submerged coral reefs of the Gulf of Carpentaria. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging areas for seabirds and internesting and foraging areas for turtles.
Joseph Bonaparte Gulf Marine Park	VI	The Joseph Bonaparte Gulf Marine Park is located within both the NWMR and NMR. Refer **Table 10-1** for description and conservation values.	
Limmen Marine Park	IV	Limmen Marine Park covers an area of 1399 km^2 and is located ~315 km south-west of Nhulunbuy, NT, in the south-west of the Gulf of Carpentaria. It extends from NT waters, between the Sir Edward Pellew Group of Islands and Maria Island in the Limmen Bight, adjacent to the NT Limmen Bight Marine Park.	Limmen Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf bioregion. It includes one KEF: Gulf of Carpentaria coastal zone. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include internesting and foraging habitat for marine turtles.
Oceanic Shoals Marine Park	II, IV, VI	The Oceanic Shoals Marine Park is located within both the NWMR and NMR. Refer **Table 10-1** for description and conservation values.	
Wessel Marine Park	IV, VI	Wessel Marine Park covers an area of 5908 km^2 and is located ~22 km east of Nhulunbuy, NT. It extends from NT waters adjacent to the tip of the Wessel Islands to NT waters adjacent to Cape Arnhem.	Wessel Marine Park is significant because it contains habitats, species and ecological communities associated with the Northern Shelf bioregion. It includes one KEF: Gulf of Carpentaria basin. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding habitat for seabirds and internesting and foraging habitat for marine turtles.
West Cape York Marine Park	II, IV, VI	West Cape York Marine Park covers an area of 16,012 km^2 and is located adjacent to the northern end	West Cape York Marine Park is significant because it contains species and ecological communities associated with two bioregions: • Northeast Shelf Transition

Protected Area	IUCN Protected Area Category* or Relevant Park Zone	Description	Conservation Values
		of Cape York Peninsula ~25 km south-west of Thursday Island and 40 km north-west of Weipa, Queensland.	• Northern Shelf Province. It includes two KEFs: Gulf of Carpentaria basin; and Gulf of Carpentaria coastal zone. The AMP supports a range of species, including species listed as threatened, migratory, marine or cetacean under the EPBC Act. BIAs within the AMP include breeding and foraging habitat for seabirds, internesting and foraging habitat for marine turtles and dugong, and foraging, breeding and calving habitat for dolphins.
Territory Marine Parks and Reserves			
Cobourg Marine Park	II, IV, VI	Cobourg Marine Park covers an area of 2,290 km^2 and is located in the waters surrounding the Cobourg Peninsula ~220 km north-east of Darwin. The Marine Park is part of the larger Garig Gunak Barlu National Park. Garig Gunak Barlu National Park includes both the Marine Park and the Cobourg Sanctuary.	Cobourg Marine Park is located in the Cobourg and Van Diemen Gulf marine bioregions with the northern portion of the Park covered by the Cobourg marine bioregion and the southern portion covered by the Van Diemen Gulf marine bioregion. The Marine Park is characterised by a number of deeply incised bays and estuaries on its northern shores. These bays are ancient river valleys that were drowned during periods of sea level rise and provide a varied environment and habitat that is quite distinct from the open water areas of the Park. The areas of the Park that have been studied and where extensive collections have been made indicates that the Park supports rich and diverse marine life including live coral reefs, seagrass, diverse reef and pelagic fish populations, marine turtles and dugong.

**Conservation objectives for IUCN categories include:*

Ia: Strict Nature Reserve

Ib: Wilderness Area

II: National Park

III: Natural Monument or Feature

IV: Habitat/Species Management Area

V: Protected Landscape

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

IUCN categories for the marine park are provided and, in brackets, the IUCN categories for specific zones within each Marine Park as assigned under the North Marine Parks Network Management Plan 2018 (DNP, 2018c)

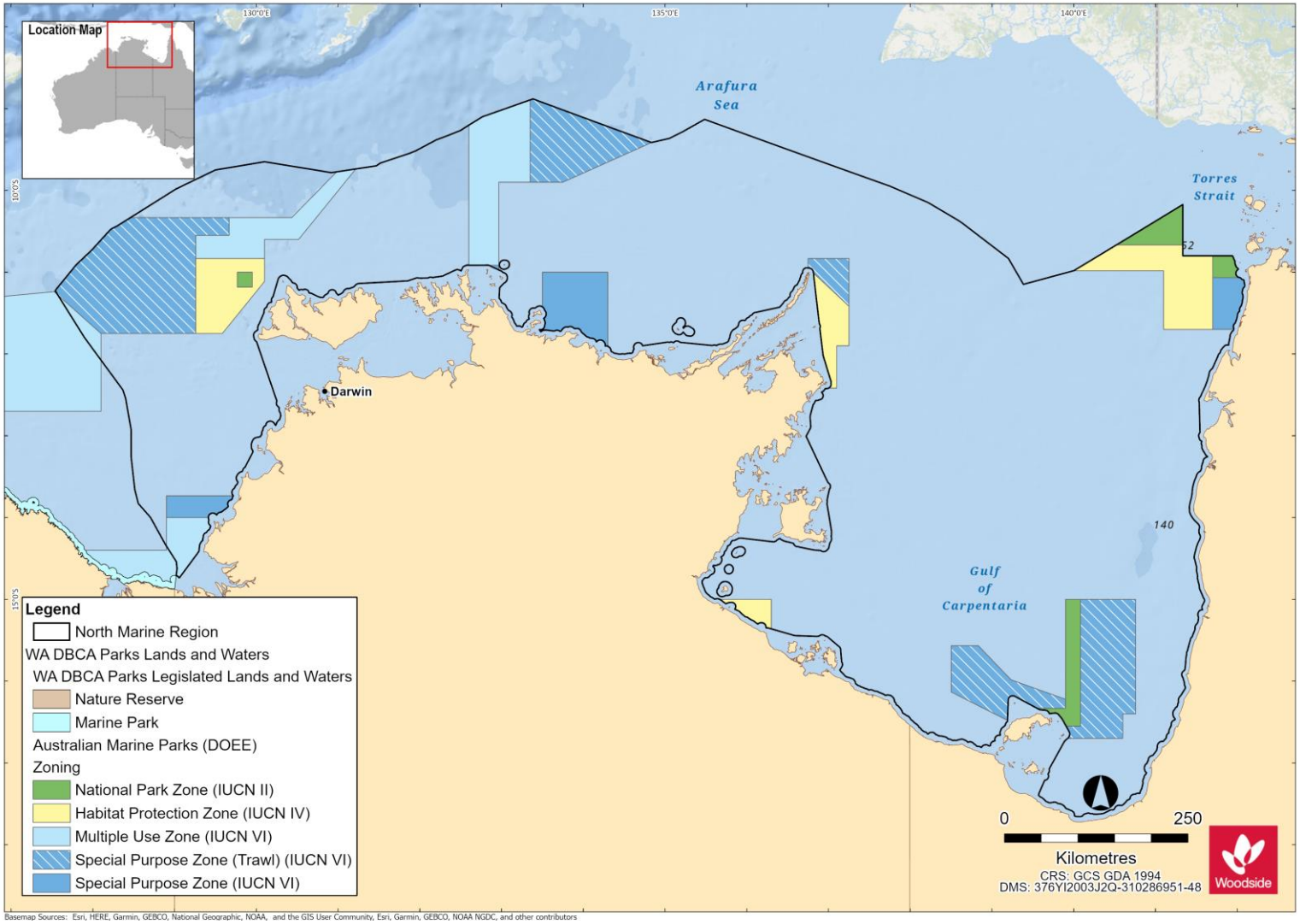

Figure 10-3. Commonwealth and State Marine Protected Areas within the NMR

11. SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

This section summarises the information relating to the socio-economic and cultural environment of the regions offshore Western Australia, with a focus on the NWMR and to a lesser extent the SWMR and NWR.

The cultural environment includes Indigenous and European heritage values, including underwater values such as historic shipwrecks. Socio-economic values include commercial and traditional fishing, tourism and recreation, shipping, oil and gas activities and defence activities.

11.1 Cultural Heritage

11.1.1 Indigenous Sites of Significance

Murujuga (the Burrup Peninsula) has a very high density of significant Indigenous heritage sites and places with tangible and intangible heritage values. The area has one of the largest, densest, and most diverse collections of rock art in the world. It is estimated that the peninsula and surrounding islands contain over a million petroglyphs (rock engravings) covering a broad range of styles and subjects. The landscape also contains quarries, middens, fish traps, rock shelters, ceremonial sites, artefact scatters, grinding patches and stone arrangements that evidence tens of thousands of years of human occupation. These places are linked to Aboriginal cosmology, Dreaming stories and songs through the stories, knowledge and customs that are still held by traditional custodians.

In 2007 the Dampier Archipelago (including the Burrup Peninsula) was included on the National Heritage List due to outstanding heritage values relating to Australia's cultural history contained in the large number, density, diversity, distribution and fine execution of rock art. Within the National Heritage Place, the Murujuga National Park covers 4913 ha and is co-managed by the Murujuga Aboriginal Corporation and the Department of Biodiversity, Conservation and Attractions. The Murujuga Cultural Landscape was also added to Australia's Tentative World Heritage List in 2020, with full World Heritage Listing anticipated in 2024.

Woodside also recognises the potential for heritage to survive in submerged landscapes. Sea-level rises since the last ice age mean that areas now under the sea were once exposed, that many of today's islands would have been connected to the mainland, and that Aboriginal people are highly likely to have inhabited these places. Woodside works with traditional custodians, academics and heritage professionals to identify tangible and intangible heritage values in the submerged landscape to avoid disturbing heritage where possible and to minimise impacts where heritage cannot be avoided.

It is an offence to excavate, destroy, damage, conceal or alter Indigenous heritage onshore or in state waters under section 17 of the *Aboriginal Heritage Act 1972 (WA) (AHA)* without ministerial authorisation. Where there is a risk of injury or desecration to a significant Aboriginal area, even where permitted under the AHA, any Aboriginal person may apply to the federal Environment Minister for a declaration under sections 9 or 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* for the protection and preservation of that area.

The Department of Planning, Lands and Heritage maintains a register of registered sites and heritage places including middens, burial, ceremonial [sites], artefacts, rock shelters, mythological [sites] and engraving sites. There are over 1600 registered sites on Murujuga and the Dampier Archipelago with around 1100 other heritage places. This register is not comprehensive and will be complemented by heritage surveys where necessary. Protection of National and World Heritage values is also legislated through various provisions of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*. Murujuga National Park is managed under the *Conservation and Land Management Act 1984 (WA)*.

11.1.2 European Sites of Significance

European sites of significance and heritage value are found along adjacent foreshores of the SWMR, NWMR and NWR. Heritage values are protected in Western Australia under the *Heritage Act 2018*.

11.1.3 Underwater Cultural Heritage

Places of historic cultural significance are protected under Commonwealth, State and local regimes. Places inscribed on the National or World Heritage list are protected through various provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth). Historic places may also be protected under the *Heritage Act 2018* (WA); under section 129 the prohibited alteration, demolition, damage, despoilment or removal of objects from a registered place may result in a fine of A$1 million. Protection of heritage by local government typically emanates from local planning schemes produced under Part 5 of the *Planning and Development Act 2005* (WA).

The remains of vessels and aircraft in Commonwealth waters, along with any associated article, are automatically protected under the *Underwater Cultural Heritage Act 2018* (Cth) after 75 years. Remains and relics of any ship lost, wrecked or abandoned in Western Australian waters before 1900 are protected by the *Maritime Archaeology Act 1973* (WA).

The Australian National Shipwreck Database and the WA Maritime Museum Shipwreck Database list these protected wrecks.

11.1.4 National and Commonwealth Listed Heritage Places

Australia's National Heritage Sites are those of outstanding natural, historic and/or Indigenous significance to Australia. National Heritage places classed as natural are discussed in **Section 10.3**. Historic and/or Indigenous National Heritage Listed Places of the NWMR include:

- Dampier Archipelago (including Burrup Peninsula)
- Dirk Hartog Landing Site/Cape Inscription
- HMAS Sydney II and the HSK Kormoran Shipwreck Sites
- Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos

Commonwealth Heritage Places are a collection of sites recognised for their Indigenous, historical and/or natural values, which are owned or controlled by the Australian Government. A number of these sites are owned or controlled by the Department of Defence, as well as Government agencies relating to maritime safety, customs and communication. Commonwealth Heritage places classed as natural are discussed in **Section 10.3**. Listed Heritage Places in the NWMR include:

- Mermaid Reef – Rowley Shoals (refer **Section 10.3**)
- Ashmore Reef National Nature Reserve (refer **Section 10.3**)
- Scott Reef and Surrounds – Commonwealth Area (refer **Section 10.3**)
- Ningaloo Marine Area (refer **Section 10.3**)

World Heritage Properties are those sites that hold universal value which transcends any value they may be held by any one nation. These sites and their qualities are detailed in the Convention concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), to which Australia is a founding member. The Protected Matters Search Report (**Appendix A**) lists two natural World Heritage Properties in the NWMR (refer **Section 10.2**). There are no cultural heritage listings located within the NWMR.

Summary tables of heritage places for NWMR, SWMR and NMR are presented in **Table 11-1,Table 11-2** and **Table 11-3**.

11.2 Summary of Heritage Places within the NWMR

Table 11-1 Heritage Places (Indigenous and Historic) within the NWMR

Heritage Places	Woodside Activity Area			Class	Description	Conservation Values
	Browse	NWS/S	NW Cape			
National Heritage Properties						
Dampier Archipelago (including Burrup Peninsula)	-	✓	-	Indigenous	The Dampier Archipelago (including the Burrup Peninsula) contains one of the densest concentrations of rock engravings in Australia with some sites containing thousands or tens of thousands of images.	The rock engravings comprise images of avian, marine and terrestrial fauna, schematised human figures, figures with mixed human and animal characteristics and geometric designs. At a national level it has an exceptionally diverse and dynamic range of schematised human figures some of which are arranged in complex scenes. The fine execution and dynamic nature of the engravings, particularly some of the composite panels, exhibit a degree of creativity that is unusual in Australian rock engravings.
Dirk Hartog Landing Site 1616 – Cape Inscription Area	-	-	✓	Historic	Cape Inscription is the site of the oldest known landings of Europeans on the WA coastline.	The Cape Inscription area displays uncommon aspects of Australia's cultural history because of the cumulative effect its association with these explorers and surveyors had on growing knowledge of the great southern continent in Europe. The association of the site with these early navigators stimulated the development of the European view of the great southern continent at a time when they began to look at the world with a modern scientific outlook.
Commonwealth Heritage Properties						
N/A						

11.3 Summary of Heritage Places within the NMR

Table 11-2 Heritage Places (Indigenous and Historic) within the NMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
None			
Commonwealth Heritage Properties			
None			

11.4 Summary of Heritage Places within the SWMR

Table 11-3 Heritage Places (Indigenous and Historic) within the SWMR

Heritage Places	Class	Description	Conservation Values
National Heritage Properties			
Cheetup Rock Shelter	Indigenous	Cheetup meaning “place of the birds” is the name of a spacious rock shelter located in Cape Le Grand National Park, about 55 km east of Esperance in WA. Aboriginal people associated with the place identify themselves as Nyungar/Noongar, Ngadju (shortened from Ngadjunmaia) or Mirning.	Cheetup rock shelter provides outstanding evidence for the antiquity of processing and use of cycad seeds by Aboriginal people. The seeds of the cycad are extremely toxic and can cause speedy death if eaten fresh without proper preparation to remove the toxins. The presence of *Macrozamia riedlei* seeds in a pit lined with Xanthorrhoea (grass tree) leaf bases indicates that the Aboriginal people in the Esperance region had the knowledge to remove the toxins of this important source of carbohydrate and protein at least 13,200 years ago.

Heritage Places	Class	Description	Conservation Values
Batavia Shipwreck Site and Survivor Camps Area 1629 – Houtman Abrolhos	Historic	The Batavia and its associated sites hold an important place in the discovery and delineation of the WA coastline. The wreck of the Batavia, and other Dutch ships like her, convinced the VOC (Dutch East India Company) of the necessity of more accurate charts of the coastline and resulted in the commissioning of Vlamingh's 1696 voyage.	Because of its relatively undisturbed nature the archaeological investigation of the wreck itself has revealed a range of objects of considerable value as well as to artefact specialists and historians.
HMAS Sydney II and HSK Kormoran Shipwreck Sites	Historic	The naval battle fought between the Australian warship HMAS Sydney II and the German commerce raider HSK Kormoran off the WA coast during World War II was a defining event in Australia's cultural history. HMAS Sydney II was Australia's most famous warship of the time and this battle has forever linked the stories of these warships to each other. The loss of HMAS Sydney II along with its entire crew of 645 following the battle with HSK Kormoran, remains as Australia's worst naval disaster.	The shipwreck sites of HMAS Sydney II and HSK Kormoran have outstanding heritage value to the nation because of their importance in a defining event in Australia's cultural history and for their part in development of the process of the defence of Australia.
Commonwealth Heritage Properties			
Cliff Point Historic Sites	Historic	Cliff Head is a limestone bluff on the east coast of Garden Island. Evidence of occupation has been reported from the beach just north of the head, the immediate hinterland, the ridge above and on the south face of the ridge.	The Cliff Point Historic Site, individually significant within the area of Garden Island is important as the first site inhabited by Governor Stirling's party in 1829 when founding the colony of WA, and as WA's first official non-convict settlement. The site was occupied in the first instance by Captain Charles Fremantle before the arrival of Captain Stirling. The party occupied the site for two months before a move was made to the Swan River settlement on the mainland.
HMAS Sydney II and HSK Kormoran Shipwreck Sites	Historic	As above	As above
J Gun Battery	Historic	J Battery comprised two 155 mm long range guns, the other similar battery being at Cape Peron on the mainland at the entrance to Cockburn Sound. Located in the dune systems at the north western	J Gun Battery (1942) is individually significant within the area of Garden Island (Register No. 019544) and is historically important as the first gun battery constructed on Garden Island and as one of two long range gun batteries which played a

Heritage Places	Class	Description	Conservation Values
		corner of Garden Island elements of the J Battery complex are now covered in part by sand.	strategic role in the coastal defences of Cockburn Sound and Fremantle following the entry of Japan into the Second World War (1939-45).

11.5 Fisheries - Commercial

11.5.1 Commonwealth and State Fisheries

The diverse range of habitats and species offshore WA has allowed for various fisheries to develop and operate throughout the region.

The Australian Fisheries Management Authority (AFMA) manages fisheries on behalf of the Commonwealth Government and is bound by objectives under the Commonwealth *Fisheries Management Act 1991*.

WA State commercial fisheries are managed by the WA Department of Primary Industries and Regional Development (WA DPIRD) under the WA *Fish Resources Management Act 1994* (FRMA), Fisheries Resources Management Regulations 1995, relevant gazetted notices and licence conditions, and applicable Fishery Management Plans.

Commonwealth and State managed fisheries that operate within the NWMR and in areas beyond this region are summarised in the **Table 11-4**.

Table 11-4 Commonwealth and State managed fisheries

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Commonwealth Managed Fisheries							
Southern Bluefin Tuna Fishery	✓	✓	✓	**Management area**	The Southern Bluefin Tuna Fishery (SBTF) covers the entire EEZ around Australia, out to 200 nm from the coast. They do not fish in the Woodside activity area.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Southern bluefin tuna (*Thunnus maccoyii*)		Longline and purse seine fishing.	Southern bluefin tuna is a pelagic species which can be found to depths of 500 m (AFMA, 2021a)
				Fishing effort	Most of the Australian fishing effort is by purse-seine vessels in the Great Australian Bight and waters off South Australia during summer months, and by longline off the New South Wales coastline during winter months (Patterson *et al*., 2020). SBTF is a fishery that is shared amongst many countries. Australia currently has a 35% share of the total global allowable catch, and while wild capture fishing in Australia to sell directly to market can occur anywhere throughout the SBTF's range, currently the vast majority of that quota is value-added through ranching (on-growing the wild captured fish for extra 5-6 months). Ranching requires significant infrastructure, a resident labour force, plus proximity to a fishery able to supply a large quantity of natural feed/sardines (40,000+ tonnes) (for example as available in Port Lincoln). North-west WA is critically important regardless of how the quota is fished because of the proximity to the single spawning ground of this global roaming species. The stock remains classified as overfished.		
				Active licences/vessels	Seven purse seine vessels, 20 longline vessels (Patterson *et al*., 2020).		
Western Skipjack Tuna Fishery	✓	✓	✓	**Management area**	The combined western and eastern skipjack tuna (*Katsuwonus pelamis*) fisheries (STF) encompass the entire Australian EEZ. The Western Skipjack Tuna Fishery (WSTF) extends westward from the SA/Victorian border across the Great Australian Bight and around the west coast of WA to the Cape York Peninsula.		

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Species targeted	**Fishing methods**	**Fishing depth**
				Western skipjack tuna (*Katsuwonus pelamis*)	Fishers use purse seine gear (about 98% of catch) and sometimes pole and line when fishing for skipjack tuna.	Western skipjack tuna is a pelagic species that can be found to depths of 260 m (AFMA, 2021b).
				Fishing effort:	The Skipjack Tuna Fishery (STF) has not been actively fished since the 2008-2009 fishing season (Patterson *et al*., 2020). The management arrangements for this fishery will be reviewed if active boats re-enter the fishery.	
				Active licences/vessels:	No active vessels operating since 2009.	
Western Tuna and Billfish Fishery	✓	✓	✓	**Management area**	The Western Tuna and Billfish Fishery (WTBF) extends to the Australian EEZ boundary in the Indian Ocean.	
				Species targeted	**Fishing methods**	**Fishing depth**
				Bigeye tuna (*Thunnus obesus*) Yellowfin tuna (*Thunnus albacares*) Swordfish (*Xiphias gladius*) Albacore (*Thunnus alalonga*) Striped marlin (*Kajikia audax*)	Fishers mainly use pelagic longline fishing gear to catch the targeted species. Minor line (including handline, troll, rod and reel) can also be used.	Species have a broad depth distribution, with tuna occurring at 150 – 300 m, striped marlin at 150 m and swordfish at up to 600 m (BRS, 2007).
				Fishing effort:	The WTBF operates in Australia's EEZ and high seas of the Indian Ocean. Fishing effort in recent years has been concentrated off south-west WA, with occasional activity off SA.	
				Active licences/vessels:	Two pelagic longline vessels and two minor longline vessels (Patterson *et al*., 2020).	
Western Deepwater Trawl Fishery			✓	**Management area**	The Western Deepwater Trawl Fishery (WDTF) is located in deep water off WA, from the line approximating the 200 m isobath to the edge of the Australian Fishing Zone (AFZ).	

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th></tr>
<tr><td></td><td></td><td></td><td></td><td>
<table>
<tr><th>Species targeted</th><th>Fishing methods</th><th>Fishing depth</th></tr>
<tr><td>More than 50 species, historically dominated by six commercial finfish species or species groups:
Orange roughy (Hoplostethus atlanticus)
Oreos (Oreosomatidae)
Boarfish (Pentacerotidae)
Eteline snapper (Lutjanidae: Etelinae)
Apsiline snapper (Lutjanidae: Apsilinae)
Sea bream (Lethrinidae)</td><td>Demersal trawl.</td><td>Water deeper than 200 m, stakeholder consultation has indicated that this may be to depths of 800 m.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">The number of vessels active in the fishery and total hours trawled have fluctuated from year to year. Notably, total hours trawled were relatively high for a brief period during the early 2000s when fishers targeted ruby snapper and deepwater bugs (Patterson et al., 2020). Total fishing effort has been variable but relatively low since then. Effort in 2018-2019 (492 trawl hours) was less than half that of 2017-2018 (1108 trawl hours) (Patterson et al., 2020).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">One active vessel in 2018-2019 (Patterson et al., 2020).</td></tr>
</table>
</td></tr>
<tr><td>North-west Slope Trawl Fishery</td><td>✓</td><td>✓</td><td></td><td>
<table>
<tr><td>Management area</td><td colspan="2">The North-west Slope Trawl Fishery (NWSTF) extends, from 114 °E to 125 °E, from the 200 m isobath to the outer limit of the AFZ (200 nm from the coastline, which is the boundary of the Australian EEZ).</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Australian scampi (Metanephrops australiensis) and smaller quantities of velvet and Boschma’s scampi (M. velutinus and M. boschmai)
Mixed snappers have historically been an important component of the catch.</td><td>Demersal trawl.</td><td>Typically at depths of 350 to 600 m (Patterson et al., 2017), however stakeholder consultation has indicated that this may be to depths of 800 m.</td></tr>
</table>
</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Fishing effort:	The NWSTF commenced in 1985 and the number of active vessels peaked at 21 in the 1986-1987 season and declined through the 1990s before increasing to 10 vessels in 2000-2001 and 2002-2002 seasons. Four vessels operated in the 2017-2018 and 2018-2019 seasons (Patterson *et. al*. 2020). Fishing for scampi occurs over soft, muddy sediments or sandy habitats, using demersal trawl gear on the continental slope (Patterson *et al*., 2017).		
				Active licences/vessels:	Four vessels (Patterson *et. al*., 2020).		
State Managed Fisheries							
Pilbara Fish Trawl (Interim) Managed Fishery		✓		**Management area**	The Pilbara Trawl (Interim) Managed Fishery is of high intensity and is divided into two zones and an area governed by Schedule 5 (prohibited to trawling). In addition to the Prohibited Trawl Fishing area, no fish trawl units are allocated for use in Zone 1 or Areas 3 and 6 of Zone 2 (which comprises six management areas) (Newman *et al*., 2020a). No fish trawl units have been allocated for use in Area 6 of Zone 2 since the management plan commenced operation in 1998.		
				Species targeted		**Fishing methods**	**Fishing depth**
				The Pilbara Fish Trawl (Interim) Managed Fishery (PFTIMF) targets more than 50 scalefish species. The five main demersal scalefish species landed by the fisheries in the Pilbara region are blue-spotted emperor, crimson snapper, rosy threadfin bream, red emperor and goldband snapper in 2018 (Newman *et al*., 2020a).	Demersal trawl.	The Pilbara Fish Trawl Fishery lands the largest component of the catch and operates in waters between 50 and 200 m water depth (Allen *et al*., 2014, Newman et al. 2015). Stakeholders have advised that trawling can occur in depths of up to approximately 800 m.
				Fishing effort:	Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years:		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
					Pilbara Trawl (Interim) Managed Fishery caught 1996 t in 2018-19, 1780 t in 2017-18, 1529 t in 2016-17, 1172 t in 2015-16, 1105 t in 2014-15.		
				Active licences/vessels:	Two Pilbara Trawl (Interim) Managed Fishery vessels in 2017 (Newman *et al*., 2020a). Active vessels data are confidential as there were fewer than three vessels in the Pilbara Fish Trawl Interim Managed Fishery (Newman *et al*., 2020a).		
Pilbara Trap Managed Fishery		✓	✓	**Management area**	The Pilbara Trap Fishery covers the area from Exmouth northwards and eastwards to the 120° line of longitude, and offshore as far as the 200 m isobath. Like the trawl fishery, the trap fishery is also managed using input controls in the form of individual transferable effort allocations monitored with a satellite-based vessel management system. The fishery includes six licences allocated to three vessels, operating principally from Onslow.		
				Species targeted		**Fishing methods**	**Fishing depths**
				Pilbara Trap Managed Fishery catch is made up of around 45-50 different fish species. The four main species landed by the fisheries in the Pilbara region are blue-spotted emperor, red emperor, goldband snapper and Rankin cod.		Demersal fish traps.	Greatest effort in waters less than 50 m depth targeting high value species such as red emperor and goldband snapper.
				Fishing effort	Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years: Pilbara Trap Managed Fishery caught 563 t in 2018-19, 573 t in 2017-18, 495 t in 2016-17, 510 t in 2015-16, 268 t in 2014-15. In 2018, the total catch for the Pilbara Trap Managed Fishery was 563 t, making up 21% of the total catch by the Pilbara Demersal Scale Fishery (Newman *et al*., 2019).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels	In the 2019 season, there were six licences in the Pilbara Trap Managed Fishery, (Newman *et al*., 2020a). Active vessels data are confidential as there were fewer than three vessels in the Pilbara Trap Managed Fishery (Newman *et al*., 2019).		
Pilbara Line Managed Fishery		✓	✓	**Management area**	The Pilbara Line Managed Fishery boat licences are permitted to operate anywhere within "Pilbara waters", bounded by a line commencing at the intersection of 21°56'S latitude and the high water mark on the western side of the North-west Cape on the mainland of WA; west along the parallel to the intersection of 21°56'S latitude and the boundary of the AFZ and north to longitude 120°E.		
				Species targeted		**Fishing method**	**Fishing depths**
				The Pilbara Line Managed Fishery catch is made up around 45-50 different fish species. The Pilbara Line Managed Fishery targets similar demersal species to the Pilbara Trap and Trawl fisheries, as well as some deeper offshore species such as ruby snapper and eightbar grouper The Pilbara Line Managed Fishery operates on an exemption basis that enables licence holders to fish for any nominated five-month block during the year.		Demersal long line.	Pilbara Line Fishing Depth: Operates up to a depth of 600 m.
				Fishing effort	Based on State of the Fisheries annual reports provided by DPIRD, catch trends are seen to be increasing over the past reporting years: Pilbara Line Managed Fishery caught 93 t in 2018-19, 143 t in 2017-18, 126 t in 2016-17, 97 t in 2015-16, 40 t in 2014-15. The total catch in 2018 for the Pilbara Line Managed Fishery was 93 t, making up 3% of the total catch by the Pilbara Demersal Scalefish Fishery (Newman *et al*., 2019).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels	In the 2018 season there are nine individual licences in the Pilbara Line Fishery, held by seven operators. Active vessels data is confidential as there were fewer than three vessels in the Pilbara Line Fishery (Newman *et al*., 2018).		
Mackerel Managed Fishery	✓	✓	✓	**Management area**	The commercial fishery extends from Geraldton to the Northern Territory border. There are three managed fishing areas: Kimberley (Area 1), Pilbara (Area 2), and Gascoyne and West Coast (Area 3).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Spanish mackerel (*Scomberomorus commerson*) Grey mackerel (*S. semifasciatus*) Other species from the genus *Scomberomorus*		Near-surface trawling gear. Jig fishing.	Previous engagement with WAFIC suggests that the depth of fisheries may extend to 70 m.
				Fishing effort:	Most of the catch is taken from waters off the Kimberley coasts (Lewis and Brand-Gardner, 2018), reflecting the tropical distribution of mackerel species (Molony *et al.*, 2015). Most fishing activity occurs around the coastal reefs of the Dampier Archipelago and Port Hedland area, with the seasonal appearance of mackerel in shallower coastal waters most likely associated with feeding and gonad development before spawning (Mackie *et al.*, 2003). Based on State of the Fisheries annual reports provided by DPIRD, catch trends are as follows: 213 t in 2018-19 (the lowest on record (Lewis *et al*., 2020), 283 t in 2017-18, 276 t in 2016-17, 302 t in 2015-16, 322 t in 2014-15.		
				Active licences/vessels:	Fifteen boats fished in 2018, with approximately 35-40 people directly employed in the Mackerel Managed Fishery, primarily from May-November (Lewis *et al*., 2020).		
Marine Aquarium Managed Fishery	✓	✓	✓	**Management area**	The Marine Aquarium Managed Fishery is able to operate in all State waters. The fishery is typically more active in waters south of Broome and higher levels of effort around the Capes region, Perth, Geraldton, Exmouth, Dampier and Broome (Newman *et al.*, 2020b).		
				Species targeted		**Fishing methods**	**Fishing depth**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Finfish, hard coral, soft coral, tridacnid clams, syngnathids (seahorses and pipefish), other invertebrates (including molluscs, crustaceans, echinoderms etc.), algae, seagrasses and 'live rock'.	The fishery is diver-based, which typically restricts effort to safe diving depths (less than 30 m).	Less than 30 m, as advised by WAFIC.
				Fishing effort:	Total catch for the Marine Aquarium Managed Fishery in 2018 was 156,188 fishes, 32.025 t of coral, live rock and living sand and 176.02 L of marine plants and live feed.	
				Active licences/vessels:	Eleven licences were active in 2019 (Newman *et al.*, 2020b).	
Beche-de-mer Fishery	✓	✓	✓	**Management area**	Fishing occurs in the northern half of WA from Exmouth Gulf to the NT border and is managed under Ministerial Exemptions.	
				Species targeted	**Fishing methods**	**Fishing depth**
				The sea cucumber fishery targets two main species: sandfish (*Holothuria scabra*) and redfish (*Actinopyga echinites*).	Diving	The targeted species typically inhabit nearshore in shallow depths.
				Fishing effort	Based on State of the Fisheries annual reports provided by DPRID, catch trends are as follows: 62t in 2018 (Gaughan and Santoro, 2020), 135t in 2017, 93t in 2016, 38t in 2015	
				Active licences/vessels	Six active licences in 2019 (Hart *et al*., 2019). Active vessels data is confidential as there were fewer than three vessels.	
Onslow Prawn Managed Fishery		✓		**Management area**	The Onslow Prawn Managed Fishery encompasses a portion of the continental shelf off the Pilbara.	
				Species targeted	**Fishing methods**	**Fishing depth**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				The fishery targets: Western king prawns (*Penaeus esculentus*) Brown tiger prawns (*Penaeus esculentus*) Blue endeavour prawns (*Metapenaeus endeavouri*	Low opening, otter prawn trawl systems.	Prawn trawling takes place in water depths of approximately 30 metres and less (licence holder feedback). Fishery and or fishing activity overlaps the Beadon Creek dredging scope (Sporer *et al*., 2015).
				Fishing effort:	The total landings for the Onslow Prawn Managed Fishery in 2018 were less than 60 t below the target catch range (Kangas *et al.*, 2020a).	
				Active licences/vessels:	One vessel (Kangas *et al.*, 2020a).	
Pearl Oyster Managed Fishery	✓	✓	✓	**Management area**	Located in shallow coastal waters with the pearl oyster managed fishery designated by four zones extending from Exmouth to Kununurra and the seaward boundary demarcated by the 200 nm EEZ.	
				Species targeted	**Fishing methods**	**Fishing depth**
				Pearl oysters (*Pinctada maxima*).	Drift diving.	Fishing effort is mostly focussed in shallow coastal waters (10-15 m depth), with a maximum depth of 35 m (Lulofs *et al.* 2002).
				Fishing effort:	In 2018, catch was taken from Zones 2 and 3 with no fishing in Zone 1. The number of pearl oysters caught for 2018-19 was 614,002. Total effort was 15,637 dive hours, this was an increase from 2017 effort of 12,845 hours. No fishing occurred in Zone 1 in 2017 and 2018 (Gaughan and Santoro, 2020).	
				Active licences/vessels:	15,637 diver hours (Hart *et al.*, 2020a).	
		✓	✓	**Management area**	The Pilbara Crab Managed Fishery comprises WA waters off the north-western coast of WA north of 23° 34′ south latitude and west of 120° 00′ east longitude. Areas of the fishery north and east of Exmouth and	

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Pilbara Crab Managed Fishery					nearshore are currently closed as per Schedule 2 of the Draft Management Plan for the Pilbara Crab Managed Fishery.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Crabs of the Family Portunidae, excluding crabs of the genus *Scylla*.		Traps.	Up to 50 m deep.
				Fishing effort:	The capacity of the fishery is 600 traps.		
				Active licences/vessels:	No information available at this time.		
South-west Coast Salmon Managed Fishery	✓	✓	✓	**Management area**	The South-west Coast Salmon Managed Fishery operates on various beaches south of the metropolitan area and includes all WA waters north of Cape Beaufort except Geographe Bay.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western Australian salmon (*Arripis truttaceus*)		Beach seine nets.	Information not available however, species generally found in shallow waters (up to 30 m).
				Fishing effort:	No fishing occurs north of the Perth metropolitan area, despite the managed fishery boundary extending to Cape Beaufort (WA/Northern Territory border), as advised by WAFIC. The 2018 commercial catch was 191 t, with 72% taken by the South West Coast Salmon Managed Fishery, 25% by the South Coast Salmon Managed Fishery and 3% by other fisheries (Duffy and Blay, 2020a).		
				Active licences/vessels:	Six licences.		
	✓	✓	✓	**Management area**	The Specimen Shell Managed Fishery (SSMF) encompasses the entire WA coastline, but effort is concentrated in areas adjacent to the population centres such as Broome, Exmouth, Shark Bay,		

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th></tr>
<tr><td>Specimen Shell Managed Fishery</td><td></td><td></td><td></td><td colspan="4">
<table>
<tr><td></td><td colspan="3">Geraldton, Perth, Mandurah, the Capes area and Albany (Hart et al., 2020b). There are a number of closed areas where the SSMF is not permitted to operate. These include various marine parks and aquatic reserves, such as Ningaloo Marine Park.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The Specimen Shell Managed Fishery targets the collection of specimen shells for display, collection, cataloguing and sale.</td><td>Collection is predominantly by hand when diving to wading in shallow, coastal waters, though in deeper water collection may be conducted by remotely operated vehicles (limited to one per licence).</td><td>For collection by hand, (diver-based) this typically restricts effort to safe diving depths (less than 30 m).
ROV collection could enable depths up to 300 m (Hart et al., 2017). In the past there has been one licence holder in the Specimen Shell Managed Fishery who has trialled ROV means of shell collection, WAFIC have provided advice that this fishery is no longer active.</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">Information not available.</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="3">In 2018 there were 31 licences with only two divers allowed in the water per licences at one time (Hart et al., 2018). The number of people employed regularly in the fishery is likely to be about 21 (Hart et al., 2018).</td></tr>
</table>
</td></tr>
<tr><td>West Australian Abalone Fishery</td><td>✓</td><td>✓</td><td>✓</td><td colspan="4">
<table>
<tr><td>Management area</td><td colspan="3">The Western Australian Abalone Fishery includes all coastal waters from the WA and SA border to the WA and NT border. The fishery is concentrated on the south coast and the west coast.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">Greenlip abalone (Haliotis laevigata)
Brownlip abalone (Haliotis conicopora)
Roe’s abalone (Haliotis roei)</td><td>Divers.</td><td>Distribution to 5 m depth for Roe’s abalone and 40 m depth for greenlip / brownlip abalone (DOF, 2011).</td></tr>
</table>
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<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="4" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Fishing effort:</td><td colspan="3">In 2018, the total commercial catch was 48 t, 1 t less than the catch in each of the last two seasons. No commercial fishing for abalone north of Moore River (Zone 8 of the managed fishery) has occurred since 2011–2012 (Strain et al., 2018).</td></tr>
<tr><td></td><td></td><td></td><td></td><td>Active licences/vessels:</td><td colspan="3">26 vessels active in Roe’s abalone fishery (WAFIC[5]).</td></tr>
<tr><td rowspan="5">West Coast Deep Sea Crustacean Managed Fishery</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td rowspan="5">✓</td><td>Management area</td><td colspan="3">The West Coast Deep Sea Crustacean Managed Fishery extends north from Cape Leeuwin to the WA/NT border in water depths greater than 150 m within the AFZ.</td></tr>
<tr><td colspan="2">Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td colspan="2">The fishery targets deepwater crustaceans. Catches were dominated by crystal crabs of which 99% of their Total Allowable Catch (TAC) was landed (How and Orme, 2020a).
Crystal (snow) crab (Chaceon albus)
Giant (king) crab (Pseudocarcinus gigas)
Champagne (spiny) crabs (Hypothalassia acerba)</td><td>Baited pots, or traps, are operated in long-lines which have between 80 and 180 pots attached to a main line marked by a float at each end.</td><td>Deeper than 150 m (and mostly at depths of between 500 m – 800 m). Most of the commercial Crystal crab catch is taken in depths of 500 m – 800 m (WAFIC[6]).</td></tr>
<tr><td>Fishing effort:</td><td colspan="3">The total landings in 2018 was 168. t. Two vessels operated in the fishery in 2017, using baited pots operated in a longline formation in the shelf edge waters, mostly in depths between 500 and 800 m (How and Orme, 2020a). Fishing effort was concentrated between Fremantle and Carnarvon.</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="3">There were four active vessels in 2018 (How and Orme, 2020a).</td></tr>
</table>

[5] https://www.wafic.org.au/fishery/roes-abalone-fishery/

[6] https://www.wafic.org.au/fishery/west-coast-deep-sea-crustacean-fishery/

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
Abrolhos Islands and Mid-West Trawl Fishery			✓	**Management area**	The Abrolhos Islands and Mid-West Trawl Fishery (AIMWTMF) operates around the Abrolhos Islands within the SWMR.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Saucer scallops (*Ylistrum balloti,* formerly *Amusium balloti*)		Trawl.	Information not available, however, the species occurs at depth of around 30-60 m and therefore fishing effort would likely be at these depths (Himmelman *et al*., 2009).
				Fishing effort:	The scallop landings in the AIMWTMF were 31.0 t meat weight (154.8 t whole weight). Between 2011 and 2015, the annual pre-season surveys showed very low recruitment (1-year old), as a result of the 2011 extreme marine heatwave and subsequent poor pawning stock (Kangas *et al.*, 2020b). The fishery was closed between 2011 and 2016.		
				Active licences/vessels:	Information about licences or vessels is not available but the Department of Primary Industry and Regional Development reported 774 t of catch from this fishery in the 2019 annual report (DPIRD, 2019).		
Broome Prawn Managed Fishery	✓			**Management area**	The Broome Prawn Managed Fishery (BPMF) operates off Broome and forms part of the North Coast Prawn Fishery.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*) Coral prawn		Trawl.	Trawling is generally in waters between 30 and 60 m deep, however can occur down to 100 m (DOEH, 2004).
				Fishing effort:	BPMF recorded extremely low fishing effort in 2018. Only two vessels undertook trial fishing to investigate whether the catch rates were sufficient for commercial fishing. This resulted in negligible landings of Western king prawn (Kangas *et al*., 2020a).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	Two vessels conducting fishing trial operated in 2018 (Kangas *et al*., 2020a).		
Exmouth Gulf Prawn Managed Fishery			✓	**Management area**	The estimated employment in the fishery in 2017 was 18 people including skippers and other crew (Kangas *et al*., 2018). The fishery occupies a total area of 4000 km², with only half of this area being trawled (Fletcher and Santoro, 2015).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*) Brown tiger prawn (*Penaeus esculentus*) Blue endeavour prawn (*Metapenaeus endeavouri*) Banana prawn (*Penaeus merguinensis*)		Trawl.	Information not available.
				Fishing effort:	The total landings of prawns in 2018 were 880 t (Kangas *et al*., 2020a). In the 2016 season, a fishing effort of about 23,000 hours resulted in a catch of 822 t.		
				Active licences/vessels:	The precise number of vessels is unreported. Eighteen people were said to be employed in this fishery in 2018 (Kangas *et al.*, 2019); however, in 2013 it was reported that 18 skippers as well as other crew and support staff were employed (WAFIC[7]).		
Gascoyne Demersal Scalefish Managed Fishery			✓	**Management area**	The Gascoyne Demersal Scalefish Fishery (GDSF) is located between the southern Ningaloo Coast to south of Shark Bay (23°07.30'S to 26°.30'S) with a closure area at Point Maud to Tantabiddi (21°56.30'S) (WAFIC[8]).		
				Species targeted		**Fishing methods**	**Fishing depth**

[7] https://www.wafic.org.au/fishery/exmouth-gulf-prawn-fishery/

[8] https://www.wafic.org.au/fishery/gascoyne-demersal-scalefish-fishery/

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Pink snapper (*Chrysophrys auratus*) Goldband snapper (*Pristipomoides multidens*) Red emperor (*Lutjanus sebae*) Cods (*Gadus morhua*) Emperors (*Lethrinus miniatus)*	Mechanised handlines.	Information not available.
				Fishing effort:	The GDSF reported a total commercial catch of 210 t in 2017-18.	
				Active licences/vessels:	In 2018, 13 vessels fished during the season, in the 2017 season there were 16 vessels (Gaughan and Santoro, 2018).	
Kimberley Developing Mud Crab Fishery	✓			**Management area**	The Kimberley Developing Mud Crab Fishery is one of two small trap-based crab fisheries that exist in the North Coast Bioregion between Cambridge Gulf and Broome (Gaughan and Santoro, 2018).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Brown mud crab (*Scylla olivacea*) Green mud crab (*Scylla serrata*)	Trap.	Information not available.
				Fishing effort:	The catch landed represents all commercially caught mud crabs landed in WA for 2018. A nominal catch rate of 0.66 kg/traplift was recorded for 2018, which is a 28% decrease from 2017 but remains above the harvest strategy threshold (Johnston *et al*., 2020).	
				Active licences/vessels:	There are currently three licences issued to commercial operators (600 trap limit), and three exemptions issued to Indigenous groups (total of 210 traps currently allocated of a maximum 600 traps) (Johnston *et al*., 2020).	
Nickol Bay Prawn Managed Fishery		✓		**Management area**	The Nickol Bay Prawn Managed Fishery operates in nearshore and offshore waters of the Pilbara region along the NWS.	
				Species targeted	**Fishing methods**	**Fishing depth**

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Banana prawn (*Penaeus merguiensis*) Western king prawn (*Penaeus latisulcatus*) Brown tiger prawn (*Penaeus esculentus*) Blue endeavour prawn (*Metapenaeus endeavouri*)	Trawl.	Information not available.
				Fishing effort:	Trawling has been reported to occur at several locations along the Pilbara coast to the east of the Burrup Peninsula, including within the waters of Nickol Bay (Fletcher and Santoro, 2015). The total landings for the 2018 season were 81 t. Fishing effort was less than half at 138 days, compared to 281 boat days in 2017 (Kangas *et al*., 2020a).	
				Active licences/vessels:	The precise number of vessels is unreported, though low effort produced a catch of 17 t in 2016 (Kangas *et al.*, 2018).	
Northern Demersal Scalefish Managed Fishery	✓			**Management area**	The fishery is divided into two fishing areas: an inshore sector (Area 1) and an offshore sector (Area 2) (Newman *et al.*, 2018). Area 1 permits line fishing only, between the high water mark and the 30 m isobath. Area 2 permits handline, dropline and fish trap fishing methods and is further divided into zones. Zone A is an inshore area, Zone B comprises the area with most historical fishing activity, and Zone C is an offshore deep slope area representing waters deeper than 200 m (Fletcher *et al.*, 2017).	
				Species targeted	**Fishing methods**	**Fishing depth**
				Goldband snapper (*Pristipomoides multidens*) Blue-spotted emperor (*Lethrinus punctulantus*) Red emperor (*Lutjanus sebae*) Rankin cod (*Epinephelus multinotatus*)	Line fishing, handline, dropline and fish trap fishing.	Information not available.

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Fishing effort:	In 2018, the fishery reported a total catch of 1297 t. Most of the catch is landed from Zone B, with a catch of 1106 t in 2018. The level of catch in Zone B is the highest reported since zoning was implemented in 2006 (Newman *et al.*, 2019).		
				Active licences/vessels:	Six vessels fished in the 2018 season and at least 20 people were directly employed (Gaughan and Santoro, 2018).		
Octopus Interim Management Fishery				**Management area**	The developing Octopus Fishery operates from Kalbarri Cliffs in the north to Esperance in the south.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Octopus sp. cf. tetricus		Passive shelter pots and active traps.	In inshore waters to a depth of 70 m (DPIRD, 2018).
				Fishing effort:	In 2019, the total commercial octopus catch was 314 t, which was 22% higher than the 2017 catch of 257 t. In 2016, about 200 vessels reported a total catch of 252 t (Hart *et al.*, 2020c).		
				Active licences/vessels:	About 21 vessels fish within the octopus specific fisheries, and about 200 vessels from the West Coast Rock Lobster Fishery catch octopus as bycatch (Gaughan and Santoro, 2018).		
Shark Bay Beach Seine and Mesh Net Managed Fishery				**Management area**	The Shark Bay Beach Seine and Mesh Net Managed Fishery operates from Denham.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Whiting *(*yellowfin *Sillago schomburgkii* and goldenline *S. analis*) Sea mullet *(Mugil cephalus*) Tailor (*Pomatomus saltatrix*) Western yellowfin bream (*Acanthopagrus australis*)		Beach seine and mesh net.	Information not available.

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Fishing effort:	In 2018, the total catch was 176 t (Gaughan and Santoro, 2020). The fishery currently employs about 14 fishers based on the seven fishery licences in operation (WAFIC[9]).		
				Active licences/vessels:	Six vessels operated employing around 12 fishers (Gaughan and Santoro, 2018).		
Shark Bay Crab Managed Fishery				**Management area**	The Shark Bay Crab Managed Fishery operates within the NWMR.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Blue swimmer crab (*Portunus armatus*)		Trap and trawl.	Information not available.
				Fishing effort:	Commercial fishing for blue swimmer crabs in Shark Bay was voluntarily halted by industry in 2012 to facilitate stock rebuilding. The stock is still in a recovery phase; however, the fishery has resumed and reported a total commercial catch of 518 t in the 2017/18 season. The average commercial trap catch rate was 1.5 kg/traplift during 2017/18 (Chandrapavan *et al.*, 2017).		
				Active licences/vessels:	The precise number of vessels in the Shark Bay Blue Swimmer Crab Fishery is unreported. There are five crab trap permits. These permits are consolidated onto three active vessels (WAFIC[10]).		
Shark Bay Prawn and Scallop Managed Fishery				**Management area**	The Shark Bay Prawn Managed Fishery is the highest producing WA fishery for prawns.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western king prawn (*Penaeus latisulcatus*) Brown tiger prawn (*Penaeus esculentus*)		Low-opening otter trawls.	Information not available.

[9] https://www.wafic.org.au/fishery/inner-shark-bay-scalefish-fishery/

[10] https://www.wafic.org.au/fishery/shark-bay-prawn-and-scallop-managed-fisheries/

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
				Endeavour prawns (*Metapenaeus endeavouri*) Coral prawns (*Metapenaeopsis sp*.) Saucer scallop (*Amusium balloti*)		
				Fishing effort:	The Shark Bay Scallop Managed Fishery is currently in a recovery phase due to the results from the pre-season survey of stock abundance (Fletcher and Santoro, 2015; Kangas *et al.*, 2018).	
				Active licences/vessels:	The precise number of vessels in the Shark Bay Prawn Managed Fishery is unreported; however, about 100 people are employed in this fishery (Gaughan and Santoro, 2018). About 20 skippers and crew are employed in scallop fishing in the Shark Bay and South Coast fisheries across 18 vessels in 2015 (Sporer *et al.*, 2015).	
South Coast Crustacean Managed Fishery	-	-	-	**Management area**	The South Coast Crustacean Managed Fishery comprises four fisheries: the Windy Harbour/Augusta Rock Lobster Managed Fishery, the Esperance Rock Lobster Managed Fishery, the Southern Rock Lobster Pot Regulation Fishery and the South Coast Deep-Sea Crab Fishery.	
				Species targeted	**Fishing methods**	**Fishing depth**
				Southern rock lobster (*Jasus edwardsii*) Western rock lobster (*Panulirus cygnus*) Giant crab (*Pseudocarcinus gigas*) Crystal crab (*Chaceon albus*) Champagne crab (*Hypothalassia acerba*)	Pots.	Information not available.
				Fishing effort:	The South Coast Crustacean Managed Fishery reported a total catch of 101.2 t in 2018 season and the value of the fishery for 2017/2018 was about $5.9 million (Howe and Orme, 2020b).	
				Active licences/vessels:	The number of vessels is unknown; however, a total of 1977 pots are licensed to be used.	
	-	-	-	**Management area**	The fishery is active in coastal waters between Cape Leeuwin and the South Australia border. Landings are primarily at Albany, Bremer Bay and Esperance (Norriss and Blazeski, 2020).	

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th></tr>
<tr><td>South Coast Purse Seine Managed Fishery</td><td></td><td></td><td></td><td>
<table>
<tr><th>Species targeted</th><th>Fishing methods</th><th>Fishing depth</th></tr>
<tr><td>Small pelagic finfish such as pilchards and yellowtail scad using purse seine nets from vessels.
Sandy sprat (Hyperlophus vittatus)
Blue sprat (Spratelloides robustus)</td><td>Purse seine.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">In the 2017/18 season the total catch effort was 2,168 t (Norriss and Blazeski, 2020).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">Nine active vessels in 2017/18 (Norriss and Blazeski, 2020).</td></tr>
</table>
</td></tr>
<tr><td>South-west Trawl Managed Fishery</td><td>-</td><td>-</td><td>-</td><td>
<table>
<tr><td>Management area</td><td colspan="2">The South-west Trawl Managed Fishery is a multi-species fishery and includes two of WA’s smaller scallop fishing grounds at Fremantle and north of Geographe Bay (Fairclough and Walters, 2018).</td></tr>
<tr><th>Species targeted</th><th>Fishing methods</th><th>Fishing depth</th></tr>
<tr><td>Scallops (Ylistrum balloti, formerly Amusium balloti) and associated by-products
Western king prawn (Penaeus latisulcatus)
In years of low scallop catches licencees may use other trawl gear to target fin-fish species.</td><td>Trawl.</td><td>Information not available.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">Effort in the fishery is highly variable and typically fluctuates in response to recruitment variability in saucer scallops and prawns. The fishery was not active in 2015 or 2016 (Fairclough and Walters, 2018).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">Only one boat fished in 2018 for a total of 5 boat days for minimal catch (Fairclough and Walters, 2018).</td></tr>
</table>
</td></tr>
</table>

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
The South Coast Salmon Managed Fishery	-	-	-	**Management area**	The South Coast Salmon Managed Fishery is one of two fisheries operating in the South Coast Bioregion that target nearshore and estuarine finfish.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Western Australian salmon (*Arripis truttaceus*) Southern school whiting (*Sillago bassensis*) Australian herring (*Arripis georgianus*) King George whiting (*Sillaginodes punctatus*) Sea mullet (*Mugil cephalus*) Estuary cobbler (*Cnidoglanis macrocephalus*) Black bream (*Acanthopagrus butcheri*)		Beach seines, haul nets and gill nets.	Information not available.
				Fishing effort:	The total catch for 2018 was 243 t (Duffy and Blay, 2020b).		
				Active licences/vessels:	Number of vessels is unknown; however, 12 commercial fishers were employed in 2018 (Duffy and Blay, 2020b).		
West Coast Beach Bait Managed Fishery	-	-	-	**Management area**	Primarily active in the Bunbury areas in the SWMR.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Whitebait		Beach-based haul nets.	Information not available.
				Fishing effort:	In recent years the fishery is primarily active in the Bunbury area. Total catch of whitebait in 2015 was 40.2 t (Duffy and Blay, 2020c).		

Fishery	Woodside Activity Area			Description			
	Browse	NWS/S	NW Cape				
				Active licences/vessels:	Number of vessels is unknown; however, only one license was issued (DPIRD, 2019).		
West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery	-	-	-	**Management area**	The West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery (WCDGDLF) is part of the Temperate Demersal Gillnet and Demersal Longline Fishery (TDGDLF), which operates between 26° and 33° S, and the Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery (JASDGDLF), which operates from 33° S to the WA/SA border (Braccini and Blay, 2020).		
				Species targeted		**Fishing methods**	**Fishing depth**
				Gummy shark (*Mustelus antarcticus*) Dusky shark (*Carcharhinus obscurus*) Whiskery shark (*Furgaleus macki*) Sandbar shark (*C. plumbeus*)		Gillnet and longline.	Information not available.
				Fishing effort:	Catch estimated annual value of the fishery was $0.2 million for 2017 to 2018 (Braccini and Blay, 2020).		
				Active licences/vessels:	Vessel numbers are unknown; however, 17 interim managed fishery permits were held in 2019 (DPIRD, 2019) and between 18 and 21 skippers and crew were employed between 2016 and 2017.		
West Coast Demersal Scalefish Fishery	-	-	-	**Management area**	These fisheries include the West Coast Demersal Scalefish (Interim) Managed Fishery (51 boats), the West Coast Demersal Gillnet and Demersal Longline (Interim) Managed Fishery and the temperate Demersal Gillnet and Demersal Longline Fisheries. The West Coast Demersal Scalefish Managed Fishery is the main commercial fishery that targets demersal species in the West Coast Bioregion. It encompasses the waters from just south of Shark Bay down to just east of Augusta and extends seaward to the 200 nm boundary. The fishery is divided into four inshore management areas and one offshore management area.		
				Species targeted		**Fishing methods**	**Fishing depth**
				Baldchin groper (*Choerodon rubescens*) Dhufish (*Glaucosoma hebraicum*) Pink snapper *(Pagrus auratus*)		Lines.	Inshore species – 20 to 250 m water depth.

Fishery	Woodside Activity Area			Description		
	Browse	NWS/S	NW Cape			
						Offshore species – more than 250 m water depth.
				Fishing effort:	In 2016, the West Coast Demersal Scalefish (interim) Managed Fishery reported a total catch of 256 t.	
				Active licences/vessels:	The precise number of vessels in the West Coast Demersal Scalefish Fisheries is unreported; however, it is restricted to 60 interim managed fishery permit holders.	
West Coast Purse Seine Managed Fishery	-	-	-	**Management area**	Located in waters from Cape Bouvard extending to Lancelin.	
				Species targeted	**Fishing methods**	**Fishing depth**
				Small pelagic finfish such as: Scaly mackerel (*Sardinella lemuru*) Pilchards (*Sardinops sagax*) Australian anchovy (*Engraulis australis*) Yellowtail scad (*Trachurus novaezelandiae*) Maray (*Etrumeus teres*)	Purse seine.	Information not available.
				Fishing effort:	Information not available	
				Active licences/vessels:	Seven vessels in 2017 (Gaughan and Santoro, 2018).	
West Coast Rock Lobster Managed Fishery			✓	**Management area**	The West Coast Rock Lobster Fishery operates from Shark Bay south to Cape Leeuwin. The fishery is managed using zones, seasons and total allowable catch. The recreational fishery targets the western rock lobsters using baited pots and by diving between North-west Cape and Augusta.	

<table>
<tr><th rowspan="2">Fishery</th><th colspan="3">Woodside Activity Area</th><th colspan="3" rowspan="2">Description</th></tr>
<tr><th>Browse</th><th>NWS/S</th><th>NW Cape</th></tr>
<tr><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4"></td><td rowspan="4"></td><td>Species targeted</td><td>Fishing methods</td><td>Fishing depth</td></tr>
<tr><td>Western rock lobster (Panulirus cygnus)</td><td>Baited pots.</td><td>Less than 20 m.</td></tr>
<tr><td>Fishing effort:</td><td colspan="2">In 2018, 234 vessels reported a total catch of 6400 t in 2017 (de Lestang et al., 2018). In 2016, 226 vessels reported a total catch of 6,086 t (Gaughan and Santoro, 2018).</td></tr>
<tr><td>Active licences/vessels:</td><td colspan="2">234 vessels operated in 2017 and 233 vessels operated in 2018 (Gaughan and Santoro, 2018).</td></tr>
</table>

11.5.2 Aquaculture

Aquaculture operations in the northwest are typically restricted to inland and shallow coastal waters.

West Coast Bioregion

Aquaculture activities in the West Coast bioregion, defined by the Department of Primary Industries and Regional Development (DPIRD) (as the government body responsible management of primary industries in WA) are focused on blue mussels and edible oysters (mainly in Cockburn Sound) and marine algae for production of beta-carotene, used as a food additive and as a nutritional supplement. Offshore marine finfish production is also being developed, initially focusing on yellowtail kingfish.

There is also an emerging black pearl industry (from the *Pinctada margaritifera* oyster) in the Abrolhos Islands. As well as expansion in the production of Akoya pearls (small white pearls from *Pinctada fucata martensi*), *Pinctada albina* (small, yellow pearls) and *Pteria penguin*, which are often used to produce half (mabe) pearls in pink and bluish shades.

Aquaculture licences for producing coral and live rock (pieces of old coral reefs colonised by marine life, such as beneficial bacteria, for aquariums) at the Abrolhos Islands have also been issued and other applications are being assessed.

Gascoyne Coast Bioregion

In the Gascoyne Coast bioregion, aquaculture activities are focused on the blacklip oyster (*Pinctada margaritifera*) and Akoya pearl oyster (*Pinctada imbricata*) (Gaughan and Santoro, 2020). Several hatcheries supply *P. margaritifera* juveniles to the region's developing black pearl farms.

Other aquaculture developments in the Gascoyne Coast bioregion include emerging producers of coral and live rock species for aquariums.

North Coast Bioregion

Aquaculture activities in the North Coast bioregion is dominated by the production of pearls. A large number of pearl oysters for seeding are obtained from wild stocks and supplemented by hatchery produced oysters, with major hatcheries operating at Broome and around the Dampier Peninsula (Gaughan and Santoro, 2018). Primary spawning of the pearl oyster occurs from mid-October to December. A smaller secondary spawning occurs in February and March (Gaughan and Santoro, 2020).

Other aquaculture developments in the North Coast include emerging producers of coral and live rock species for aquariums as well as barramundi (*Lates calcarifer)* farms and microalgae culturing for Omega-3, biofuels and protein biomass (Gaughan and Santoro, 2020).

11.6 Fisheries – Traditional

Traditional or customary fisheries are typically restricted to shallow coastal waters and/or areas with structures such as reef.

Dugong, fish and marine turtles that move between coastal and Commonwealth waters are important components of the Aboriginal people's culture and diet. Aboriginal people continue to actively manage their sea country in coastal waters of WA in order to protect and manage the marine environment, its resources and cultural values.

Indonesian fishers can fish within designated areas under the Australia-Indonesia Memorandum of Understanding regarding the Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974 (MoU 74). Traditional fishing is allowed within the MoU Box (**Figure 11-1)**, which encompasses: Ashmore Reef (Pulau Pasir), Cartier Island (Pulau Baru), Seringapatam Reef (Afringan), Scott Reef (Pulau Dato) and Browse Island (Berselan). Restrictions have since been introduced around Ashmore Reef and Cartier Island following their

designation as Nature Reserves under the Commonwealth's *National Parks and Wildlife Conservation Act 1975* in 1983 and 2000, respectively.

The MoU allows Indonesian fishers to fish in designated areas using traditional methods only. These methods include reef gleaning, free-diving, hand lining and other non-mechanised methods. Scott Reef is currently the principal reef in the MoU 74 Box and is utilised seasonally by Indonesian fishers to harvest trepang, trochus shells and other reef species. The peak season is July to October due to more favourable wind conditions, and to allow fishers to sun dry their catch on their boat decks (ERM, 2009). Browse Island is also frequently visited by shark fishers who mostly fish along the eastern margin of the MoU 74 Box.

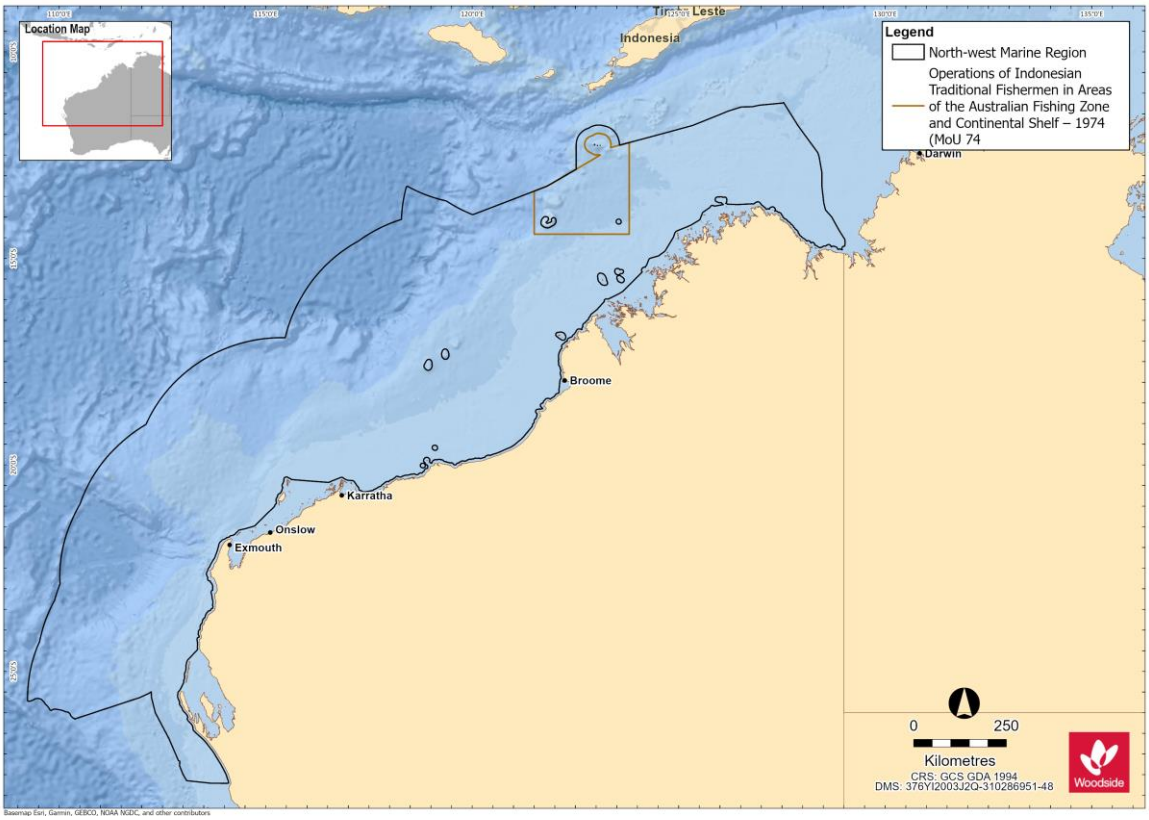

Figure 11-1 MOU 74 Box. Operations of Indonesian Traditional Fishermen in Areas of the Australian Fishing Zone and Continental Shelf – 1974

11.7 Tourism and Recreation

There are growing tourism and recreational sectors in WA. The Kimberley, Pilbara and Gascoyne regions are popular visitor destinations for Australian and international tourists. Tourism is concentrated in the vicinity of population centres including Broome, Dampier, Exmouth, Coral Bay and Shark Bay.

Recreational and tourism activities include: charter fishing, other recreational fishing, diving, snorkelling, marine fauna watching, and yachting.

11.7.1 Gascoyne Region

Outside the petroleum industry, tourism is the largest revenue earner of all the major industries of the Gascoyne region. It contributes significantly to the local economy in terms of both income and

employment. In 2018 there was an average of 337,400 visitors with a visitor spend of $359 million (Gascoyne Development Commission[11]).

In 2018-19, the Ningaloo region (Ningaloo Reef and the surrounding coastal region Exmouth Gulf, communities of Exmouth and Coral Bay, and adjacent proposed southern coastal reserves and pastoral leases) contributed an estimated $110 million in value added to the WA economy (DCBA, 2020). Ningaloo's economic contribution to WA is attributed to four key types of economic activity, tourism expenditure by international, interstate and WA visitors to the Ningaloo region, commercial fishing in the Exmouth Gulf, recreation activity involving the Reef by residents of the Ningaloo region and management and research relating to the Reef (DCBA, 2020). More than 90% of this value added is attributed to the domestic and international tourists who visit Ningaloo each year (DCBA, 2020). The main marine nature-based tourist activities are concentrated around and within the Ningaloo WHA.

11.7.2 Pilbara region

Recreation and tourism activities within the Pilbara are of high social value. Tourism is a key economic driver for the Pilbara with more than 1 million visitors to the region every year, generating $413 million in gross revenue annually (Pilbara Development Commission[12]).

Recreational fishing within the Pilbara region tends to be concentrated in State waters adjacent to population centres. Recreational fishing is known to occur around the Dampier Archipelago with boats launched from boat ramps around Dampier and Karratha (Williamson *et al.*, 2006). Once at sea, charter vessels may also frequent the waters surrounding the Montebello Islands.

11.7.3 Kimberley Region

Recreation and tourism activities in the Kimberley region occur predominantly in WA State waters (extending offshore 3 nm from the mainland), adjacent to coastal population centres (e.g. Broome), with a peak in activity during the winter months (dry season). These activities include recreational fishing, diving, snorkelling, wildlife watching and boating.

Primary dive locations in the Kimberley region include the Rowley Shoals, including Mermaid Reef AMP, Scott Reef, Seringapatam Reef, Ashmore Reef AMP and Cartier Island.

11.8 Shipping

Commercial shipping traffic is high within the NWMR with vessel activities including commercial fisheries, tourism such as cruises, international shipping and oil and gas operations. There are 12 ports adjacent to the NWMR, including the major ports of Dampier, Port Hedland and Broome, which are operated by their respective port authorities. These ports handle large tonnages of iron ore and petroleum exports in addition to salt, manganese, feldspar chromite and copper (DEWHA, 2008).

Heavy vessel traffic exists within the Pilbara Port Authority management area which recorded 10,064 vessel movements in Port of Dampier 2019/20 annual reporting period (PPA, 2020). Twenty-six designated anchorages for bulk carriers, petroleum and gas tankers, drilling rigs, offshore platforms, and pipelay vessels are located offshore of Rosemary Island.

In 2012, AMSA established a network of shipping fairways off the northwest coast of Australia. The shipping fairways, while not mandatory, aim to reduce the risk of collision between transiting vessels and offshore infrastructure. The fairways are intended to direct large vessels such as bulk carriers and LNG ships trading to the major ports into pre-defined routes to keep them clear of existing and planned offshore infrastructure (AMSA, 2013).

[11] https://www.gdc.wa.gov.au/industry-profiles/tourism/

[12] https://www.pdc.wa.gov.au/our-focus/strategicinitiatives/tourism

11.9 Oil and Gas Infrastructure

The NWMR supports a number of industries including petroleum exploration and production.

Within the NWMR there are seven sedimentary petroleum basins: Northern and Southern Carnarvon basins, Perth, Browse, Roebuck, Offshore Canning and Bonaparte basins. Of these, the Northern Carnarvon, Browse and Bonaparte basins hold large quantities of gas and comprise most of Australia's reserves of natural gas (DEWHA, 2008), which is reflected by the level of development in the area. In addition to existing facilities, there are proposed developments in the region. This includes proposals to develop gas and condensate from a number of fields within the NWMR.

In addition to the oil and gas industry, other land-based industries depend upon the marine environment in the nearshore area. These include ports, salt mines such as Karratha and Onslow, LNG onshore processing facilities such as Burrup Hub, Thevenard Island, Barrow Island, Varanus Island, and small-scale desalination plants at Barrow Island, Burrup, Cape Preston, and Onslow.

11.10 Defence

Key Australian Department of Defence (DoD) operational areas and facilities areas of the NWMR for training and operational activities, include:

- An operating logistics base has been established in Dampier to support vessels patrolling the waters around offshore oil and gas facilities. A dedicated navy administrative support facility is also being constructed at the nearby township of Karratha.
- The Royal Australian Air Force currently maintains two 'bare bases' in remote areas of WA that are used for military exercises. One of these is the Royal Australian Air Force Base in Learmonth. The Royal Australian Air Force maintains the Commonwealth Heritage listed Learmonth Air Weapons Range Facility, which is located between Ningaloo Station and the Cape Range National Park. The air training area associated with the Learmonth base extends over the offshore region.
- The Royal Australian Air Force Base Curtin is located on the north coast of WA, south-east of Derby and 170 km east of Broome. It provides support for land, air and sea operations aimed to support Australia's northern approaches.
- The Naval Communications Station Harold E. Holt is located ~6 km north of Exmouth. The main role of the station is to communicate at very low frequencies (19.8 kHz) with Australian and United States submarines and ships in the eastern Indian Ocean and the western Pacific Ocean.

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APPENDIX A. PROTECTED MATTER SEARCH REPORTS FOR NWMR, SWMR AND NMR

Australian Government

Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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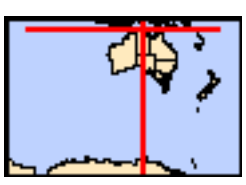
This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates

Buffer: 1.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	33
Listed Migratory Species:	70

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	127
Whales and Other Cetaceans:	25
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	15

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	1
Nationally Important Wetlands:	1
Key Ecological Features (Marine)	8

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

Name
EEZ and Territorial Sea
Extended Continental Shelf

Marine Regions [Resource Information]

If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

Name
North

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat may occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-	Vulnerable	Species or species

Name	Status	Type of Presence
tailed Godwit [86380]		habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Mammals		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Notomys aquilo Northern Hopping-mouse, Woorrentinta [123]	Endangered	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat may occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Cryptoblepharus gurrmul Arafura Snake-eyed Skink [83106]	Endangered	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Sharks		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to occur within area
Glyphis glyphis Speartooth Shark [82453]	Critically Endangered	Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Foraging, feeding or related behaviour known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat likely to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Cecropis daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Acrocephalus orientalis Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Foraging, feeding or related behaviour known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Hirundo daurica Red-rumped Swallow [59480]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Limicola falcinellus Broad-billed Sandpiper [842]		Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Sterna bengalensis Lesser Crested Tern [815]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Stiltia isabella Australian Pratincole [818]		Species or species habitat known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area
Fish		

Name	Threatened	Type of Presence
Acentronura tentaculata Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys haematopterus Reef-top Pipefish [66201]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys ocellatus Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Cosmocampus maxweberi Maxweber's Pipefish [66209]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Festucalex cinctus Girdled Pipefish [66214]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus macrorhynchus Whiskered Pipefish, Ornate Pipefish [66222]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys cyanospilos Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
Hippichthys heptagonus Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
Hippichthys parvicarinatus Short-keel Pipefish, Short-keeled Pipefish [66230]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippichthys spicifer Belly-barred Pipefish, Banded Freshwater Pipefish [66232]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Hippocampus zebra Zebra Seahorse [66241]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Micrognathus brevirostris thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Microphis brachyurus Short-tail Pipefish, Short-tailed River Pipefish [66257]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammals		
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Congregation or aggregation known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Enhydrina schistosa Beaked Seasnake [1126]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Seasnake [1101]		Species or species habitat may occur within area
Hydrophis caerulescens Dwarf Seasnake [1103]		Species or species habitat may occur within area
Hydrophis coggeri Slender-necked Seasnake [25925]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Seasnake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis gracilis Slender Seasnake [1106]		Species or species habitat may occur within area
Hydrophis inornatus Plain Seasnake [1107]		Species or species habitat may occur within area
Hydrophis mcdowelli null [25926]		Species or species habitat may occur within area
Hydrophis melanosoma Black-banded Robust Seasnake [1109]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
Hydrophis pacificus Large-headed Seasnake, Pacific Seasnake [1112]		Species or species habitat may occur within area
Hydrophis vorisi a seasnake [25927]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Lapemis hardwickii Spine-bellied Seasnake [1113]		Species or species habitat may occur within area
Laticauda colubrina a sea krait [1092]		Species or species habitat may occur within area
Laticauda laticaudata a sea krait [1093]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Breeding known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Parahydrophis mertoni Northern Mangrove Seasnake [1090]		Species or species habitat may occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia simus Dwarf Sperm Whale [58]		Species or species habitat may occur within area

Name	Status	Type of Presence
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcaella brevirostris Irrawaddy Dolphin [45]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Name	Label
Arafura	Multiple Use Zone (IUCN VI)
Arafura	Special Purpose Zone (Trawl) (IUCN VI)
Arnhem	Special Purpose Zone (IUCN VI)
Gulf of Carpentaria	National Park Zone (IUCN II)
Gulf of Carpentaria	Special Purpose Zone (Trawl) (IUCN VI)
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)

Name	Label
Joseph Bonaparte Gulf	Special Purpose Zone (IUCN VI)
Limmen	Habitat Protection Zone (IUCN IV)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Oceanic Shoals	Special Purpose Zone (Trawl) (IUCN VI)
Wessel	Habitat Protection Zone (IUCN IV)
Wessel	Special Purpose Zone (Trawl) (IUCN VI)
West Cape York	Habitat Protection Zone (IUCN IV)
West Cape York	National Park Zone (IUCN II)
West Cape York	Special Purpose Zone (IUCN VI)

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Anindilyakwa	NT
Marthakal	NT

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Plants		
Andropogon gayanus Gamba Grass [66895]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Southern Gulf Aggregation	QLD

Key Ecological Features (Marine) [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Carbonate bank and terrace system of the Van	North
Gulf of Carpentaria basin	North
Gulf of Carpentaria coastal zone	North
Pinnacles of the Bonaparte Basin	North
Plateaux and saddle north-west of the Wellesley	North
Shelf break and slope of the Arafura Shelf	North
Submerged coral reefs of the Gulf of Carpentaria	North
Tributary Canyons of the Arafura Depression	North

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-14.758882 129.178077,-13.960657 128.826514,-13.768665 128.606788,-12.484784 128.496924,-11.183724 127.563087,-10.460737 128.233253,-9.746889 129.518653,-9.660256 130.254737,-9.779371 130.935889,-9.280976 132.528907,-8.901286 133.385841,-9.411062 134.858008,-9.129149 135.473243,-10.363488 138.582374,-11.129831 139.395362,-10.190527 141.339942,-10.806262 141.317969,-10.817053 141.922217,-11.10827 142.087012,-12.527687 141.559669,-13.330764 141.515723,-13.960657 141.40586,-15.045535 141.570655,-15.945419 141.317969,-17.22994 140.823585,-17.513041 140.53794,-17.659661 140.032569,-17.429205 139.593116,-16.630864 139.966651,-16.409675 139.812842,-16.177683 139.208594,-16.820251 138.966895,-15.924291 137.165137,-15.575354 137.132178,-15.458909 136.934424,-15.289418 136.11045,-14.822615 135.45127,-14.269641 135.846778,-14.418655 136.97837,-13.608551 137.011329,-12.784952 136.780616,-12.388227 137.055274,-10.957305 136.76963,-10.957305 136.703712,-11.399198 136.407081,-11.679068 135.824805,-11.904912 135.616065,-11.947909 134.473487,-11.679068 133.869239,-11.700585 133.50669,-11.431505 133.528663,-11.442273 133.363868,-11.64679 133.254005,-11.313028 132.979346,-11.04358 133.067237,-10.90337 132.583839,-11.151389 131.221534,-11.3238 130.782081,-11.054363 130.287696,-11.474575 130.111915,-11.765126 129.958106,-11.947909 130.067969,-11.894162 130.760108,-12.119827 130.913917,-12.441874 130.474464,-12.870649 130.100928,-13.939333 129.584571,-13.971319 129.419776,-14.47185 129.28794,-14.631358 129.507667,-14.843856 129.452735,-14.769505 129.178077,-14.758882 129.178077

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This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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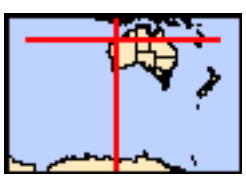
Coordinates

Buffer: 1.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	2
National Heritage Places:	5
Wetlands of International Importance:	2
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	70
Listed Migratory Species:	84

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	1
Listed Marine Species:	149
Whales and Other Cetaceans:	34
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	17

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	10
Regional Forest Agreements:	None
Invasive Species:	23
Nationally Important Wetlands:	3
Key Ecological Features (Marine)	5

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Status
Shark Bay, Western Australia	WA	Declared property
The Ningaloo Coast	WA	Declared property

National Heritage Properties [Resource Information]

Name	State	Status
Natural		
Shark Bay, Western Australia	WA	Listed place
The Ningaloo Coast	WA	Listed place
The West Kimberley	WA	Listed place
Indigenous		
Dampier Archipelago (including Burrup Peninsula)	WA	Listed place
Historic		
Dirk Hartog Landing Site 1616 - Cape Inscription Area	WA	Listed place

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Eighty-mile beach	Within Ramsar site
Ord river floodplain	Within 10km of Ramsar

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

Name
EEZ and Territorial Sea
Extended Continental Shelf

Marine Regions [Resource Information]

If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

Name
North-west

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Monsoon vine thickets on the coastal sand dunes of Dampier Peninsula	Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species

Name	Status	Type of Presence
		habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Falcunculus frontatus whitei Crested Shrike-tit (northern), Northern Shrike-tit [26013]	Vulnerable	Species or species habitat likely to occur within area
Geophaps smithii blaauwi Partridge Pigeon (western) [66501]	Vulnerable	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Malurus leucopterus leucopterus White-winged Fairy-wren (Dirk Hartog Island), Dirk Hartog Black-and-White Fairy-wren [26004]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence
		area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Bettongia lesueur lesueur Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat likely to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat likely to occur within area
Conilurus penicillatus Brush-tailed Rabbit-rat, Brush-tailed Tree-rat, Pakooma [132]	Vulnerable	Species or species habitat may occur within area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Isoodon auratus auratus Golden Bandicoot (mainland) [66665]	Vulnerable	Species or species habitat likely to occur within area
Lagostrophus fasciatus fasciatus Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Translocated population known to occur within area
Leporillus conditor Wopilkara, Greater Stick-nest Rat [137]	Vulnerable	Translocated population known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat known to occur within area
Macrotis lagotis Greater Bilby [282]	Vulnerable	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Perameles bougainville bougainville Western Barred Bandicoot (Shark Bay) [66631]	Endangered	Translocated population known to occur within area
Petrogale concinna monastria Nabarlek (Kimberley) [87607]	Endangered	Species or species habitat known to occur within area
Phascogale tapoatafa kimberleyensis Kimberley brush-tailed phascogale, Brush-tailed Phascogale (Kimberley) [88453]	Vulnerable	Species or species habitat likely to occur within area
Rhinonicteris aurantia (Pilbara form) Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat may occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Egernia stokesii badia Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Lerista nevinae Nevin's Slider [85296]	Endangered	Species or species habitat known to occur within area
Liasis olivaceus barroni Olive Python (Pilbara subspecies) [66699]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Glyphis garricki Northern River Shark, New Guinea River Shark [82454]	Endangered	Species or species habitat known to occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Listed Migratory Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species

Name	Threatened	Type of Presence
		habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Foraging, feeding or related behaviour likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat known to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur

Name	Threatened	Type of Presence
		within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Breeding known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat known to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area

Migratory Terrestrial Species	
Cecropis daurica Red-rumped Swallow [80610]	Species or species habitat may occur within area
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]	Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]	Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]	Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]	Species or species habitat likely to occur within area

Migratory Wetlands Species	
Acrocephalus orientalis Oriental Reed-Warbler [59570]	Species or species habitat may occur within area
Actitis hypoleucos Common Sandpiper [59309]	Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Xenus cinereus		
Terek Sandpiper [59300]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Heritage Places		[Resource Information]
Name	State	Status
Natural		
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Acrocephalus orientalis		
Oriental Reed-Warbler [59570]		Species or species habitat may occur within area
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Anseranas semipalmata		
Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres		
Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba		
Sanderling [875]		Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Hirundo daurica Red-rumped Swallow [59480]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Foraging, feeding or related behaviour known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Foraging, feeding or related behaviour likely to occur within area
Pluvialis squatarola Grey Plover [865]		Species or species habitat known to occur within area
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or

Name	Threatened	Type of Presence
		related behaviour known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Species or species habitat likely to occur within area
Puffinus pacificus Wedge-tailed Shearwater [1027]		Breeding known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		Breeding known to occur within area
Sterna anaethetus Bridled Tern [814]		Breeding known to occur within area
Sterna bengalensis Lesser Crested Tern [815]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sterna fuscata Sooty Tern [794]		Breeding known to occur within area
Sterna nereis Fairy Tern [796]		Breeding known to occur within area
Sula leucogaster Brown Booby [1022]		Breeding known to occur within area
Sula sula Red-footed Booby [1023]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Xenus cinereus Terek Sandpiper [59300]		Species or species habitat known to occur within area
Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammals		
Dugong dugon Dugong [28]		Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Species or species habitat may occur within area
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Aipysurus foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Seasnake [66061]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Seasnake [1121]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Enhydrina schistosa Beaked Seasnake [1126]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis atriceps Black-headed Seasnake [1101]		Species or species habitat may occur within area
Hydrophis coggeri Slender-necked Seasnake [25925]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Hydrophis czeblukovi Fine-spined Seasnake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis inornatus Plain Seasnake [1107]		Species or species habitat may occur within area
Hydrophis mcdowelli null [25926]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
Lapemis hardwickii Spine-bellied Seasnake [1113]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within

Name	Status	Type of Presence
		area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Globicephala melas Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Indopacetus pacificus Longman's Beaked Whale [72]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia simus Dwarf Sperm Whale [58]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Orcaella brevirostris Irrawaddy Dolphin [45]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa chinensis Indo-Pacific Humpback Dolphin [50]		Breeding known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species

Name	Status	Type of Presence
		habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Name	Label
Abrolhos	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Special Purpose Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Dampier	Habitat Protection Zone (IUCN IV)
Dampier	Multiple Use Zone (IUCN VI)
Eighty Mile Beach	Multiple Use Zone (IUCN VI)
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Multiple Use Zone (IUCN VI)
Gascoyne	National Park Zone (IUCN II)
Joseph Bonaparte Gulf	Multiple Use Zone (IUCN VI)
Kimberley	Multiple Use Zone (IUCN VI)
Ningaloo	Recreational Use Zone (IUCN IV)
Oceanic Shoals	Multiple Use Zone (IUCN VI)
Roebuck	Multiple Use Zone (IUCN VI)
Shark Bay	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Bardi Jawi	WA
Dambimangari	WA
Dambimangari	WA
Dirk Hartog Island	WA
Faure Island	WA
Little Rocky Island	WA
Tent Island	WA
Unnamed WA36913	WA
Unnamed WA36915	WA
Uunguu	WA

Invasive Species

[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat may occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Andropogon gayanus Gamba Grass [66895]		Species or species habitat likely to occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species

Name	Status	Type of Presence
		habitat likely to occur within area
Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507]		Species or species habitat likely to occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Parkinsonia aculeata Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Reptiles		
Ramphotyphlops braminus Flowerpot Blind Snake, Brahminy Blind Snake, Cacing Besi [1258]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Exmouth Gulf East	WA
Hamelin Pool	WA
Shark Bay East	WA

Key Ecological Features (Marine) [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Carbonate bank and terrace system of the Sahul	North-west
Commonwealth waters adjacent to Ningaloo Reef	North-west
Continental Slope Demersal Fish Communities	North-west
Pinnacles of the Bonaparte Basin	North-west
Wallaby Saddle	North-west

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-11.269933 127.440005,-12.516962 128.274966,-13.416271 128.362857,-13.854015 128.406802,-14.652617 128.879214,-14.833236 128.956119,-14.737633 128.439761,-14.280288 127.769595,-13.864681 127.385074,-13.864681 127.143375,-13.67261 126.934634,-13.875347 126.418277,-13.843348 126.242496,-13.896678 125.967837,-14.077907 125.934878,-14.34416 125.836001,-14.216398 125.649234,-14.461212 125.099918,-14.641988 125.044986,-14.88633 125.143863,-14.971254 124.990054,-15.257624 124.649478,-15.268222 124.231998,-15.416549 124.16608,-15.490673 124.407779,-16.293713 124.286929,-16.072142 123.616763,-16.219884 123.429996,-16.567693 123.408023,-16.778181 123.561832,-16.914874 123.704654,-17.114478 123.397037,-16.546631 123.034488,-16.251529 123.078433,-16.704537 122.540103,-17.135476 122.144595,-17.502564 122.056705,-18.244939 122.078677,-18.432649 121.738101,-18.76585 121.551334,-19.45099 121.100894,-19.999097 119.584781,-19.906155 119.101382,-20.236365 118.727847,-20.308506 118.112613,-20.648142 117.321597,-20.555589 116.948062,-20.360014 117.01398,-20.318809 116.816226,-20.802273 116.26691,-20.822812 116.113101,-21.468342 115.377017,-21.754335 114.629947,-22.344932 114.355289,-22.202601 114.146548,-21.67268 114.245425,-21.886924 113.849918,-22.669716 113.586246,-23.003846 113.751041,-23.458145 113.696109,-24.031352 113.300601,-24.51208 113.311587,-25.893759 114.135562,-26.258875 114.003726,-25.953045 113.926822,-25.398562 113.45441,-25.686027 113.366519,-26.249022 113.641177,-26.229314 113.509341,-25.378711 112.949039,-25.557248 112.839175,-26.485263 113.256656,-27.161748 113.816959,-27.571531 114.036685,-27.552052 113.113834,-27.151972 112.981998,-25.368784 112.278873,-26.022173 110.389224,-25.893759 110.323306,-25.804776 109.872867,-25.537424 109.587222,-25.626608 109.23566,-24.582033 109.389468,-23.306884 109.872867,-22.882439 110.026675,-21.621623 110.169498,-20.945986 110.510074,-20.030065 110.949527,-19.025706 112.092105,-17.816621 112.981998,-17.271909 113.773013,-16.935895 115.442935,-15.681156 116.014224,-14.790751 116.89313,-14.056594 118.266421,-13.266614 118.42023,-13.949995 120.046207,-13.234532 121.825992,-12.838516 122.529117,-12.15205 122.51813,-11.883411 122.726871,-11.786636 123.067447,-11.926411 123.440982,-12.248693 123.583804,-11.63603 125.737125,-11.334573 126.539126,-11.280707 127.440005,-11.269933 127.440005

Acknowledgements

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-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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Australian Government

Department of Agriculture, Water and the Environment

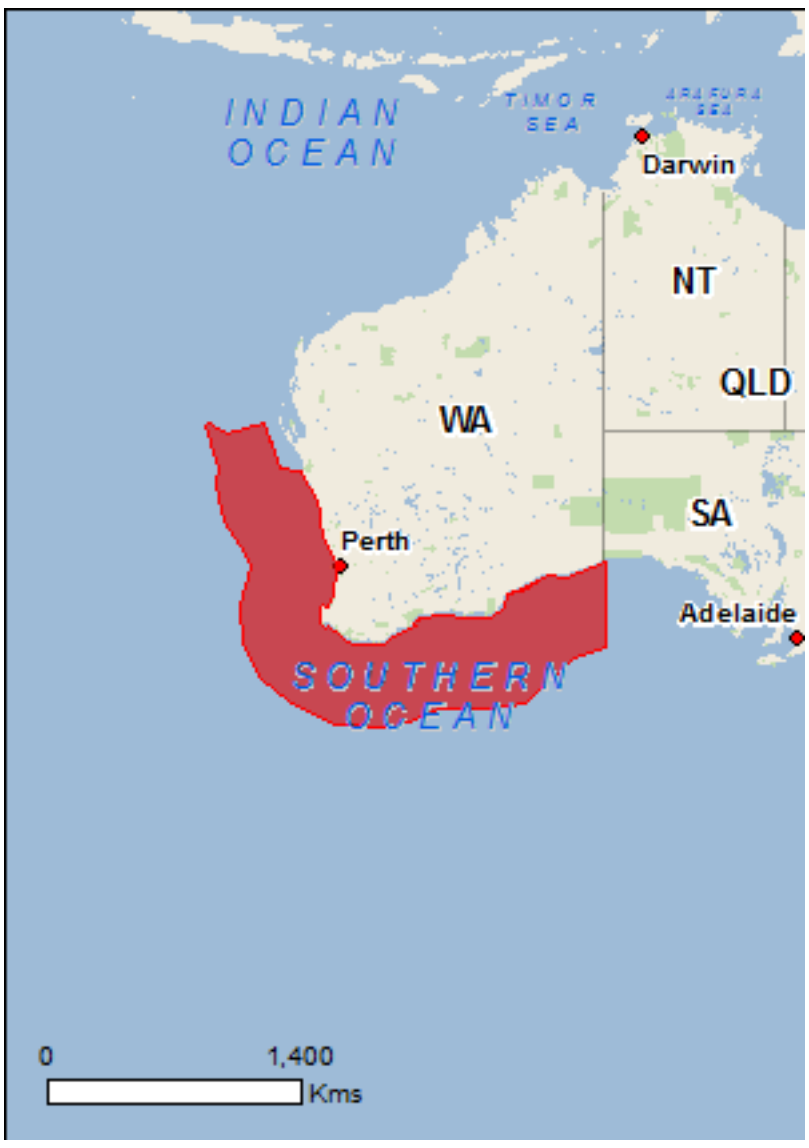
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

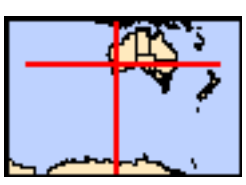
Report created: 10/05/21 12:51:00



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates

Buffer: 1.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	65
Listed Migratory Species:	67

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	2
Commonwealth Heritage Places:	1
Listed Marine Species:	106
Whales and Other Cetaceans:	40
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	21

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	10
Regional Forest Agreements:	None
Invasive Species:	42
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	8

Details

Matters of National Environmental Significance

National Heritage Properties [Resource Information]

Name	State	Status
Indigenous		
Cheetup Rock Shelter	WA	Listed place

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Becher point wetlands	Within 10km of Ramsar
Forrestdale and thomsons lakes	Within 10km of Ramsar
Peel-yalgorup system	Within 10km of Ramsar
Vasse-wonnerup system	Within 10km of Ramsar

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside the Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area. Generally the Commonwealth Marine Area stretches from three nautical miles to two hundred nautical miles from the coast.

Name
EEZ and Territorial Sea
Extended Continental Shelf

Marine Regions [Resource Information]

If you are planning to undertake action in an area in or close to the Commonwealth Marine Area, and a marine bioregional plan has been prepared for the Commonwealth Marine Area in that area, the marine bioregional plan may inform your decision as to whether to refer your proposed action under the EPBC Act.

Name
South-west

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Banksia Woodlands of the Swan Coastal Plain ecological community	Endangered	Community may occur within area
Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia	Endangered	Community may occur within area
Tuart (Eucalyptus gomphocephala) Woodlands and Forests of the Swan Coastal Plain ecological community	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Atrichornis clamosus		
Noisy Scrub-bird, Tjimiluk [654]	Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Calyptorhynchus banksii naso Forest Red-tailed Black-Cockatoo, Karrak [67034]	Vulnerable	Species or species habitat likely to occur within area
Calyptorhynchus latirostris Carnaby's Cockatoo, Short-billed Black-Cockatoo [59523]	Endangered	Species or species habitat known to occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel	Endangered	Species or species

Name	Status	Type of Presence
[1060]		habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Pezoporus flaviventris Western Ground Parrot, Kyloring [84650]	Critically Endangered	Species or species habitat likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Mammals		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence
		area
Dasyurus geoffroii Chuditch, Western Quoll [330]	Vulnerable	Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Parantechinus apicalis Dibbler [313]	Endangered	Species or species habitat known to occur within area
Petrogale lateralis hacketti Recherche Rock-wallaby [66849]	Vulnerable	Species or species habitat known to occur within area
Potorous gilbertii Gilbert's Potoroo, Ngilkat [66642]	Critically Endangered	Translocated population known to occur within area
Pseudocheirus occidentalis Western Ringtail Possum, Ngwayir, Womp, Woder, Ngoor, Ngoolangit [25911]	Critically Endangered	Species or species habitat may occur within area
Setonix brachyurus Quokka [229]	Vulnerable	Species or species habitat known to occur within area
Plants		
Caladenia elegans Elegant Spider-orchid [56775]	Endangered	Species or species habitat may occur within area
Caladenia granitora [65292]	Endangered	Species or species habitat may occur within area
Caladenia hoffmanii Hoffman's Spider-orchid [56719]	Endangered	Species or species habitat may occur within area
Diuris micrantha Dwarf Bee-orchid [55082]	Vulnerable	Species or species habitat likely to occur within area
Drummondita ericoides Morseby Range Drummondita [9193]	Endangered	Species or species habitat likely to occur within area
Eucalyptus insularis Twin Peak Island Mallee [3057]	Endangered	Species or species habitat likely to occur within area
Isopogon uncinatus Albany Cone Bush, Hook-leaf Isopogon [20871]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Name	Status	Type of Presence
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Egernia stokesii badia		
Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat may occur within area
Liopholis pulchra longicauda		
Jurien Bay Skink, Jurien Bay Rock-skink [83162]	Vulnerable	Species or species habitat known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sharks		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Breeding known to occur within area
Ardenna grisea		
Sooty Shearwater [82651]		Species or species habitat may occur within area
Ardenna pacifica		
Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Ardenna tenuirostris		
Short-tailed Shearwater [82652]		Breeding known to occur within area
Diomedea amsterdamensis		
Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis		
Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena		
Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat known to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur

Name	Threatened	Type of Presence
		within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -
Defence - HMAS STIRLING-ROCKINGHAM ;HMAS STIRLING - GARDEN ISLAND

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Garden Island	WA	Listed place

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres		
Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris alba		
Sanderling [875]		Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Cereopsis novaehollandiae grisea Cape Barren Goose (south-western), Recherche Cape Barren Goose [25978]	Vulnerable	Breeding known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Eudyptula minor Little Penguin [1085]		Breeding known to occur within area

Name	Threatened	Type of Presence
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Species or species habitat known to occur within area
Larus novaehollandiae Silver Gull [810]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pelagodroma marina White-faced Storm-Petrel [1016]		Breeding known to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Breeding known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat likely to occur within area
Pterodroma macroptera Great-winged Petrel [1035]		Breeding known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely

Name	Threatened	Type of Presence
		to occur within area
Puffinus assimilis Little Shearwater [59363]		Breeding known to occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Breeding known to occur within area
Puffinus griseus Sooty Shearwater [1024]		Species or species habitat may occur within area
Puffinus pacificus Wedge-tailed Shearwater [1027]		Breeding known to occur within area
Puffinus tenuirostris Short-tailed Shearwater [1029]		Breeding known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Sterna anaethetus Bridled Tern [814]		Breeding known to occur within area
Sterna bergii Crested Tern [816]		Breeding known to occur within area
Sterna caspia Caspian Tern [59467]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sterna fuscata Sooty Tern [794]		Breeding known to occur within area
Sterna nereis Fairy Tern [796]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche chrysostoma Grey-headed Albatross [66491]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Fish		

Name	Threatened	Type of Presence
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Breeding known to occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Endangered	Breeding known to occur within area
Reptiles		
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Seasnake [66061]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Disteira major		
Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Ephalophis greyi		
North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Pelamis platurus		
Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Berardius arnuxii		
Arnoux's Beaked Whale [70]		Species or species habitat may occur within area
Caperea marginata		
Pygmy Right Whale [39]		Foraging, feeding or related behaviour may occur within area
Delphinus delphis		
Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Breeding known to occur within area
Feresa attenuata		
Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus		
Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Globicephala melas		
Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
Grampus griseus		
Risso's Dolphin, Grampus [64]		Species or species habitat may occur within

Name	Status	Type of Presence
		area
Hyperoodon planifrons Southern Bottlenose Whale [71]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia simus Dwarf Sperm Whale [58]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat likely to occur within area
Lissodelphis peronii Southern Right Whale Dolphin [44]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Mesoplodon bowdoini Andrew's Beaked Whale [73]		Species or species habitat may occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
Mesoplodon hectori Hector's Beaked Whale [76]		Species or species habitat may occur within area
Mesoplodon layardii Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
Mesoplodon mirus True's Beaked Whale [54]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Foraging, feeding or related behaviour known to occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tasmacetus shepherdi Shepherd's Beaked Whale, Tasman Beaked Whale [55]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Name	Label
Abrolhos	Habitat Protection Zone (IUCN IV)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Special Purpose Zone (IUCN VI)
Bremer	National Park Zone (IUCN II)
Bremer	Special Purpose Zone (Mining
Eastern Recherche	National Park Zone (IUCN II)
Eastern Recherche	Special Purpose Zone (IUCN VI)
Geographe	Habitat Protection Zone (IUCN IV)
Geographe	Multiple Use Zone (IUCN VI)
Geographe	National Park Zone (IUCN II)
Geographe	Special Purpose Zone (Mining
Great Australian Bight	Special Purpose Zone (Mining
Jurien	Special Purpose Zone (IUCN VI)
South-west Corner	Habitat Protection Zone (IUCN IV)
South-west Corner	Multiple Use Zone (IUCN VI)
South-west Corner	National Park Zone (IUCN II)
South-west Corner	Special Purpose Zone (IUCN VI)
South-west Corner	Special Purpose Zone (Mining
Twilight	National Park Zone (IUCN II)
Twilight	Special Purpose Zone (Mining
Two Rocks	Multiple Use Zone (IUCN VI)

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Bald Island	WA
Boullanger, Whitlock, Favourite, Tern And Osprey Islands	WA
Eclipse Island	WA
Escape Island	WA
Flinders Bay	WA
Penguin Island	WA
Recherche Archipelago	WA
St Alouarn Island	WA
Unnamed WA44682	WA
Unnamed WA48968	WA

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Streptopelia senegalensis Laughing Turtle-dove, Laughing Dove [781]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Funambulus pennantii Northern Palm Squirrel, Five-striped Palm Squirrel [129]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Brachiaria mutica Para Grass [5879]		Species or species habitat may occur within area
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Key Ecological Features (Marine)

[Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 90-120m depth	South-west
Commonwealth marine environment surrounding	South-west
Commonwealth marine environment within and	South-west
Commonwealth marine environment within and	South-west
Diamantina Fracture Zone	South-west
Naturaliste Plateau	South-west
Western demersal slope and associated fish	South-west
Western rock lobster	South-west

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-25.765206 109.237891,-25.725623 109.501563,-25.992551 109.732276,-25.992551 109.875098,-26.071525 110.182716,-26.229314 110.325538,-25.656321 112.127296,-27.717513 112.984229,-27.814726 114.02793,-28.202708 114.159766,-28.483117 114.445411,-28.695347 114.577247,-28.974447 114.599219,-29.147305 114.818946,-29.530391 114.950782,-29.921554 114.89585,-30.746498 115.082618,-31.517621 115.533057,-31.863505 115.730811,-32.523601 115.67588,-32.634692 115.544044,-33.16049 115.620948,-33.619137 115.302344,-33.49096 114.994727,-33.737988 114.928809,-34.275319 114.972755,-34.46575 115.126563,-34.366055 115.269385,-34.818257 115.917579,-34.908402 116.060401,-35.106373 116.598731,-35.11536 117.389747,-35.169263 117.774268,-35.169263 118.081885,-34.980447 118.312598,-34.402321 119.663917,-34.30255 119.56504,-34.029844 119.883643,-33.938746 120.960303,-33.911398 121.399757,-34.011632 121.949073,-34.102652 122.476417,-34.038948 123.432227,-33.591687 124.091407,-33.10529 124.212257,-32.902593 125.014258,-32.319576 126.134864,-32.375265 127.123633,-31.760809 129.035255,-35.294897 129.068214,-35.634921 127.541114,-37.453004 125.157081,-37.696807 123.058692,-37.688114 120.817481,-38.46644 118.664161,-38.337294 115.697852,-37.418109 113.368751,-36.584603 112.028419,-34.998448 111.061622,-33.545916 110.973731,-31.984725 111.512061,-31.414542 111.270362,-30.026241 110.182716,-28.396173 109.798194,-27.756409 109.875098,-25.765206 109.237891,-25.765206 109.237891

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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APPENDIX B. SUPPORTING FIGURES FOR SECTION 2.3 METEOROLOGY AND OCEANOGRAPHY

Browse

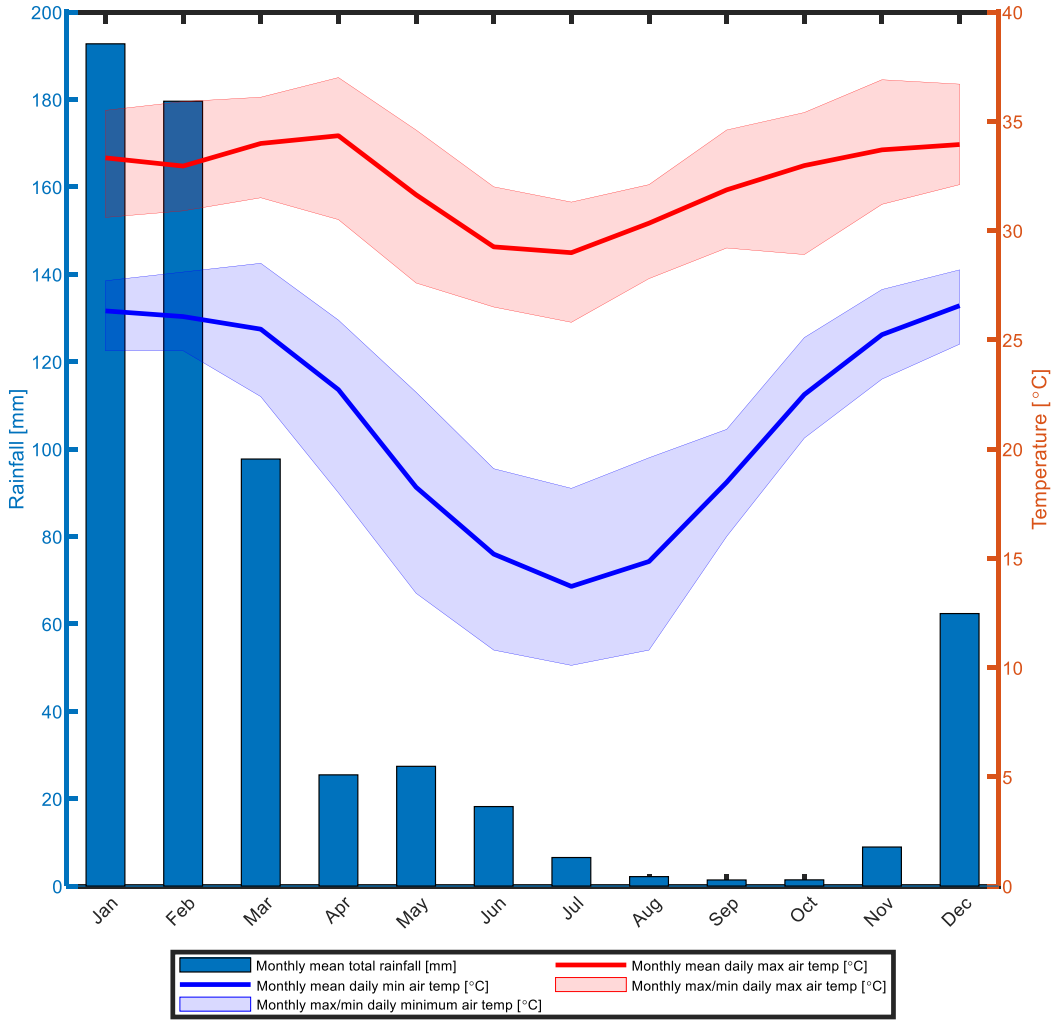


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Broome Airport weather station from 1939-2020 (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

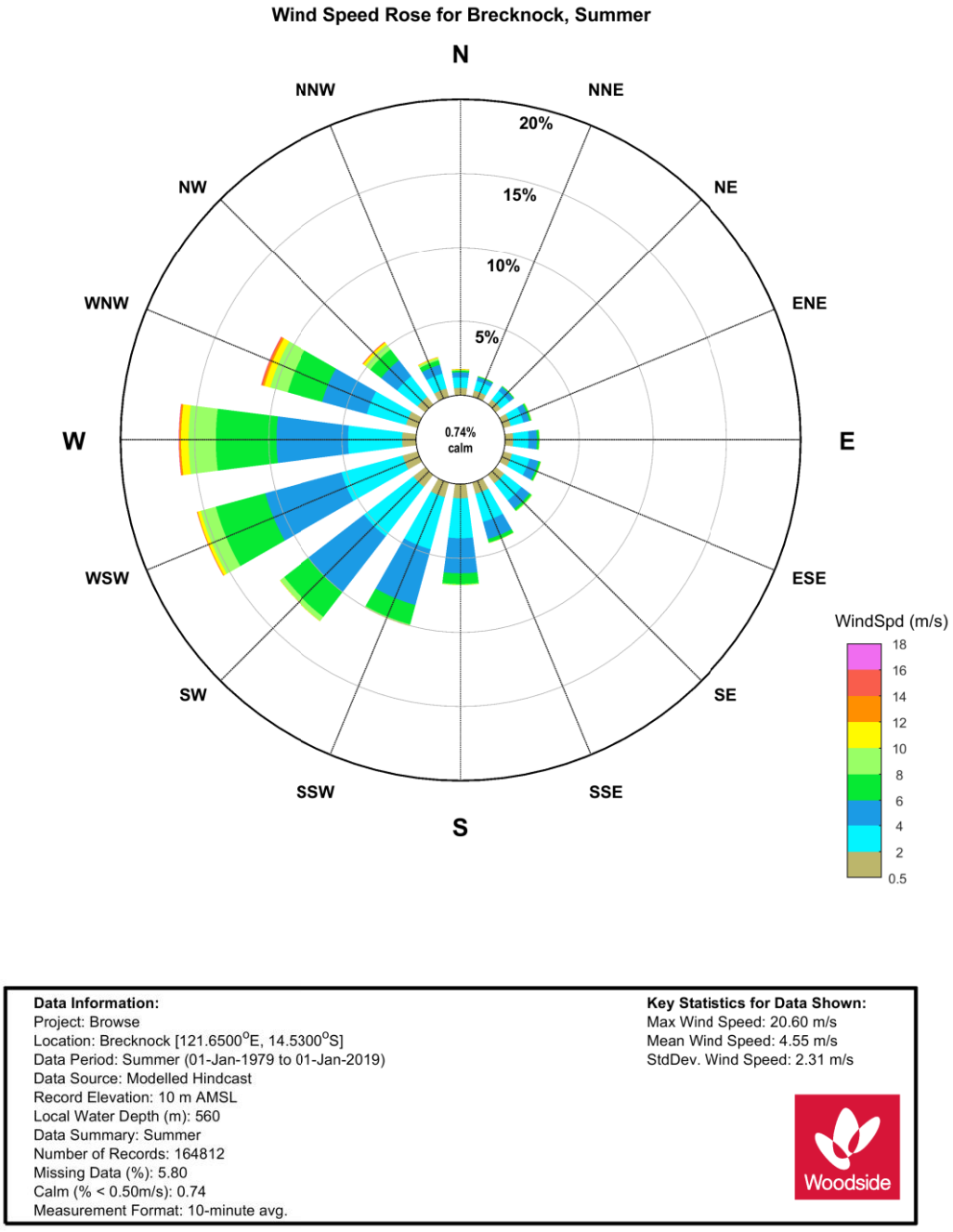
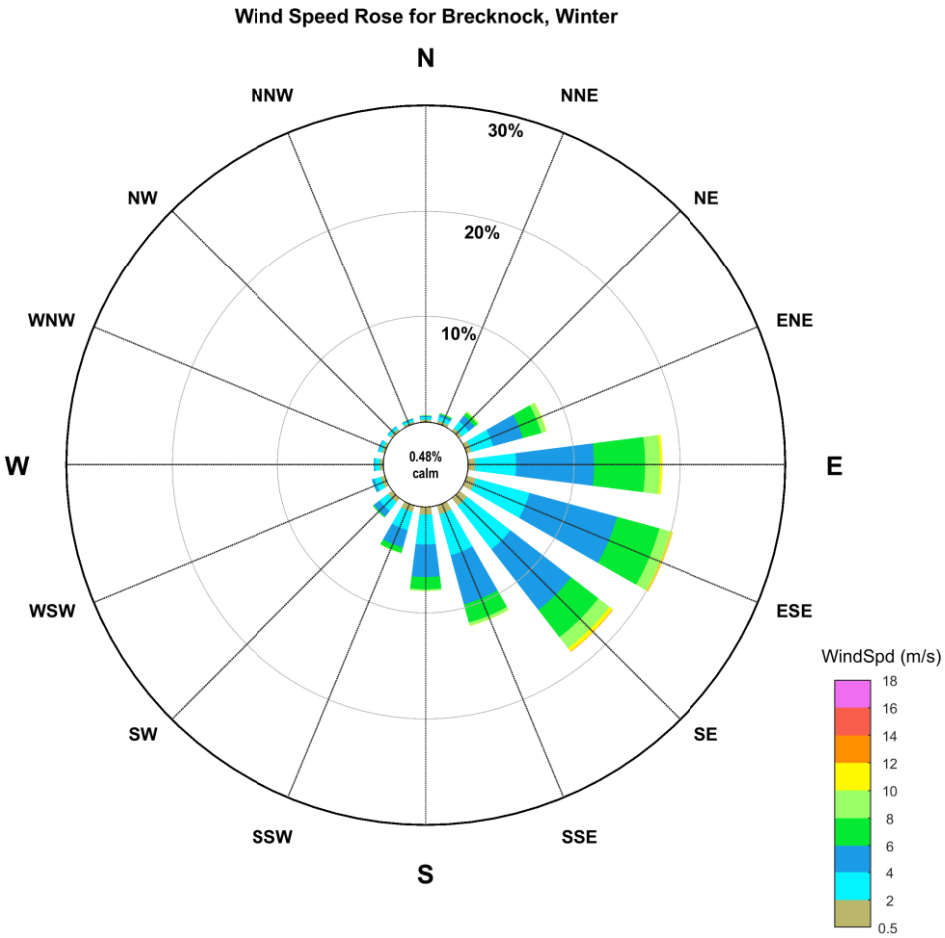


Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in summer are predominantly from the WNW to SW due to the North West Monsoon (WEL, 2019).



Data Information:
Project: Browse
Location: Brecknock [121.6500°E, 14.5300°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2018)
Data Source: Modelled Hindcast
Record Elevation: 10 m AMSL
Local Water Depth (m): 560
Data Summary: Winter
Number of Records: 173751
Missing Data (%): 1.10
Calm (% < 0.50m/s): 0.48
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 14.34 m/s
Mean Wind Speed: 4.71 m/s
StdDev. Wind Speed: 2.01 m/s

Woodside

Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the Brecknock site (Metocean Solutions Ltd, 2019). Note tropical cyclone events were not included in this distribution. Winds at Brecknock in winter are predominantly from the E to SE due to the South East Trade Winds coming from the Australian mainland (WEL, 2019).

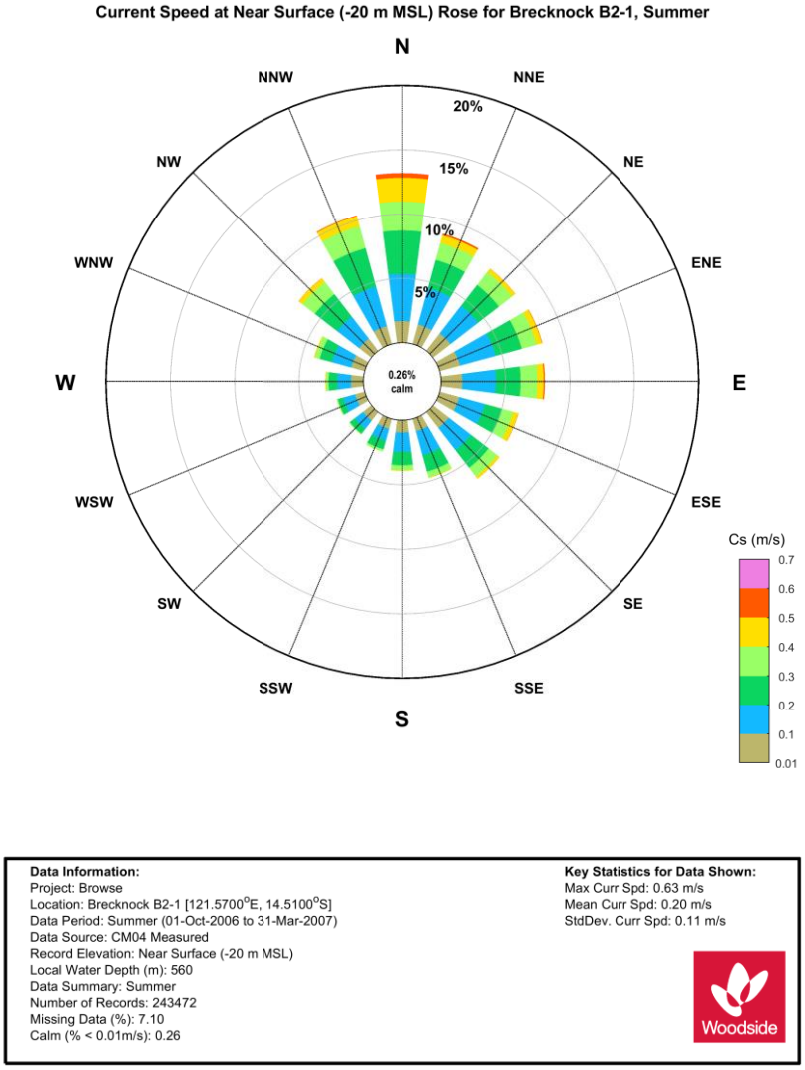
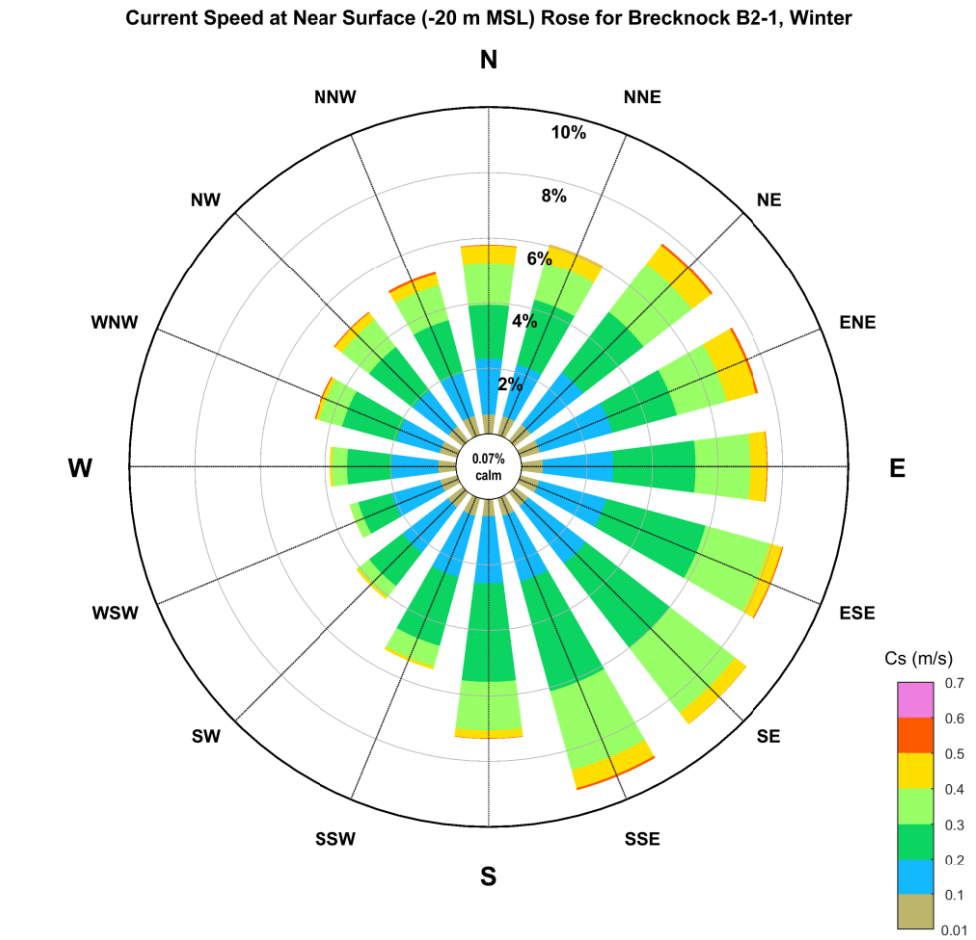


Figure 4. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).



Data Information:
Project: Browse
Location: Brecknock B2-1 [121.5700°E, 14.5100°S]
Data Period: Winter (17-Sep-2006 to 08-Sep-2007)
Data Source: CM04 Measured
Record Elevation: Near Surface (-20 m MSL)
Local Water Depth (m): 560
Data Summary: Winter
Number of Records: 246184
Missing Data (%): 1.46
Calm (% < 0.01m/s): 0.07

Key Statistics for Data Shown:
Max Curr Spd: 0.62 m/s
Mean Curr Spd: 0.24 m/s
StdDev. Curr Spd: 0.10 m/s

Woodside

Figure 5. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at Brecknock B2-1 location (cyclones removed) (RPS Metocean Ltd. 2008).

North-west Shelf/Scarborough

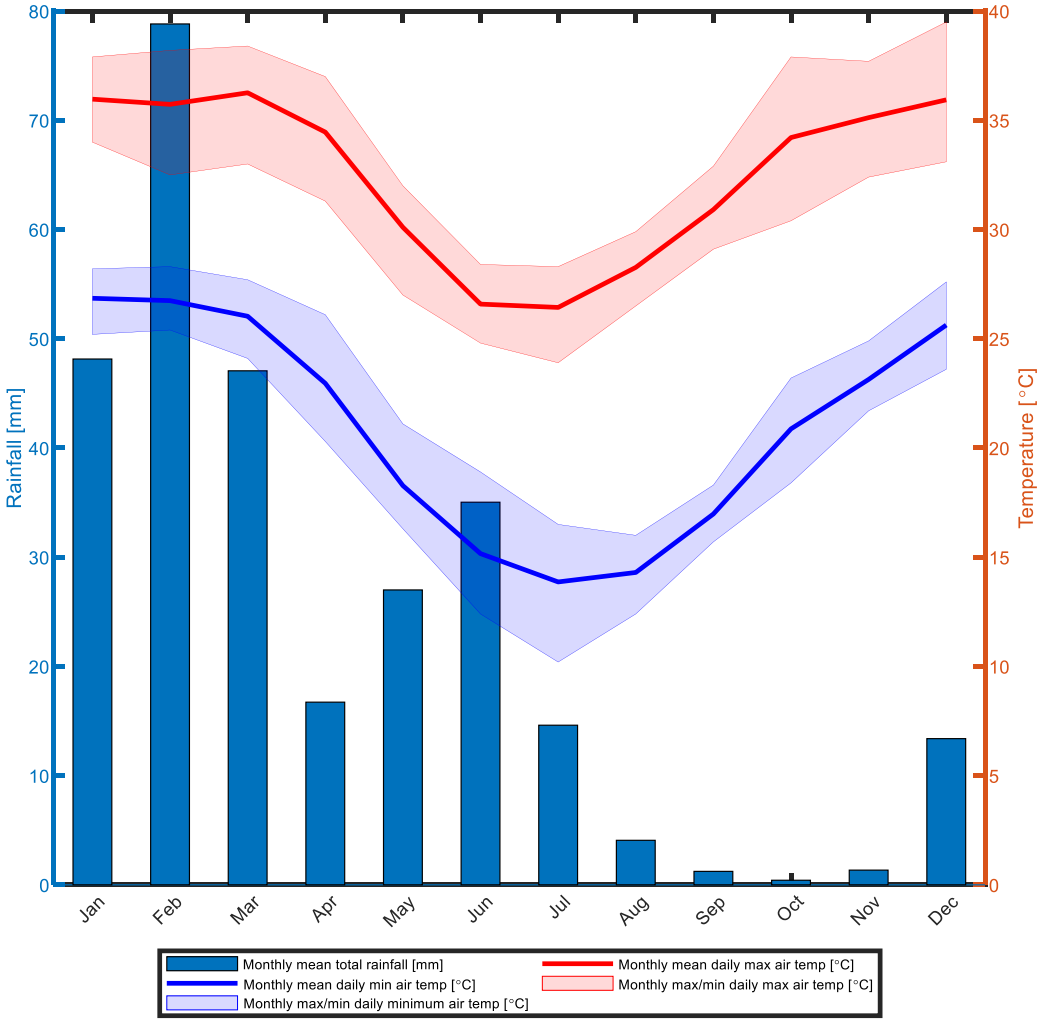
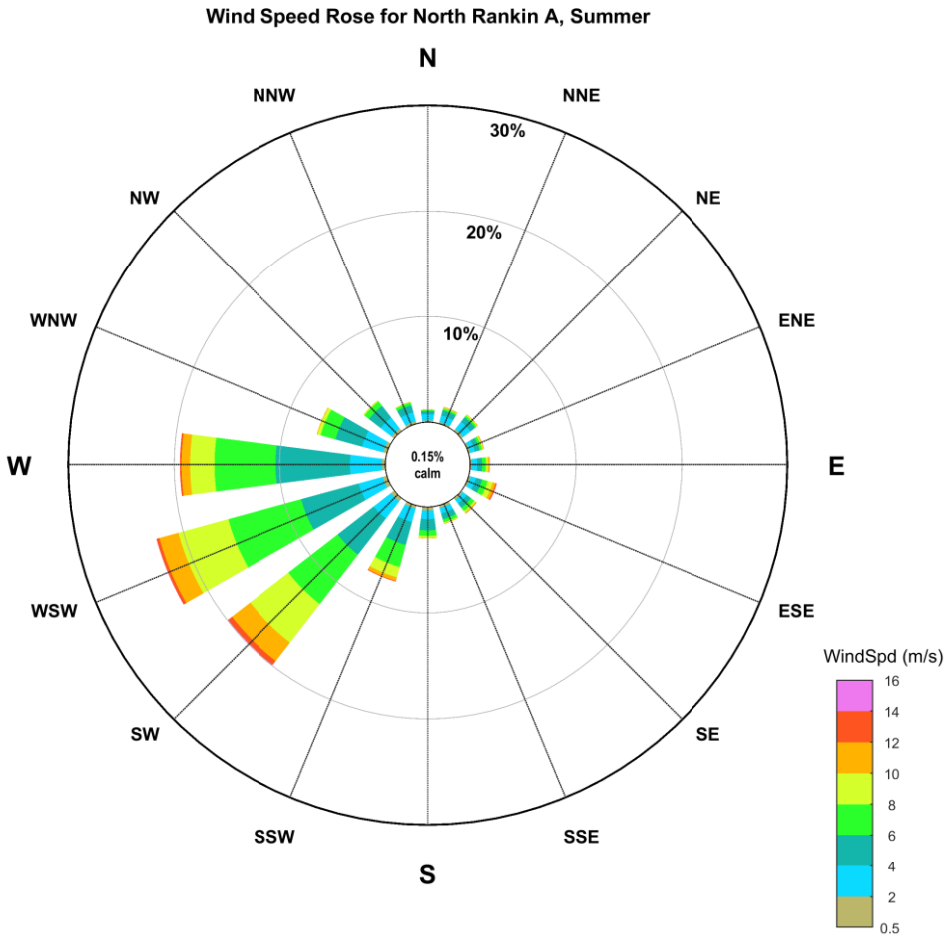


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Karratha Aero weather station from 1972-2020 and 1993-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

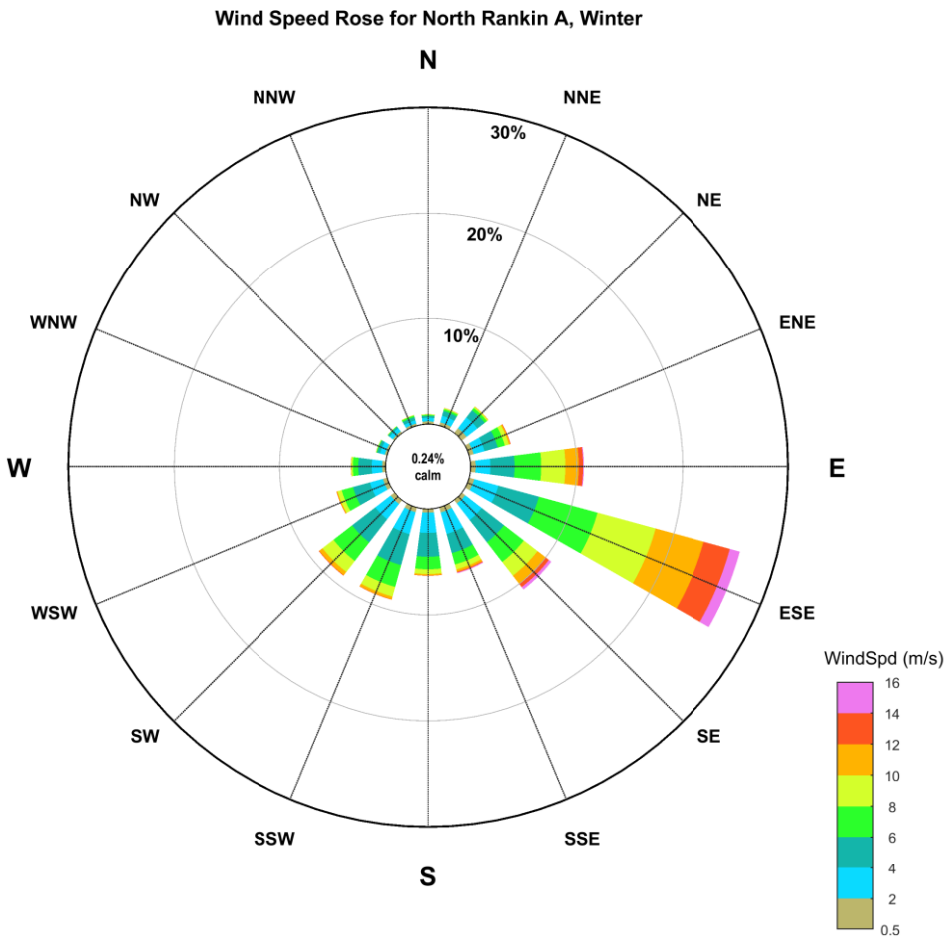


Data Information:
Project: North West Shelf
Location: North Rankin A [116.1200°E, 19.6100°S]
Data Period: Summer (01-Oct-1995 to 30-Nov-2015)
Data Source: Measured Winds
Record Elevation: 10 m AMSL
Local Water Depth (m): 125
Data Summary: Summer
Number of Records: 674659
Missing Data (%): 7.24
Calm (% < 0.50m/s): 0.15
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 18.50 m/s
Mean Wind Speed: 6.04 m/s
StdDev. Wind Speed: 2.55 m/s

Woodside

Figure 2. Summer distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin A in summer are characterised by W to SW driven by the North West Monsoon (RPS, 2016).



Data Information:
Project: North West Shelf
Location: North Rankin A [116.1200°E, 19.6100°S]
Data Period: Winter (22-Jun-1995 to 30-Sep-2015)
Data Source: Measured Winds
Record Elevation: 10 m AMSL
Local Water Depth (m): 125
Data Summary: Winter
Number of Records: 673213
Missing Data (%): 4.43
Calm (% < 0.50m/s): 0.24
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 24.23 m/s
Mean Wind Speed: 6.25 m/s
StdDev. Wind Speed: 3.16 m/s

Woodside

Figure 3. Winter distributions of 10-minute average wind speeds by 22.5° directional sectors at the North Rankin A site (WEL, 2015). Note tropical cyclone events were not included in this distribution. Winds at North Rankin in winter are predominantly influenced by the South East Trade Winds over Australia (RPS, 2016).

Scarborough

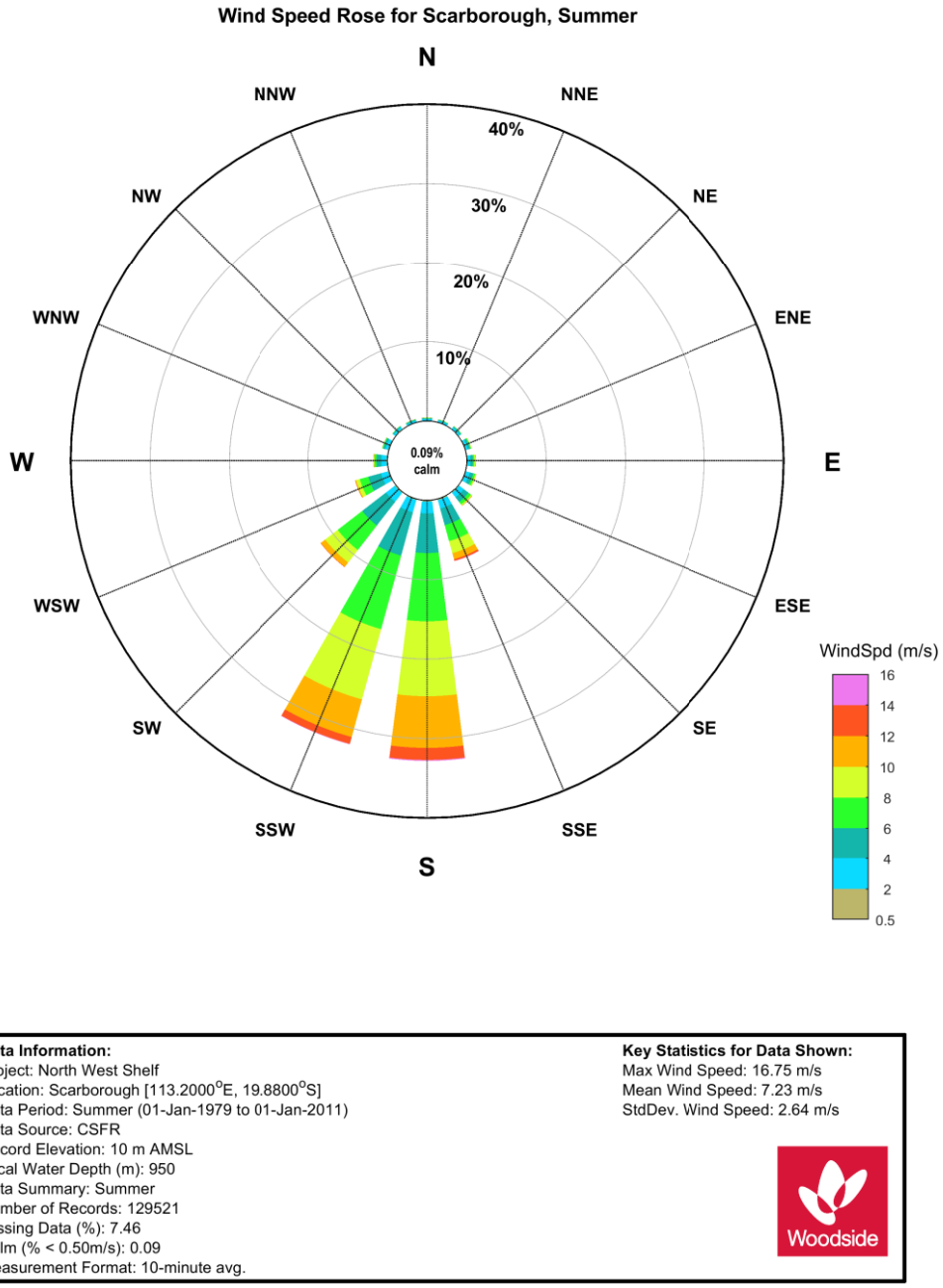
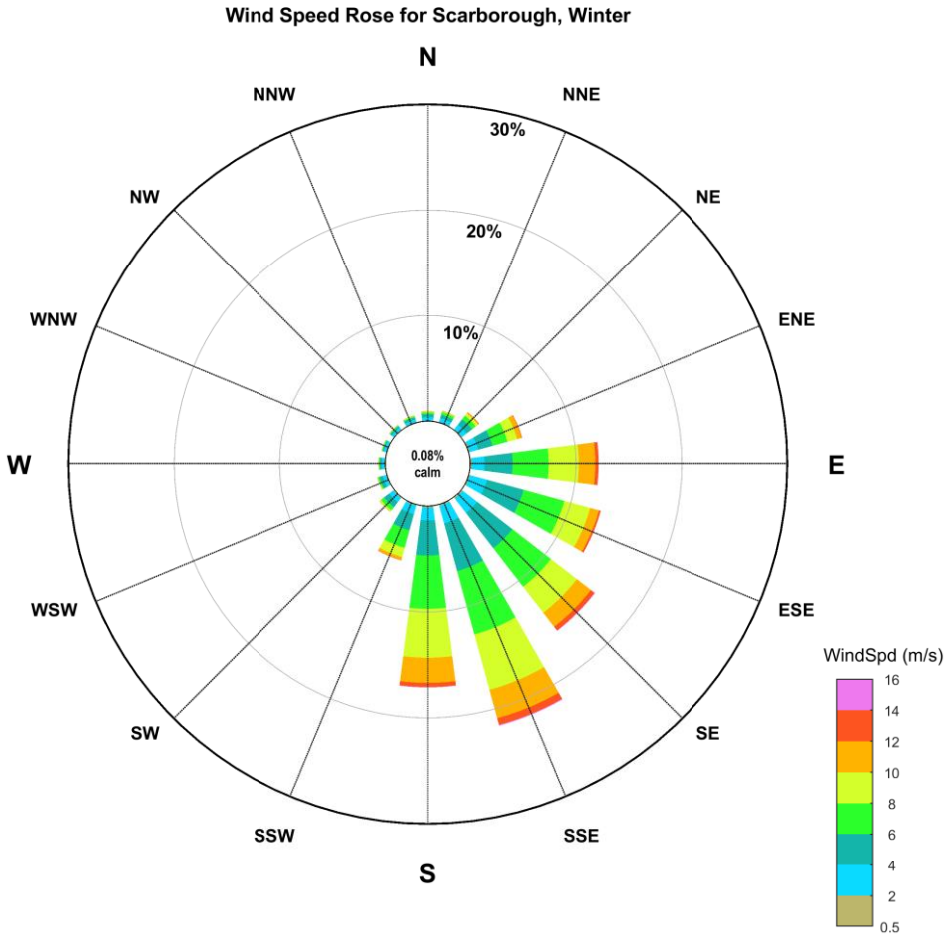


Figure 4. Summer distributions of wind speeds (10-minute at 10m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in summer are predominantly from the S to SSW due to a Pilbara Heat Low forming over the northwest coast of Western Australia [R8] SW winds are also experienced at this site due to the monsoon trough.



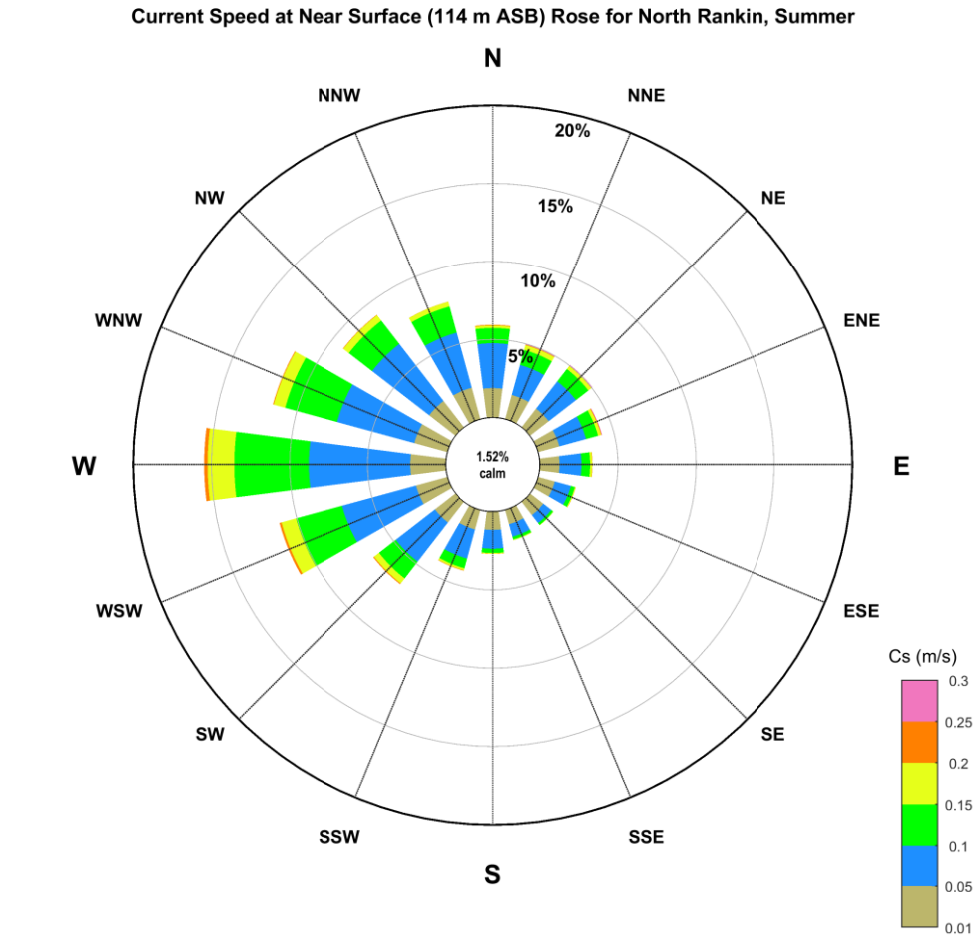
Data Information:
Project: North West Shelf
Location: Scarborough [113.2000°E, 19.8800°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2010)
Data Source: CSFR
Record Elevation: 10 m AMSL
Local Water Depth (m): 950
Data Summary: Winter
Number of Records: 138863
Missing Data (%): 1.20
Calm (% < 0.50m/s): 0.08
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 19.15 m/s
Mean Wind Speed: 6.90 m/s
StdDev. Wind Speed: 2.57 m/s

Woodside

Figure 5. Winter distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Scarborough site (WEL, 2018). Note tropical cyclone events were not included in this distribution. Winds at Scarborough in winter are predominantly from the S to E driven by the South East Trade Winds over Australia (RPS, 2016).

North-west Shelf

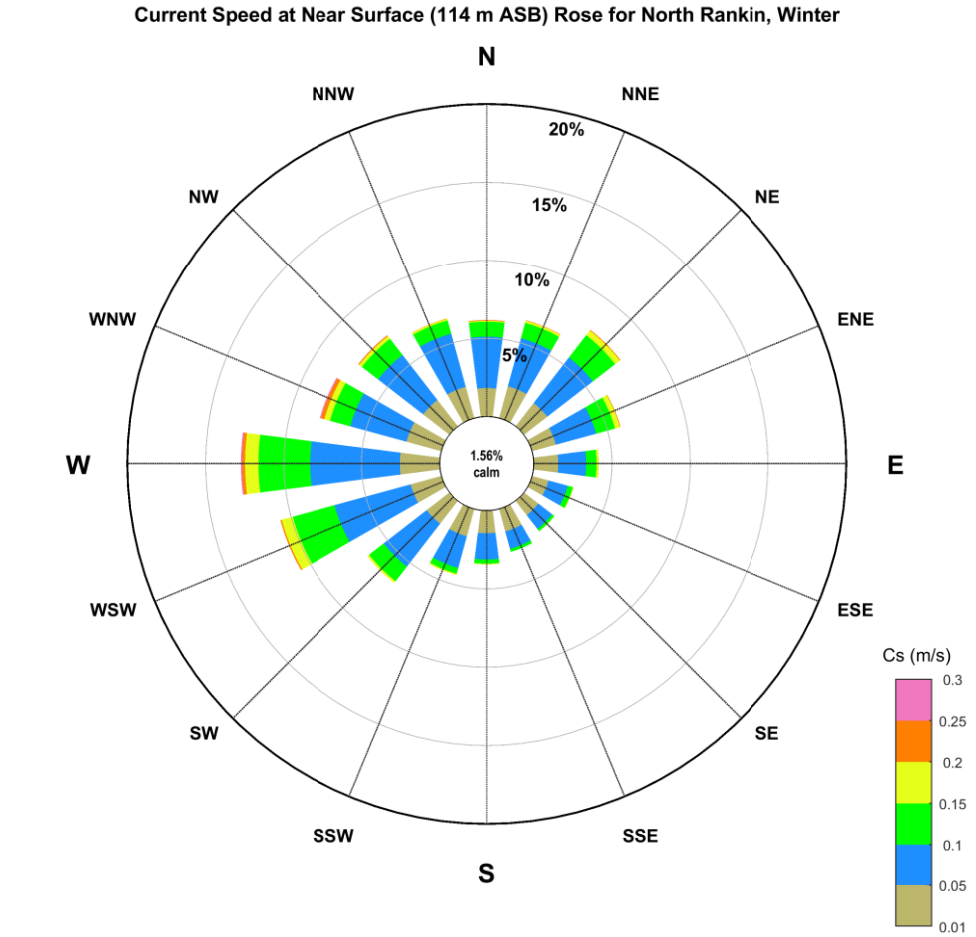


Data Information:
Project: North West Shelf
Location: North Rankin [116.1400°E, 19.5800°S]
Data Period: Summer (01-Oct-2004 to 31-Mar-2009)
Data Source: Measured Data
Record Elevation: Near Surface (114 m ASB)
Local Water Depth (m): 124.5
Data Summary: Summer
Number of Records: 496705
Missing Data (%): 6.63
Calm (% < 0.01m/s): 1.52

Key Statistics for Data Shown:
Max Curr Spd: 0.49 m/s
Mean Curr Spd: 0.08 m/s
StdDev. Curr Spd: 0.04 m/s

Woodside

Figure 6. Summer (Nov-Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).



Data Information:
Project: North West Shelf
Location: North Rankin [116.1400°E, 19.5800°S]
Data Period: Winter (21-Sep-2004 to 08-May-2009)
Data Source: Measured Data
Record Elevation: Near Surface (114 m ASB)
Local Water Depth (m): 124.5
Data Summary: Winter
Number of Records: 337723
Missing Data (%): 0.88
Calm (% < 0.01m/s): 1.56

Key Statistics for Data Shown:
Max Curr Spd: 0.32 m/s
Mean Curr Spd: 0.07 m/s
StdDev. Curr Spd: 0.04 m/s

Woodside

Figure 7. Winter (May-Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the North Rankin location (cyclones removed) (WEL, 2011).

Scarborough

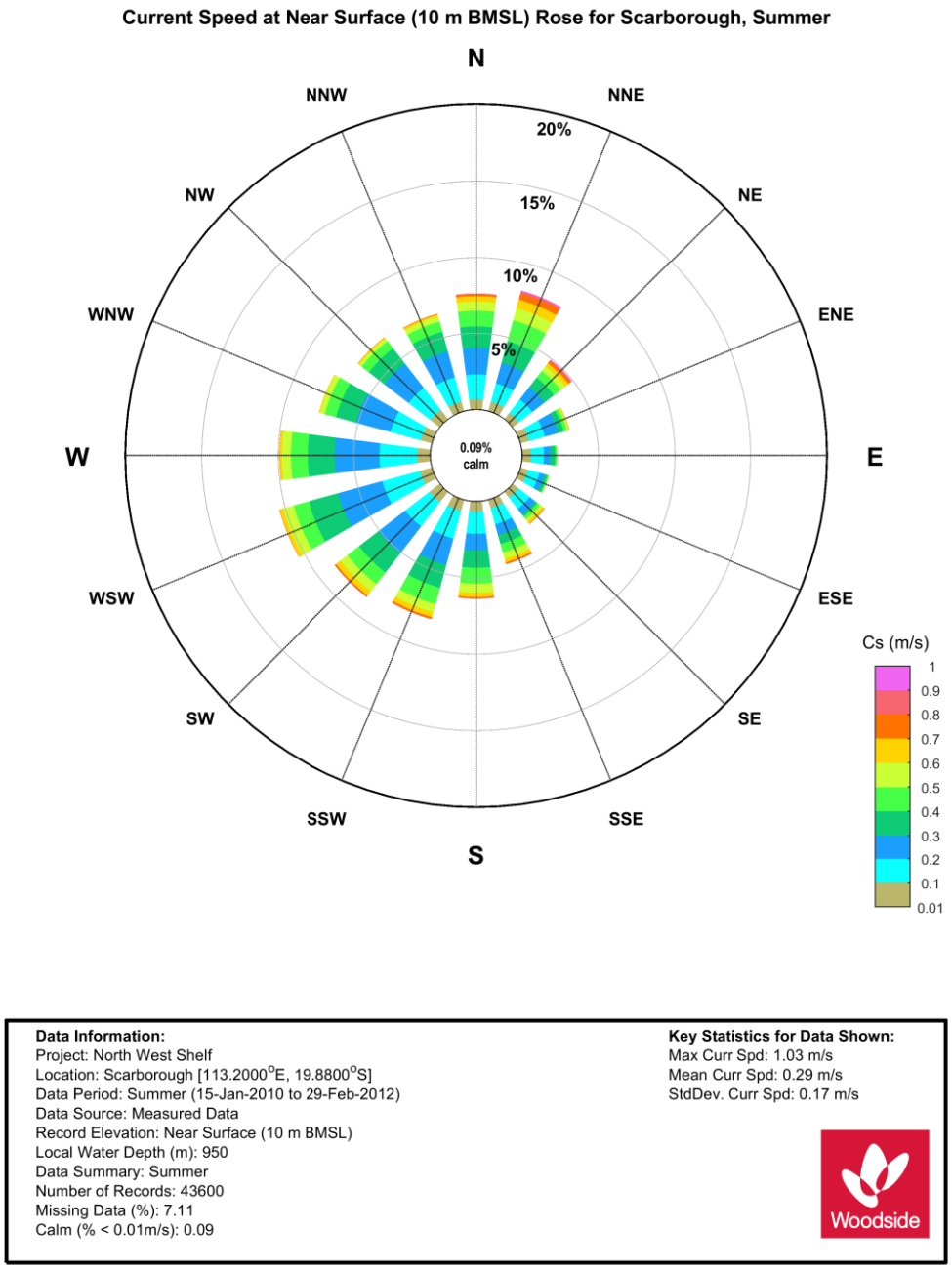


Figure 8. Summer (Nov - April) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

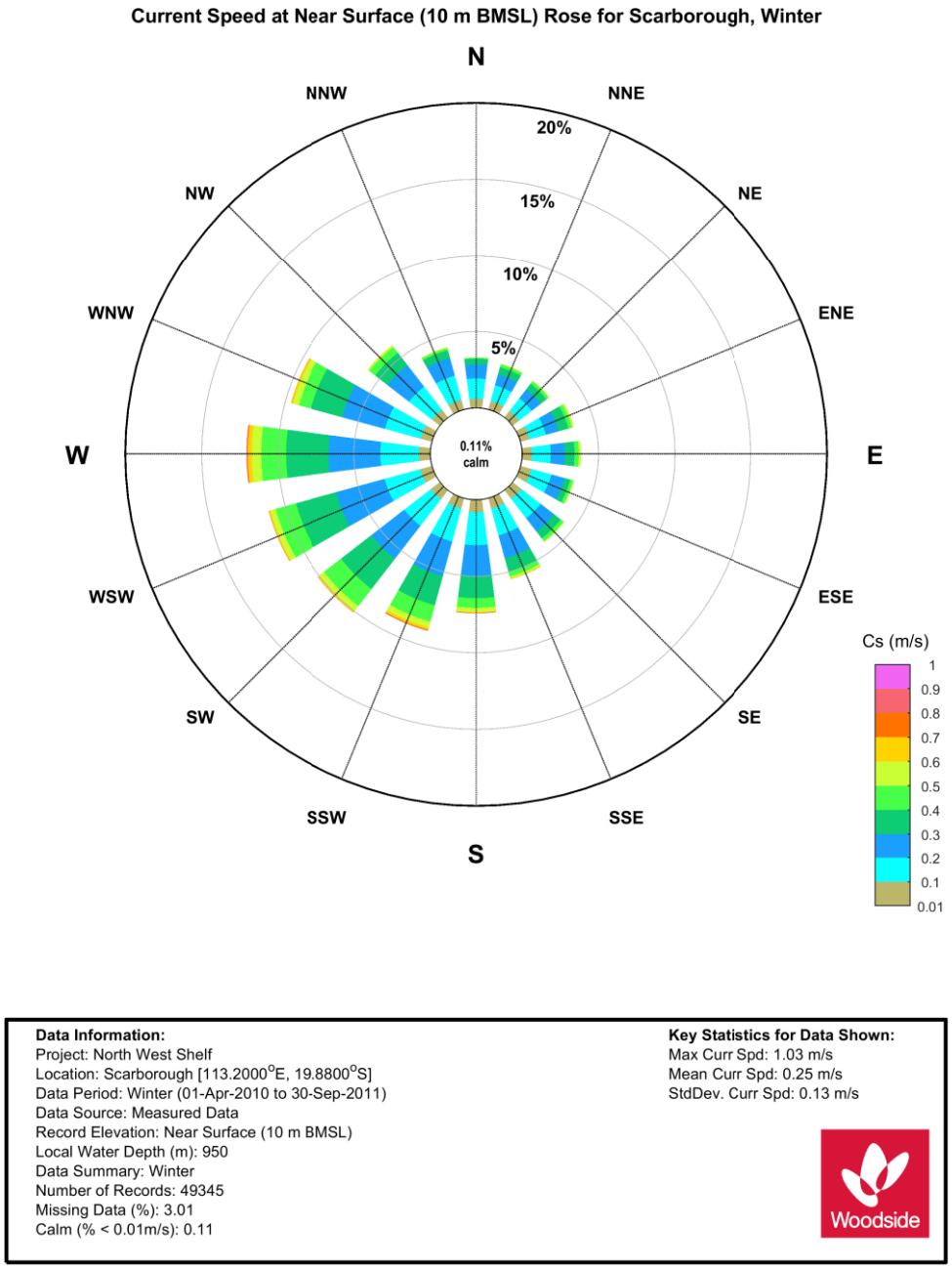


Figure 9. Winter (May-Sep) near surface combined frequency of 1-min mean current speed and direction (towards) measured at the Scarborough location (cyclones removed) (WEL, 2018).

North-west Cape

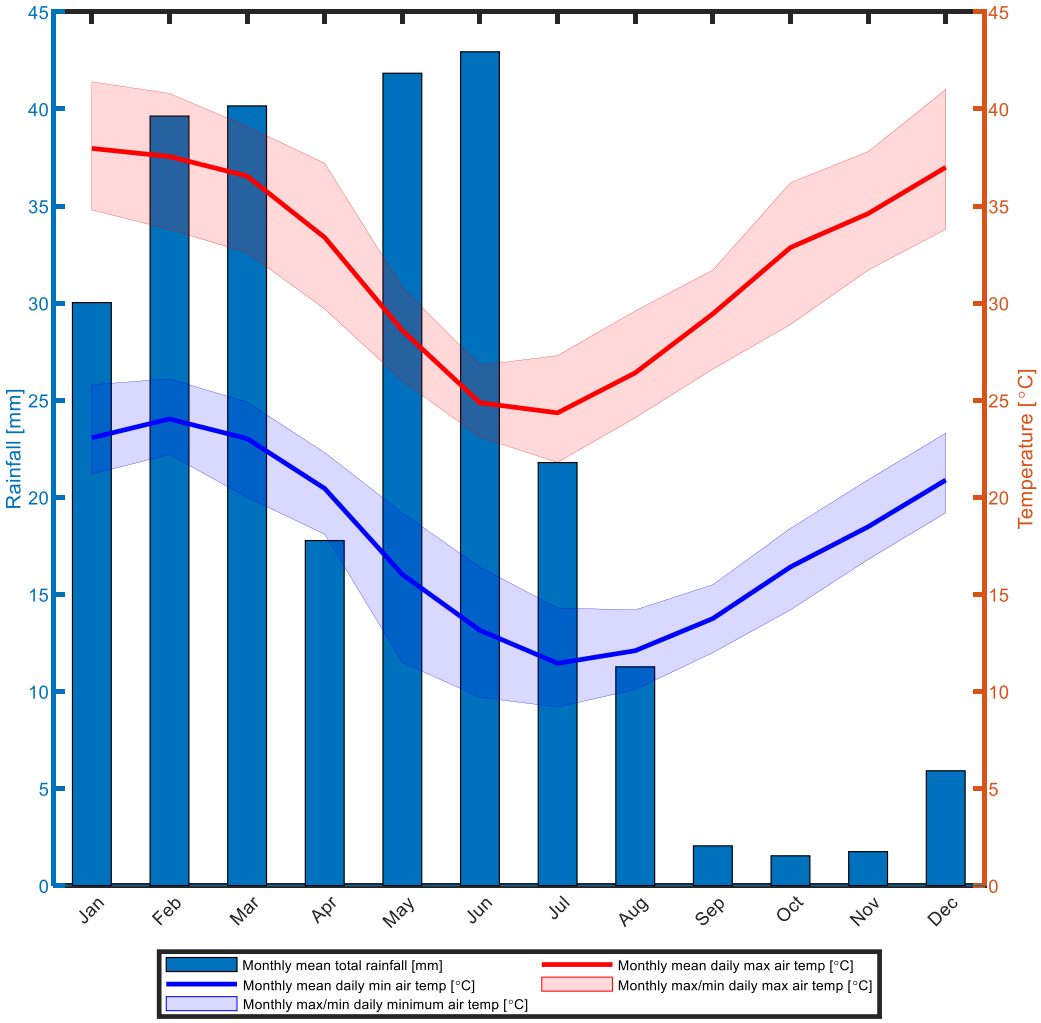


Figure 1. Monthly average total rainfall [mm] and air temperature [°C], calculated based on observations at the Learmonth Airport weather station from 1945-2020 and 1975-2020 respectively (Bureau of Meteorology 2020). Bars show the monthly average total rainfall values, and thick blue and red lines denote monthly average daily minimum and maximum air temperatures, respectively. Shaded blue and red areas denote monthly recorded extremes of daily minimum and maximum air temperature, respectively.

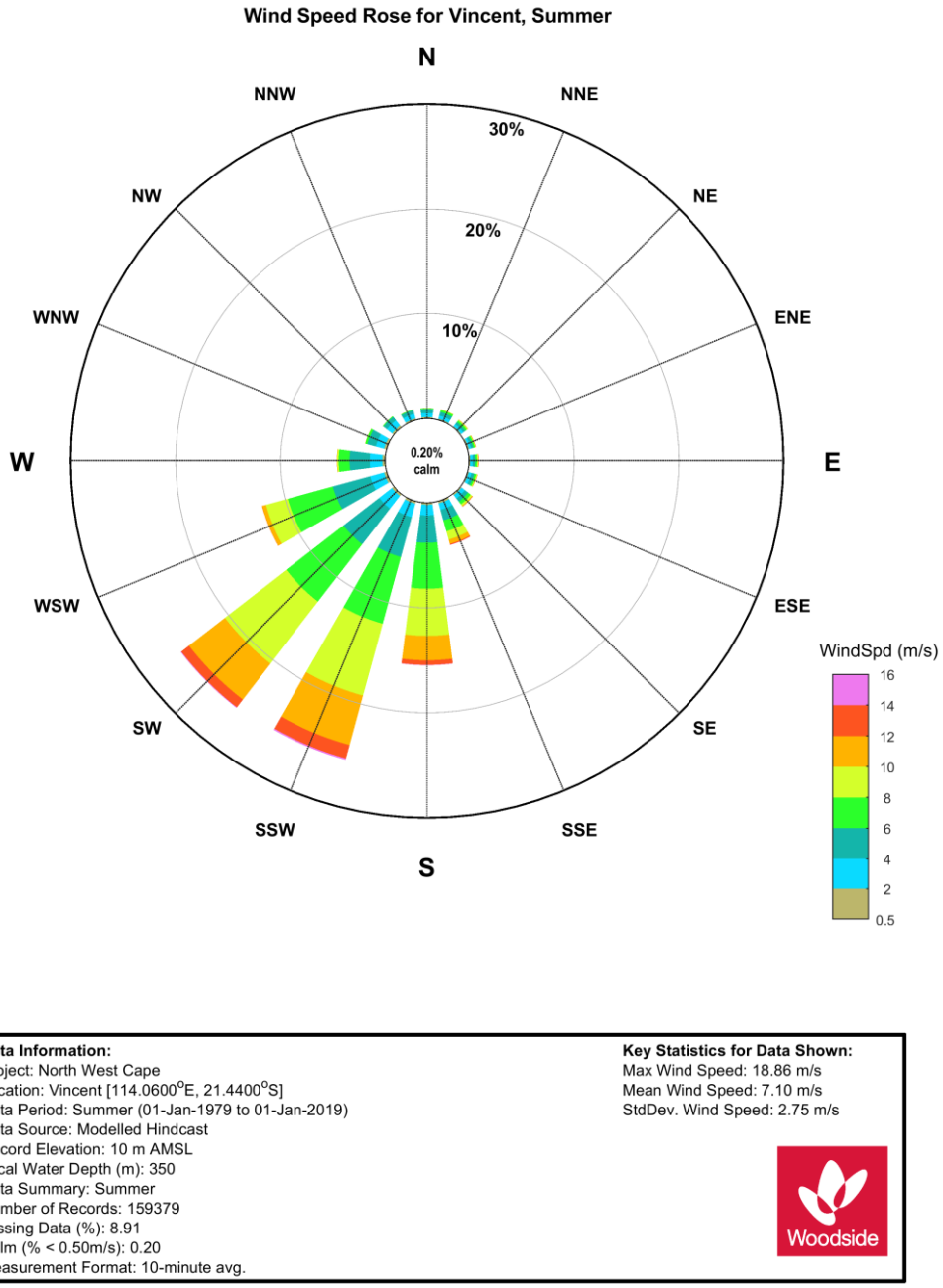
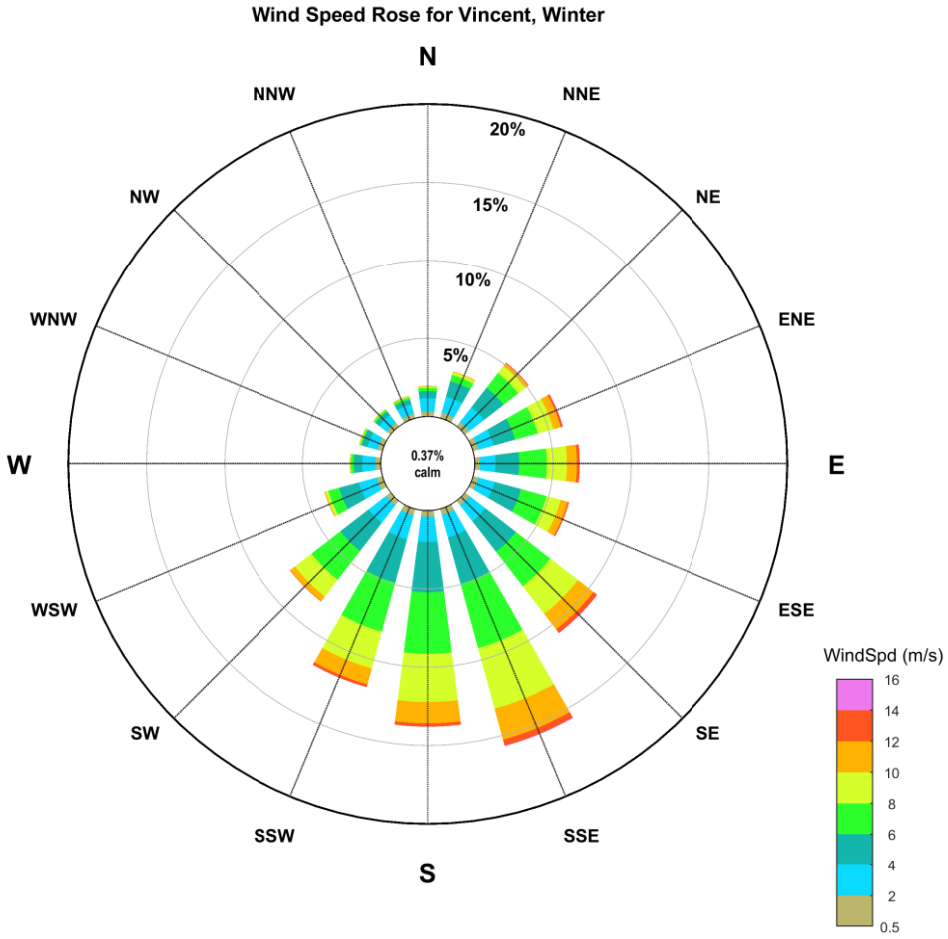


Figure 2. Summer distributions of wind speeds (10-minute at 10 m ASL) by 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. Winds at Vincent in summer are predominantly from the SW to SSW in summer due to the presence of the Pilbara Heat Low (MetOcean Engineers, 2005).

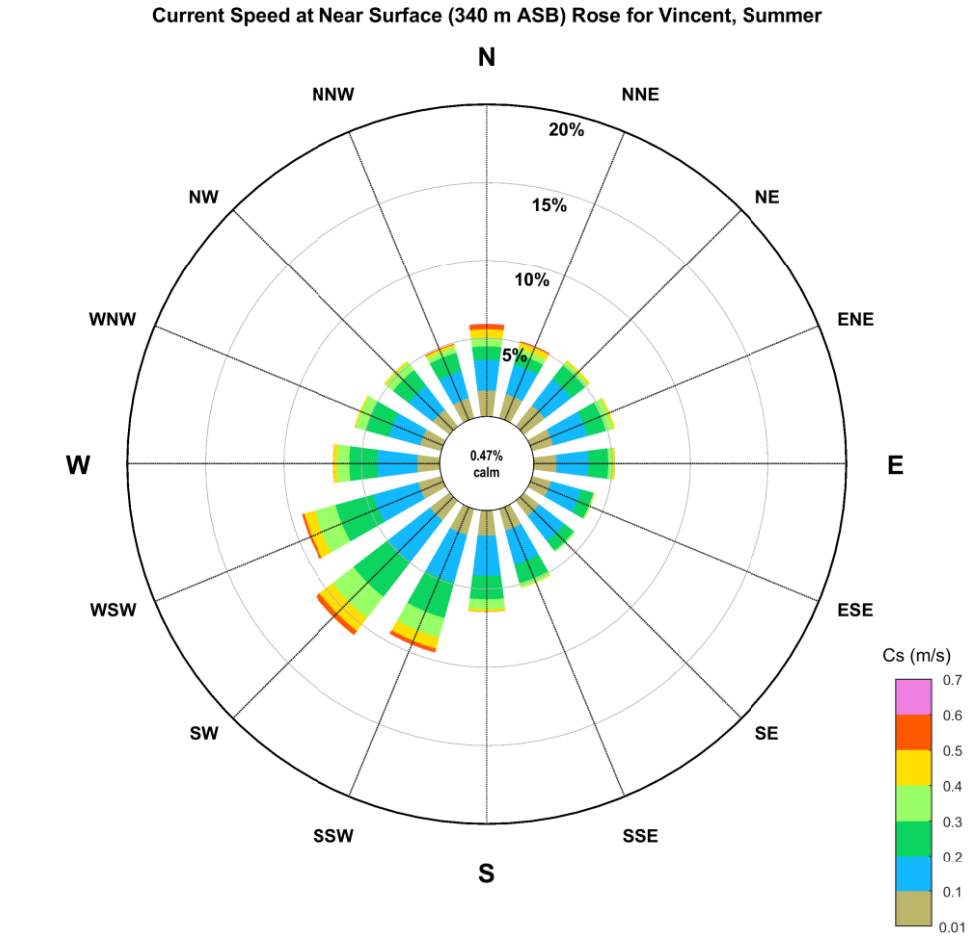


Data Information:
Project: North West Cape
Location: Vincent [114.0600°E, 21.4400°S]
Data Period: Winter (01-Apr-1979 to 30-Sep-2018)
Data Source: Modelled Hindcast
Record Elevation: 10 m AMSL
Local Water Depth (m): 350
Data Summary: Winter
Number of Records: 173626
Missing Data (%): 1.17
Calm (% < 0.50m/s): 0.37
Measurement Format: 10-minute avg.

Key Statistics for Data Shown:
Max Wind Speed: 19.39 m/s
Mean Wind Speed: 6.23 m/s
StdDev. Wind Speed: 2.78 m/s

Woodside

Figure 3. Winter distributions of wind speeds (10-minute at 10 m ASL) 22.5° directional sectors at the Vincent site (Vincent Metocean). Note tropical cyclone events were not included in this distribution. In winter, winds at are predominantly from the S to SE, associated with the South East Trades. Easterly gales are experienced at the Vincent location due to high pressure systems generating from the Great Australian Bight area to the site (MetOcean Engineers, 2005).

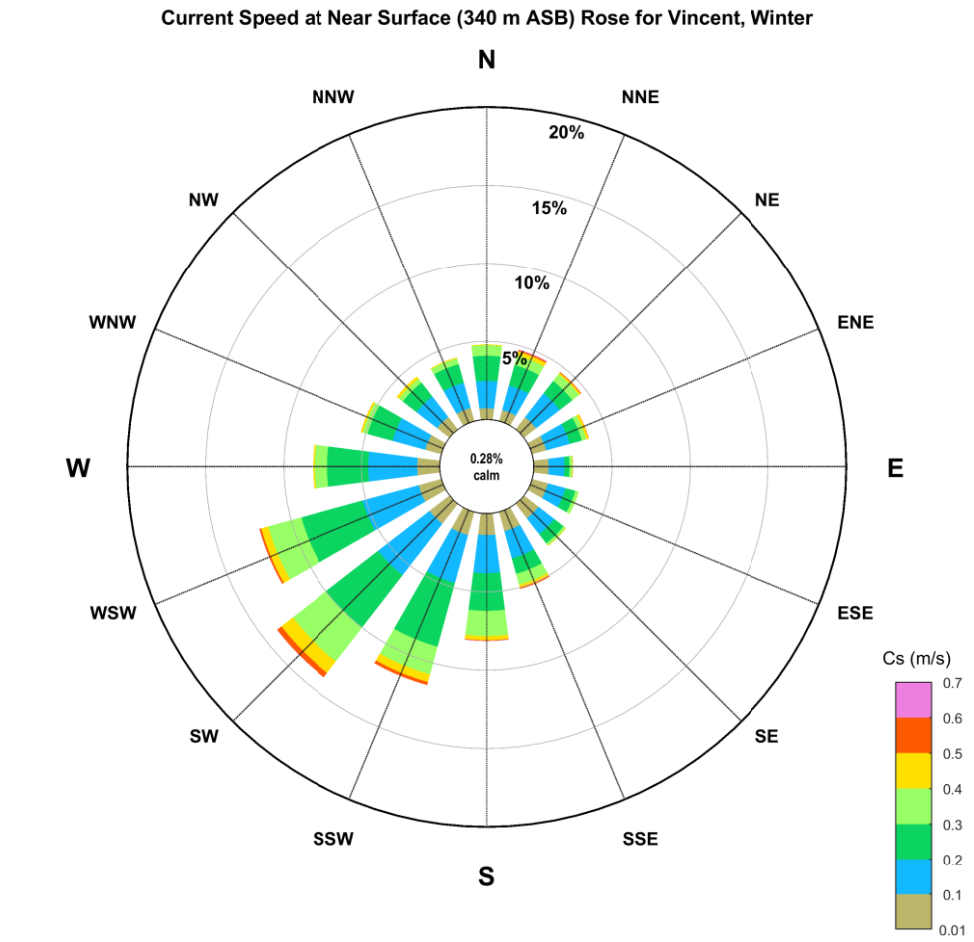


Data Information:
Project: North West Cape
Location: Vincent [114.0600°E, 21.4400°S]
Data Period: Summer (21-Nov-2000 to 13-Dec-2001)
Data Source: Measured Data
Record Elevation: Near Surface (340 m ASB)
Local Water Depth (m): 350
Data Summary: Summer
Number of Records: 144668
Missing Data (%): 1.59
Calm (% < 0.01m/s): 0.47

Key Statistics for Data Shown:
Max Curr Spd: 0.75 m/s
Mean Curr Spd: 0.19 m/s
StdDev. Curr Spd: 0.11 m/s

Woodside

Figure 4. Summer (May – Sep) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).



Data Information:
Project: North West Cape
Location: Vincent [114.0600°E, 21.4400°S]
Data Period: Winter (01-Apr-2001 to 30-Sep-2001)
Data Source: Measured Data
Record Elevation: Near Surface (340 m ASB)
Local Water Depth (m): 350
Data Summary: Winter
Number of Records: 126313
Missing Data (%): 4.13
Calm (% < 0.01m/s): 0.28

Key Statistics for Data Shown:
Max Curr Spd: 0.64 m/s
Mean Curr Spd: 0.20 m/s
StdDev. Curr Spd: 0.11 m/s

Woodside

Figure 5. Winter (Nov – Apr) near surface combined frequency of 1-minute mean current speed and direction (towards) measured at the Vincent location (cyclones removed) (WEL, 2016).

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Metocean Solutions Ltd 2019. “Australia North-West Shelf wave hindcast: Description and

Validation of SWAN ST6 Wave Model”, DRIMS 1401150817.

RPS 2016. Metocean Criteria Guidelines for Modu Mooring on Australia’s North West Shellf, DRIMS 1400522719.

RPS Metocean Pty Ltd 2008. “Browse LNG Development - Offshore MetOcean Measurement

Programme: September 2006 to February 2008 Final Data Report.” CRN: JB0020RT0019.

Vincent Metocean – 40 Year Non-Cyclonic Metocean Database for Design Studies CRN: VAOOOORT1400067309.

WEL 2011. Greater Western Flank Detailed Metocean Design Criteria, Rev 2. CRN: A3000RG5492827.

WEL 2016. Vincent – Basic Design Data Specification sheet – Metocean CRN: VA0000RT1400067309.

WEL 2015. Winds Measured at North Rankin A 1995-2015.

WEL 2018. Scarborough Development - Non-Cyclonic and Operational Metocean Design Criteria – Spreadsheet, Revision A, CRN: SA0009CT1400722569.

WEL 2019. “Browse Development – Metocean Design Basis” CRN: JJ0013ST1400274448.

APPENDIX J. PROGRAM OF ONGOING ENGAGEMENT WITH TRADITIONAL CUSTODIANS

Proposed Program of Ongoing Engagement with Traditional Custodians

This Program of Ongoing Engagement with Traditional Custodians ("Program") has been developed to demonstrate Woodside's commitment to ongoing engagement and support of Traditional Custodians' capacity to care for and manage Country, including Sea Country, and has been directly informed by Traditional Custodians' feedback regarding their capacity to engage and consult on Environment Plans.

It is a living document designed to evolve with ongoing consultation and feedback from Traditional Custodians and, at a minimum, will be subject to annual review. In addition to this Program, Woodside will continue to participate in, and support collective industry engagement with Traditional Owners on the development of a future, sustainable, industry wide Program. Through the Program, Woodside actively supports Traditional Custodians' capacity for, and involvement in, ongoing engagement and feedback on environment plans.

The Program has been developed so that Traditional Custodians can, on an ongoing basis, provide Woodside with feedback relating to the possible consequences of an activity to be carried out under an environment plan on their functions, interests and activities as they relate to cultural values. This feedback will be evaluated in conjunction with Traditional Custodians and, where necessary, avoidance or mitigation strategies in will be developed in collaboration with Traditional Custodians. How the Program is implemented with specific Traditional Custodians will depend on their stated needs and priorities

The Program is underpinned by Woodside's First Nations Communities Policy (woodside.com), the objective of which is to ensure Woodside partners and engages with First Nations communities to create positive economic, social and cultural outcomes that leave a lasting legacy. Woodside does this through building respectful relationships and partnerships with First Nations communities where we are active, in the areas where they are most interested in. We acknowledge the unique connection that First Nations communities have to land, waters and the environment. .

The Program will include, as agreed with relevant communities, reasonable commitment to:

1. **Support for ongoing dialogue and engagement**

Woodside will support the capacity of Traditional Custodians to participate in ongoing dialogue and engagement about the environment plans and to enable the ongoing and future identification of cultural values potentially impacted by Woodside's activities. Woodside further commits to agreeing consultation protocols with individual Traditional Custodians to ensure the material provided is appropriate in level of detail such that the potential for cultural impact from Woodside activities can be determined and as required measures can be adopted to avoid or minimise impact.

In addition, Woodside will receive feedback on cultural values from an individual person or organisation that identifies as a Traditional Custodian, at any stage during the development and implementation of activities. This feedback will be evaluated, in conjunction with the Traditional Custodian individual or group and if required, control measures will put in place to avoid impacts to cultural values, or where avoidance is not possible, to minimise and mitigate the impacts to an acceptable level.

Where cultural values are identified post activity completion, any controls relevant to value management will be implemented during the next relevant activity.

2. Support for the identification and recording of cultural features

Woodside will support Traditional Custodians to record and articulate their Sea Country values and will invest in cultural assessments codesigned with Traditional Custodians, where required, to inform potential risks to cultural values from our petroleum activities.

This may include supporting cultural mapping by Traditional Custodians to identify and map significant cultural features including archaeological sites and other cultural values. The scoping of the mapping process will be codesigned with Traditional Custodians.

Woodside understands that cultural knowledge remains the intellectual property of Traditional Custodians and will agree with Traditional Custodians at the outset how that information from surveys will be used to feedback into and inform the environment plan's design and implementation.

In addition, Woodside applies the Cultural Heritage Management Procedure 2019, updated in 2023, to the Program which*:*

- provides a process for the identification, protection, and management of Cultural Heritage taking into account relevant standards, in particular, the United Nations Declaration on the Rights of Indigenous Peoples, the Charter for the Protection and Management of the Archaeological Heritage, the Convention for the Safeguarding of the Intangible Cultural Heritage, and the Convention on the Protection of the Underwater Cultural Heritage;
- applies to underwater cultural heritage and, consistent with current practice, provides for the commissioning of (where appropriate) both archaeological and ethnographic assessments of cultural values over the submerged landscape; and
- the process includes the following:
    - early engagement with relevant Traditional Custodians
    - identification of potential heritage, this could include desktop and field surveys undertaken with the Traditional Custodians.
- the development of cultural management strategies; and, where it is determined cultural heritage may be impacted, the development of Cultural Heritage Management Plans codesigned with Traditional Custodians and implemented by Woodside's First Nations team which:
    - focus on avoidance or minimisation of impacts; and
    - provide regular reviews and for inclusion of new information and further development of the Cultural Heritage Management Plan.

Woodside is committed to continue to receive feedback on cultural values for the life of an environment plan, the inclusion of new information and the development of avoidance or mitigation strategies in collaboration with Traditional Custodians. This information will be recorded via the Woodside Management of Knowledge Process and any potential impacts to the accepted Environment Plan evaluated via the Woodside Management of Change Process.

3. Building capacity for the ongoing protection of country

Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups. This is guided by Woodside's Indigenous Affairs Strategy 2019 ("Strategy"), which is designed to enable the building and maintaining of relationships with Traditional Custodians to leave a lasting legacy, including strengthening of Traditional Custodians' capacity to care for and manage Country, including Sea Country. The Strategy was developed with inputs from Traditional Custodians and contains four pillars that direct Woodside's social investment, policies relating to economic development, procurement and employment, and Woodside's agreement making and implementation of agreements. The pillars are:

1. Culture and Heritage Management: support social outcomes through protection, recognition and respect for culture and heritage;
2. Economic Participation: provide training, jobs, and business opportunities;

3. Capability and capacity: ensure strong corporate governance, leadership development and education initiatives to support self-determination; and
4. Safer and Healthier Communities: partner with Aboriginal people and service providers to maximise safer and healthier community outcomes.

Woodside is committed to an ongoing relationship between Woodside and the Traditional Custodian groups. Through consultation with Traditional Custodians Woodside will continue to:

- establish support for Indigenous ranger programs via social investment;
- establish support for Indigenous oil spill response capability via investigating training models;
- establish support for identification and recording of cultural values and the management of that information by Traditional Custodians;
- establish support for programs identified by the Traditional Custodians as important to them and as agreed by Woodside.

4. Support for capacity and capability in relation to governance

Pillar 3 of the Indigenous Affairs Strategy 2019 focuses on ensuring strong corporate governance, leadership development and education initiatives to support self-determination. To enable this, Woodside will support measures to increase the capability and capacity of the Traditional Custodian groups, including in relation to governance and management systems.

The nature of this support will be informed by the individual needs of Traditional Custodian groups, but may include:

- funding or other support for community meetings, particularly where consultation with representative bodies lies outside of that body's core business and cultural authority or mandate needs to be secured,
- resourcing internal expertise so that information is managed consistently and internally, including ensuring appropriate record keeping of consultation to provide stakeholders with a lasting record of discussions, and
- development or upgrade of IT systems to manage information.

5. Program Reporting and Review of Effectiveness

Woodside will undertake an annual review of the Program to assess its effectiveness and adapt the Program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.
Progress of the Program will be reported annually in line with annual sustainability reporting via the Woodside website.

A commitment to the Program will be included in all new and revised Environment Plans in the format below:

Environmental Performance Outcome	Environmental Performance standards	Measurement Criteria
EPO 1 Woodside will actively support Traditional Custodians' capacity for ongoing engagement and consultation on environment plans for the purpose of avoiding impacts to cultural heritage values	**Applicable to all EPs:** **EPS 1.1** Implement a program, which is compliant with Corporate Woodside Policies Strategies and procedures, to undertake ongoing consultation with Traditional Custodians whose functions, interests and activities may be affected by the Petroleum Activities Program. The Program will include, where agreed with relevant Traditional Custodians: • Social investment to support Indigenous ranger programs • Support for Indigenous oil spill response capabilities • Support for recording Sea Country values • Support to Traditional Custodian groups to build capabilities and capacity with respect to ability to engage with Woodside and the broader O&G industry on activities • Development of ongoing relationships with Traditional Custodian groups • Any other initiatives proposed for the purpose of protecting country including cultural values • Consideration of 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.	**MC1.1** Records demonstrate discussions with relevant Traditional Custodian Groups on proposed partnerships and/or initiatives initiated by Woodside, and responses to feedback provided by Woodside within 4 weeks **MC 1.2** Progress of the Program will be reported in line with annual sustainability reporting via the Woodside website. **MC 1.3** Records demonstrate Change Management and Management of Knowledge processes have been followed where new controls or management measures identified
	EPS 1.2 Undertake an annual review of the program to determine its effectiveness and adapt the program accordingly. The annual review will also include an assessment of appropriateness of the methods used to undertake ongoing consultation with Traditional Custodians.	**MC 1.4** Records demonstrate an annual review of the Program has been undertaken

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	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	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.
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	In September 2023, NAC proposed a Joint Working Group to practically manage consultation processes. It was proposed that the group would meet monthly for 2023 and quarterly thereafter, meetings would include NAC CEO and NAC Directors and potentially independent SME/s, the proposal was that Woodside draft a Framework Agreement, and included a request for funding for this approach. Woodside provided in-principle support for the proposal.	Woodside has provided in-principle support for NAC's proposal and is currently developing a draft Framework Agreement which once settled internally will be sent to NAC for their response.	In accordance with NAC's proposed timeframe, Woodside aims to prepare a draft Framework Agreement, settle internally and then meet to discuss in 2023.

Nganhurra Thanardi Garrbu Aboriginal Corporation	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.	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.	Woodside will follow up with NTGAC on a monthly basis for at least six months, seeking to progress the Framework Agreement and General report.
Yinggarda Aboriginal Corporation	In August 2023, YAC requested Woodside provide a draft Framework Agreement for their consideration. Woodside has provided a draft Framework Agreement to YAC for review.	Woodside's Proposal suggests meeting with YAC every 3 months to progress matters. The Proposal suggests committing to work continuing between meetings with each party nominating focal points. A Scope of Work and schedule of rates is included to re-imburse the cost of ongoing consultation. Woodside's Proposal includes timeframes for anticipated milestones and has suggested the Proposal be in place for an initial 2-year period. Woodside has provided the draft Framework Agreement to YAC; they have advised that they will seek direction from the YAC Board on the proposal.	Woodside will continue following up with YAC on a monthly basis for at least six months, seeking to progress the Framework Agreement.
Robe River Kuruma Aboriginal Corporation	RRKAC have noted that they are insufficiently resourced to engage further and respond to Woodside regarding EPs. Woodside assesses that a Framework Agreement could address this.	Woodside has on several occasions written to RRKAC offering to fund consultation meetings. Woodside will offer RRKAC a Framework Agreement which will propose funding, scope of work and timeframes to assist with consultation and ongoing consultation. If RRKAC are open to the proposal, it is intended to put forward a draft Framework Agreement to RRKAC within the next 2 months.	Woodside will follow up with RRKAC monthly for at least six months, seeking to progress a Framework Agreement.
Ngarluma Yindjibarndi Foundation Limited	NYFL and Woodside have an existing Agreement in place which enables quarterly communication about Woodside activities. NYFL has said they are working with other First Nations organisation and representative Bodies developing a Framework Agreement.	Woodside has not yet seen a draft of the Framework Agreement. Woodside's expectation is that it will outline principles of engagement, details of resourcing, timeframes to meet agreed outcomes etc. Woodside look forward to receiving a draft Agreement and will engage with NYFL to settle on the details of any proposal.	Woodside will continue to follow up monthly with NYFL for at least six months, seeking to progress a Framework Agreement.