Browse Commonwealth Wellhead Decommissioning Environment Plan

Decommissioning

August 2022

Revision 1

THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. INTRODUCTION

1.1 Overview

Woodside Browse Pty Ltd (Woodside), as Titleholder under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Commonwealth) (referred to as the Environment Regulations), proposes to perform the following petroleum activities within Permit Areas WA-32-R and WA-28-R:

- permanently decommission the Brecknock-4, Calliance-1, Calliance-2 and Calliance-3 wellheads *in situ*.

This activity will hereafter be referred to as the Petroleum Activities Program and forms the scope of this Environment Plan (EP). A detailed description of the activities is provided in **Section 4**. This EP has been prepared as part of the requirements under the Environment Regulations, as administered by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

1.2 Purpose of the Environment Plan

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

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

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 (MC). These form the basis for monitoring, auditing and managing the Petroleum Activities Program to be performed 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.

1.3 Scope of the Environment Plan

The scope of this EP covers the activities that define the Petroleum Activities Program, as described in **Section 4**. The spatial boundary of the Petroleum Activities Program has been described and assessed based on the environments that may be affected (EMBAs). The EMBAs define the spatial boundary of the Petroleum Activities Program and are further described in **Section 4.4**.

1.4 Environment Plan Summary

An EP summary has been prepared from material provided in this EP (**Table 1-1**), as required by Regulation 11(4).

Table 1-1: Environment Plan summary

EP Summary material requirement	Relevant section of this EP containing EP Summary material
The location of the activity	**Section 4**, starting at page 57
A description of the receiving environment	**Section 5**, starting at page 62
A description of the activity	**Section 4**, starting at page 57
Details of the environmental impacts and risks	**Section 7**, starting at page 104
The control measures for the activity	**Section 7.3**, starting at page 106
The arrangements for ongoing monitoring of the titleholder's environmental performance	**Section 8**, starting at page 138
Response arrangements in the oil pollution emergency plan	Not applicable, as there is no credible spill scenario associated with the Petroleum Activities Program
Consultation already undertaken and plans for ongoing consultation	**Section 6**, starting at page 77
Details of the titleholder's nominated liaison person for the activity	**Section 1.6.2**, starting at page 10

1.5 Structure of the Environment Plan

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

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

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
Regulation 10A(a): *is appropriate for the nature and scale of the activity*	Regulation 13: *Environmental Assessment*	The principle of 'nature and scale' applies throughout the EP	**Section 2** **Section 4** **Section 5** **Section 6** **Section 7** **Section 8**
	Regulation 14: *Implementation strategy for the environment plan*		
	Regulation 16: *Other information in the environment plan*		
Regulation 10A(b): *demonstrates that the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable*	Regulation 13(1) to 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 4** **Section 5** **Section 6** **Section 7** **Section 8**
Regulation 10A(c): *demonstrates that the environmental impacts and risks of the activity will be of an acceptable level*			

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
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 Environmental Performance Standards Measurement Criteria	**Section 7**
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: • systems, practices and procedures • performance monitoring • Oil Pollution Emergency Plan (OPEP) and scientific monitoring • ongoing consultation.	**Section 8**
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 EPBC Act*	Regulation 13(1) to 13(3): *13(1) Description of the activity* *13(2) Description of the environment* *13(3) Without limiting [Regulation 13(2)(b)], particular relevant values and sensitivities may include any of the following:* *(a) the world heritage values of a declared World Heritage property within the meaning of the EPBC Act;* *(b) the national heritage values of a National Heritage place within the meaning of that Act;* *(c) the ecological character of a declared Ramsar wetland within the meaning of that Act;* *(d) the presence of a listed threatened species or listed threatened ecological community within the meaning of that Act;* *(e) the presence of a listed migratory species within the meaning of that Act;* *(f) any values and sensitivities that exist in, or in relation to, part or all of:* *(i) a Commonwealth marine area within the meaning of that Act; or* *(ii) Commonwealth land within the meaning of that Act.*	No activity, or part of the activity, undertaken in any part of a declared World Heritage property	**Section 4** **Section 5** **Section 7**

Criteria for acceptance	Content requirements/relevant regulations	Elements	Section of EP
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 in preparation of the EP	**Section 6**
Regulation 10A(h): *complies with the Act and the regulations*	Regulation 15: *Details of the Titleholder and liaison person* 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 (OPGGS) Act 2006* and the Environment Regulations	**Section 1.6** **Section 8.8**

1.6 Description of the Titleholder

Woodside is the Titleholder for this activity, on behalf of Woodside, BP Developments Australia Pty Ltd, Japan Australia LNG (MIMI Browse) Pty Ltd., Petrochina International Investment (Australia) Pty Ltd and Shell Australia Pty Ltd.

1.6.1 Details of Titleholder and Liaison Person

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

1.6.2 Titleholder

Woodside Browse Pty Ltd

11 Mount Street

Perth, Western Australia

T: 08 9348 4000

ACN: 120 237 381

1.6.3 Nominated Liaison Person

Shannen Wilkinson

Senior Corporate Affairs Advisor

11 Mount Street

Perth, Western Australia

Telephone: 08 9348 4000

Email: feedback@woodside.com.au

1.6.4 Arrangements for Notifying Change

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

1.7 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 7** are drawn from the WMS documentation, which comprises four elements: compass and policies, expectations, processes and procedures, and guidelines, as outlined below (and illustrated in **Figure 1-1**):

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

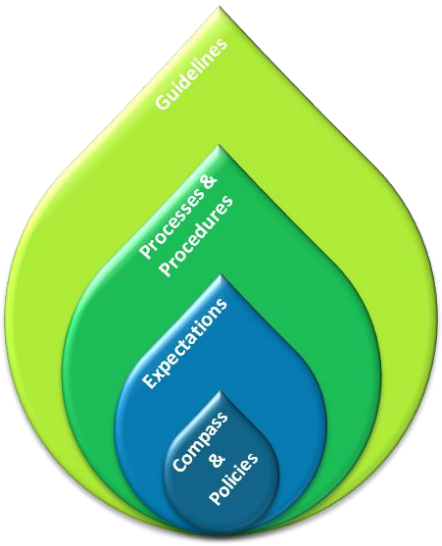


Figure 1-1: The four major elements of the Woodside Management System seed

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

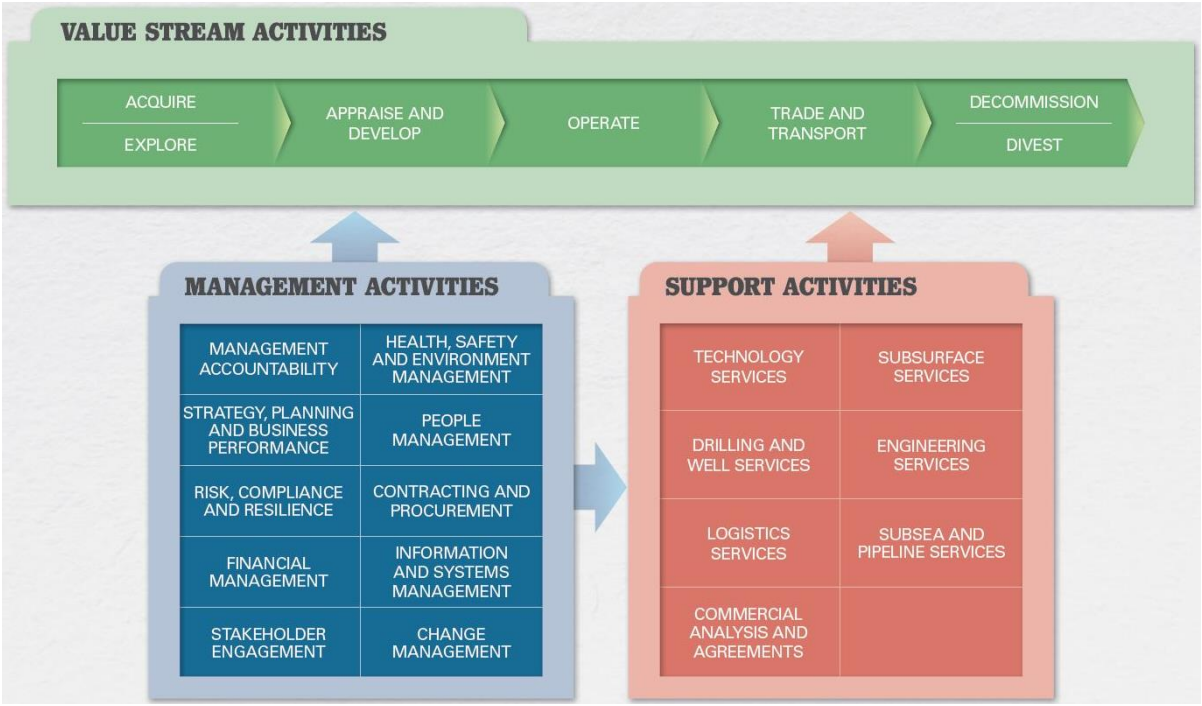


Figure 1-2: The Woodside Management System business process hierarchy

1.7.1 Health, Safety and Environment Policy

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

1.8 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 are relevant to managing risks and impacts of the Petroleum Activities Program are detailed in **Appendix B**.

1.8.1 Applicable Environmental Legislation

1.8.1.1 Offshore Petroleum and Greenhouse Gas Storage Act 2006

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

Under subsection 572(3) of the OPGGS Act, a titleholder must remove from the title area all structures that are, and all equipment and other property that is neither used nor to be used in connection with the operations. Under subsection 572(7), property removal requirements are subject to any other provision of the OPGGS Act, the regulations, directions given by NOPSEMA or the responsible Commonwealth Minister, and any other law. Under subsection 270(3) of the OPGGS Act, before title surrender, all property brought into the surrender area must be removed to the satisfaction of NOPSEMA, or arrangements that are satisfactory to NOPSEMA must be made relating to the property.

Table 1-3 is intended to inform requirements under subsection 270(3)(c), (e) and (f) and 572(2), (3) and (7) in relation to the wellheads, to enable consent to be granted for application to surrender the title once all petroleum activities have ceased in the future.

Table 1-3: Relevant requirements of the Offshore Petroleum and Greenhouse Gas Storage Act 2006

Section Number	Relevant Requirement	Relevant Section of the EP
Section 572 – Maintenance and removal of property etc. by titleholder		
2	A titleholder must maintain in good condition and repair all structures that are, and all equipment and other property that is: (a) in the title area; and (b) used in connection with the operations authorised by the permit, lease, licence or authority.	Not applicable – well has been approved for abandonment (**Section 3.8**)
3	A titleholder must remove from the title area all structures that are, and all equipment and other property that is, neither used nor to be used in connection with the operations: (a) in the title area; and (b) used in connection with the operations authorised by the permit, lease, licence or authority.	Refer to allowances under Section 270(3)
7	This section has effect subject to: (a) any other provision of this Act; and (b) the regulations; and (c) a direction given by NOPSEMA or the responsible Commonwealth Minister under: (i) Chapter 3; or (ii) this Chapter; and (d) any other law.	**Section 3.4** and **Section 7** (PS 1.1)
Section 270 – Consent to surrender title[1]		
3	The Joint Authority may consent to the surrender sought by the application only if the registered holder of the permit, lease or licence:	
	(c) has: (iii) to the satisfaction of NOPSEMA, removed or caused to be removed from the surrender area (defined by subsection (7)) all property brought into the surrender area by any person engaged or concerned in the operations authorised by the permit, lease or licence; or (iv) arrangements that are satisfactory to NOPSEMA in relation to that property; and	**Section 3** and **Section 4**
	(e) has provided, to the satisfaction of NOPSEMA, for the conservation and protection of the natural resources in the surrender area; and	**Section 7.6.1**, **7.6.2**, **7.6.3**, and **7.7.1**
	(f) has, to the satisfaction of NOPSEMA, made good any damage to the seabed or subsoil in the surrender area caused by any person engaged or concerned in the operations authorised by the permit, lease or licence;	

1.8.1.2 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 performed in a manner:

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

1.8.1.3 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act aims to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places in Australia. These are defined in the EPBC Act as matters of national environmental significance (MNES). In respect to offshore petroleum activities in Commonwealth waters, these requirements are implemented by NOPSEMA through the Streamlining Offshore Petroleum Environmental Approvals Program (the Program). The Program provides for the protection of the environment by requiring all offshore petroleum activities authorised by the OPGGS Act to be conducted in accordance with an accepted EP, consistent with the principles of ESD. Impacts on the environment include those matters protected under Part 3 of the EPBC Act. The definition of 'environment' in the Program is consistent with that used in the EPBC Act, which enables the Program to encompass all matters protected under Part 3 of the EPBC Act.

1.8.1.3.1 Recovery Plans and Threat Abatement Plans

Under Section 139(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 Section 268 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):

- NOPSEMA will not accept an EP that proposes activities which will result in unacceptable impacts to a listed threatened species or ecological community.
- NOPSEMA will not accept an EP that is inconsistent with a recovery plan or threat abatement plan for a listed threatened species or ecological community.
- NOPSEMA will have regard to any approved conservation advice relating to a threatened species or ecological community before accepting an EP.

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 (refer **Section 1.2**). This includes a description of the environmental risk management methodology that is used to identify, analyse and evaluate risks to meet ALARP and acceptability requirements and to develop EPOs and EPSs. This section also describes Woodside's risk management methodologies applicable to implementation strategies applied during the activity.

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

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

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

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

2.2 Environmental Risk Management Methodology

Woodside recognises risk is inherent to its business and that effectively managing risk is important to delivering on company objectives, success and continued growth. Woodside is committed to managing all risks proactively and effectively. The objective of Woodside's risk management system is to provide a consistent process for recognising and managing risks across its business. Achieving this objective includes ensuring risks consider impacts across the key areas of exposure: health and safety, environment, finance, reputation and brand, legal and compliance, and social and cultural. A copy of Woodside's Risk Management Policy is provided in **Appendix A**.

The environmental risk management methodology used in this EP is based on Woodside's Risk Management Procedure. This procedure aligns to industry standards such as international standard ISO 31000:2009. The WMS risk management procedure, guidelines and tools provide guidance on specific techniques for managing risk, tailored for particular areas of risk within certain business processes. Procedures applied for environmental risk management include:

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

The risk management methodology provides a framework to demonstrate that the risks and impacts are continually identified, reduced to ALARP and assessed to be at an acceptable level, as required by the Environment Regulations. The key steps of Woodside's Risk Management Process are shown in **Figure 2-1**. Each step and how they are applied to the scopes of this activity are described in **Sections 2.3** to **2.11**.

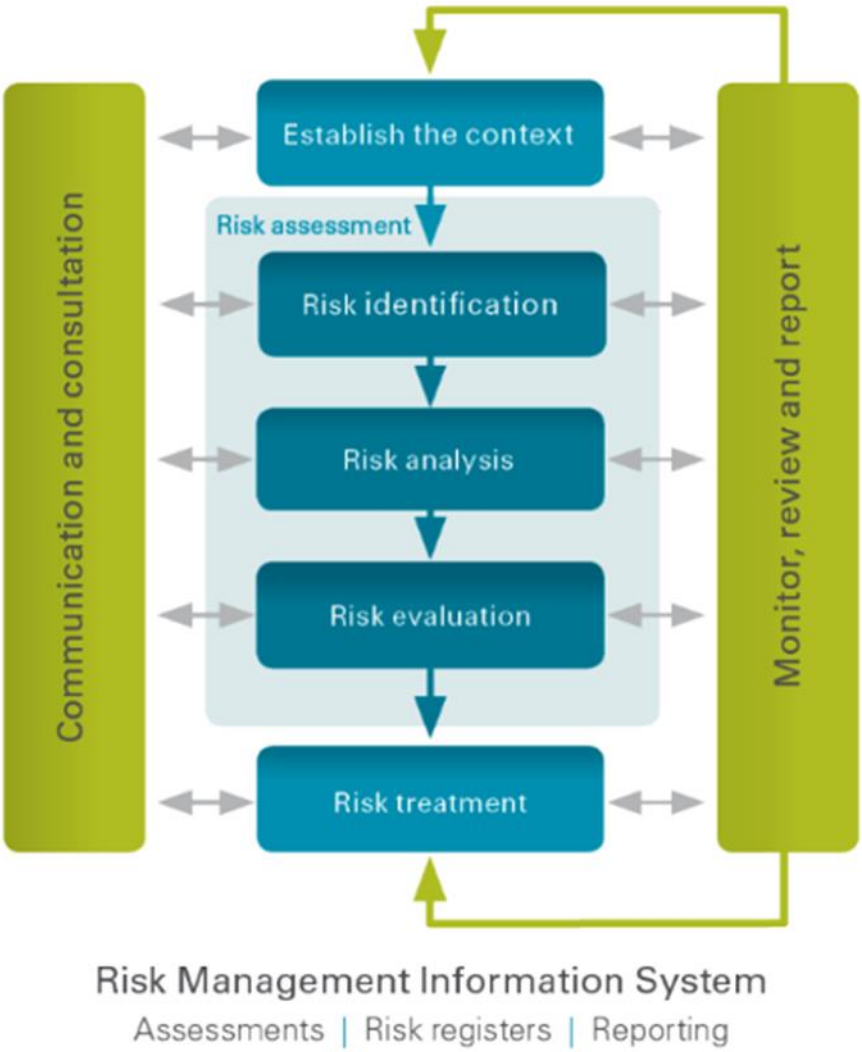


Figure 2-1: Woodside's risk management process

2.2.1 Health, Safety and Environment Management Procedure

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

2.2.2 Impact Assessment Procedure

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

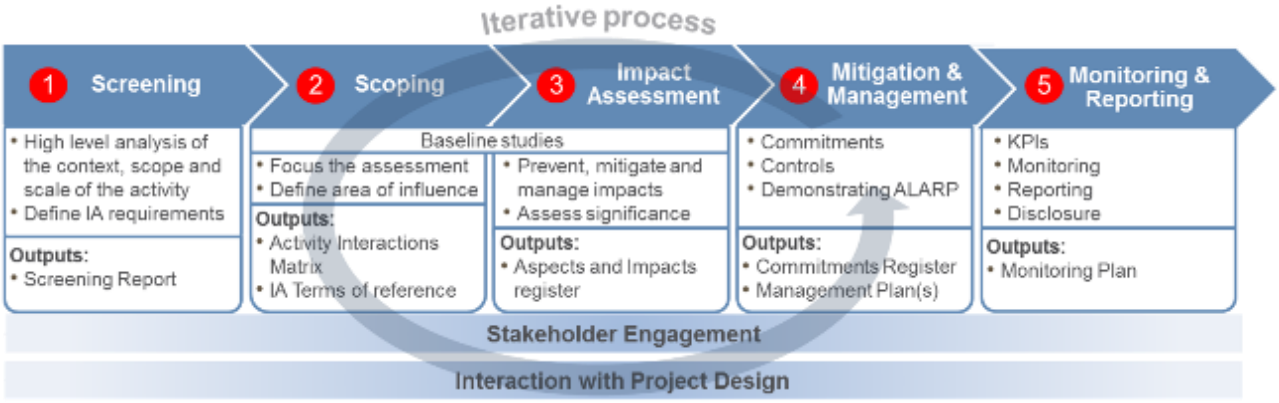


Figure 2-2: Woodside's impact assessment process

2.3 Environment Plan Process

Figure 2-3 illustrates the EP development process. Each element of this process is discussed further in **Sections 2.3** to **2.11**.

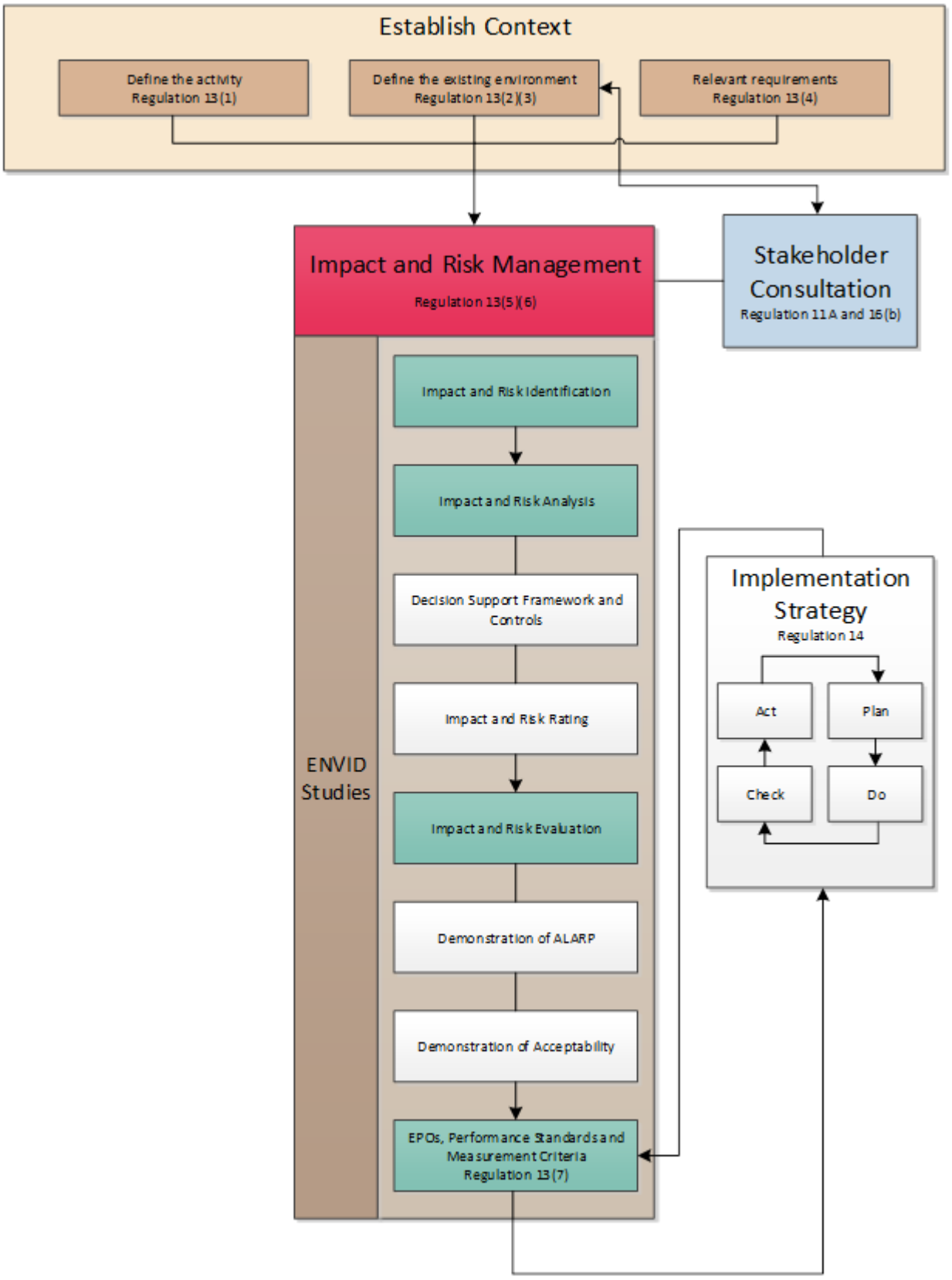


Figure 2-3: Environment Plan development process

2.4 Establish the Context

2.4.1 Define the Activity

This first stage involves evaluating whether the activity meets the definition of a 'petroleum activity' as defined in the Environment Regulations.

The activity is then described in relation to:

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

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

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

2.4.2 Define the Existing Environment

The context of the existing environment is described and determined by considering the nature and scale of the activity (size, type, timing, duration, complexity and intensity of the activity), as described in **Section 3**. In accordance with Regulation 31(1) of the Environment Regulations, references to the Master Existing Environment, Appendix H in the Enfield Plug and Abandonment EP (hereafter referred to as the Master Existing Environment) have been made throughout this EP. The accepted EP (NOPSEMA EP No: 5632, ID: A803388) is available on the NOPSEMA website: Enfield Plug and Abandonment EP » NOPSEMA. The purpose is to describe the existing environment that may be impacted by the activity, directly or indirectly, by planned or unplanned events.

The existing environment section (**Section 4**) is structured to define the physical, biological, socioeconomic and cultural attributes of the area of interest, in accordance with the definition of 'environment' in Regulation 4(a) of the Environment Regulations. These sub-sections make particular reference to:

- The environmental and social and cultural consequences as defined by Woodside (refer to **Table 2-1**), which address key physical and biological attributes, as well as social and cultural values of the existing environment. These consequence definitions are applied to the impact and risk analysis (refer **Section 2.6.2**) and rated for all planned and unplanned activities. Additional detail is provided for evaluating unplanned hydrocarbon spill risk.
- EPBC Act MNES, including listed threatened species and ecological communities and listed migratory species. Defining the spatial extent of the existing environment is guided by the nature and scale of the Petroleum Activities Program and associated sources of environmental risk. This considers the EMBA, as defined in **Section 2.4.2**. MNES, as defined within the EPBC Act, are addressed through Woodside's impact and risk assessment (**Section 7**).
- Relevant values and sensitivities, which may include world or national Heritage Listed areas, Ramsar wetlands, listed threatened species or ecological communities, listed migratory species, and sensitive values that exist in or in relation to Commonwealth marine area or land.
- In categorising the environmental values potentially impacted by the Petroleum Activities Program (as presented in **Table 2-1**), there is standardisation of information relevant to understanding the receiving environment. Potential impacts to these environmental values are evaluated in the risk analysis (refer **Section 2.7**) and risk-rated for all planned and unplanned activities. This provides a robust approach to the overall environmental risk evaluation and its documentation in the EP.

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

Table 2-1: Environmental values potentially impacted by the Petroleum Activities Program which are assessed within the Environment Plan

Environmental Value Potentially Impacted (Regulations 13(2)(3))					
Marine Sediment	Water Quality	Air Quality	Ecosystems/Habitats	Species	Socioeconomic

2.4.3 Relevant Requirements

The relevant requirements in the context of legislation, other environmental approval requirements, conditions and standards that apply to the Petroleum Activities Program have been identified and reviewed. Relevant requirements are presented in **Appendix B** and **Section 1**.

Woodside's Corporate Health, Safety and Environment Policy is presented in **Appendix A**.

2.5 Impact and Risk Identification

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

The environmental impact and risk assessment presented in this EP has been informed by recent and historical hazard identification studies and workshops (for example, Environmental Hazard Identification [ENVID]), Process Safety Risk Assessment processes, reviews and associated desktop studies associated with the Petroleum Activities Program. Risks are identified based on planned and potential interaction with the activity (based on the description in **Section 4**), the existing environment (**Section 5**) and the outcomes of Woodside's stakeholder engagement process (**Section 6**). The environmental outputs of applicable risk and impact workshops and associated studies are referred to as 'ENVID' hereafter in this EP.

An ENVID workshop was conducted for the Petroleum Activities Program on 18 February 2022. Participants included project environmental advisors, environmental engineers and the decommissioning coordinator. The participants' breadth of knowledge, training and experience was sufficient to reasonably assure the hazards which may arise in connection with the Petroleum Activities Program in this EP were identified.

Impacts and risks are identified during an ENVID for both planned (routine and non-routine) activities and unplanned (accidents, incidents and emergency conditions) events.

During this process, risks that are identified as not applicable (not credible) are removed from the assessment. This is done by defining the activity and identifying that an aspect is not applicable.

The impact and risk information is then classified, evaluated and tabulated for each planned activity and unplanned event. Environmental impacts and risk are recorded in an environmental impacts and risk register. The output of the ENVID is used to present the risk assessment and forms the basis to develop environmental performance outcomes, environmental performance standards and measurement criteria. This information is presented in **Section 7**, using the format presented in **Table 2-2**.

Table 2-2: Example of layout of identification of risks and impacts in relation to risk sources

Impact Evaluation Summary														
		Environmental Value Potentially Impacted						Evaluation						
Source of Impact	*Time Horizon (refer Section 3.6)*	*Marine Sediment*	*Water Quality*	*Air Quality (incl Odour)*	*Ecosystems/Habitat*	*Species*	*Socioeconomic*	*Decision Type*	*Consequence/Impact*	*Likelihood*	*Risk Rating*	*ALARP Tools*	*Acceptability*	*Outcome*
Summary of source of impact/risk														

2.6 Impact and Risk Analysis

Risk analysis further develops the understanding of a risk by defining the impacts and assessing appropriate controls. Risk analysis considers previous risk assessments for similar activities, reviews of relevant studies, reviews of past performance, external stakeholder consultation feedback and a review of the existing environment.

The key steps performed for each risk identified during the risk assessment are to:

- identify the decision type in accordance with the decision support framework
- identify appropriate control measures (preventative and mitigative) aligned with the decision type
- assess the risk rating or impact.

2.6.1 Decision Support Framework

To support the risk assessment process and Woodside's determination of acceptability (**Section 2.7.2**), Woodside's HSE risk management procedures include using a decision support framework based on principles set out in the Guidance on Risk Related Decision Making (Oil and Gas UK, 2014) (**Figure 2-4**). This concept was applied during the ENVID, or equivalent preceding processes during historical design decisions, to determine the level of supporting evidence that may be required to make sound conclusions about risk level and whether the risk is ALARP and acceptable. This was 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 manage risks based on the uncertainty of the risk, the complexity and risk rating (in other words, potential higher order environmental impacts are subject to further evaluation and 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 about the uncertainty of the risk, then documented in ENVID output.

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

2.6.1.1 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.

2.6.1.2 Decision Type B

Risks classified as Decision Type B typically involve greater uncertainty and complexity (and can include potential higher order impacts and 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.

2.6.1.3 Decision Type C

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

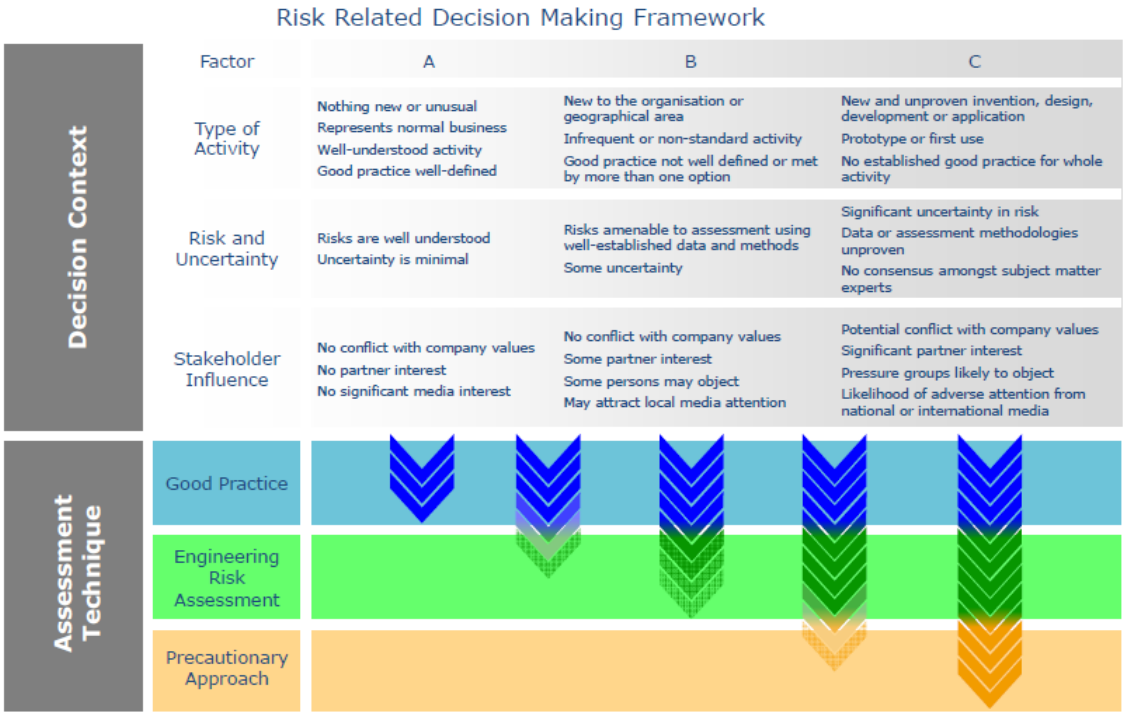


Figure 2-4: Risk-related decision-making framework (Oil and Gas UK, 2014)

2.6.2 Decision Support Framework Tools

The following framework tools are applied, as appropriate, to help identify control measures based on the decision types described above:

- **Legislation, Codes and Standards (LCS)** – identifies the requirements of legislation, codes and standards which must be complied with for the activity.
- **Good Industry Practice (GP)** – identifies further engineering control standards and guidelines that may be applied by Woodside above those required to meet the LCS.
- **Professional Judgement (PJ)** – uses relevant personnel with the knowledge and experience to identify alternative controls. Woodside applies the hierarchy of controls as part of the risk assessment to identify any alternative measures to control the risk.
- **Risk-Based Analysis (RBA)** – assesses the results of probabilistic analyses such as modelling, quantitative risk assessment and cost-benefit analysis to support the selection of control measures identified during the risk assessment process.
- **Company Values (CV)** – identifies values identified in Woodside's code of conduct, policies and the Woodside compass. Views, concerns and perceptions are considered from internal Woodside stakeholders directly affected by the planned impact or potential risk.
- **Societal Values (SV)** – identifies the views, concerns and perceptions of relevant stakeholders and addresses relevant stakeholder views, concerns and perceptions.

2.6.3 Decision Calibration

To determine that alternatives selected and the control measures applied are suitable, the following tools may be used for calibration (in other words, checking) where required:

- **Legislation, Codes and Standards/Verification of Predictions** – verification of compliance with applicable LCS and good industry practice.
- **Peer Review** – independent peer review of PJs, supported by risk-based analysis, where appropriate.
- **Benchmarking** – where appropriate, benchmarking against a similar facility or activity type or situation that has been accepted to represent acceptable risk.
- **Internal Stakeholder Consultation** – consultation performed within Woodside to inform the decision and verify CVs are met.
- **External Stakeholder Consultation** – consultation performed to inform the decision and verify societal values are considered.

Where appropriate, additional calibration tools may be selected specific to the decision type and the activity.

2.6.3.1 Control Measures (Hierarchy of Controls)

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

- **Elimination** of the risk by removing the hazard.
- **Substitution** of a hazard with a less hazardous one.
- **Engineering Controls** include design measures to prevent or reduce the frequency of the risk event, or detect or control the risk event (limiting the magnitude, intensity and duration), such as:
  - Prevention: design measures that reduce the likelihood of a hazardous event occurring.

  - Detection: design measures that facilitate early detection of a hazardous event.
  - Control: design measures that limit the extent and escalation potential of a hazardous event.
  - Mitigation: design measures that protect the environment if a hazardous event occurs.
  - Response Equipment: design measures or safeguards that enable clean-up and response after a hazardous event occurs.
- **Procedures and Administration** include management systems and work instructions used to prevent or mitigate environmental exposure to hazards.
- **Emergency Response and Contingency Planning** includes methods to enable recovery from the impact of an event; for example, protection barriers deployed near the sensitive receptor.

2.6.4 Impact and Risk Classification

Environmental impacts and risks are assessed to determine their potential significance or consequence. The impact significance or consequence considers the magnitude of the impact or risk and the sensitivity of the potentially impacted receptor, represented by **Figure 2-5**.

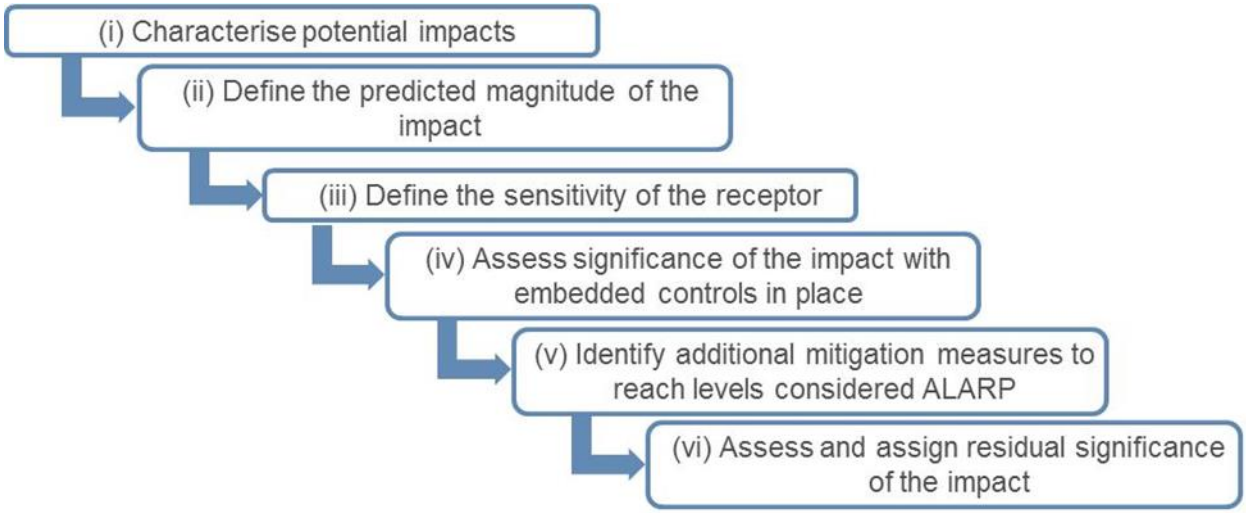


Figure 2-5: Environmental impact and risk analysis

Impacts are classified in accordance with the consequence (**Section 2.4**) outlined in the Woodside Risk Management Procedure and Risk Matrix.

Risks are assessed qualitatively or quantitatively in terms of both likelihood and consequence in accordance with the Woodside Risk Management Procedure and Risk Matrix.

The impact and risk information is summarised, including classification, and evaluation information, as shown in the example in **Table 2-2**, evaluated for each planned activity and unplanned event.

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

Environment	Social and Cultural	Consequence Level
Catastrophic, long-term impact (more than 50 years) on highly valued ecosystems, species, habitat or physical or biological attributes	Catastrophic, long-term impact (more than 20 years) to a community, social infrastructure or highly valued areas/items of international cultural significance	A
Major, long-term impact (ten to 50 years) on highly valued ecosystems, species, habitat or physical or biological attributes	Major, long-term impact (five to 20 years) to a community, social infrastructure or highly valued areas/items of national cultural significance	B
Moderate, medium-term impact (two to ten years) on ecosystems, species, habitat or physical or biological attributes	Moderate, medium term impact (two to five years) to a community, social infrastructure or highly valued areas/items of national cultural significance	C
Minor, short-term impact (one to two years) on species, habitat (but not affecting ecosystems function), physical or biological attributes	Minor, short-term impact (one to two years) to a community or highly valued areas/items of cultural significance	D
Slight, short-term impact (less than one year) on species, habitat (but not affecting ecosystems function), physical or biological attributes	Slight, short-term impact (less than one year) to a community or areas/items of cultural significance	E
No lasting effect (less than one month); localised impact not significant to environmental receptors	No lasting effect (less than one month); localised impact not significant to areas/items of cultural significance	F

2.6.5 Risk Rating Process

The risk rating process is performed to assign a level of risk to each risk event, measured in terms of consequence and likelihood. The assigned risk level is therefore determined after identifying the decision type and appropriate control measures.

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

The risk rating process is performed using the following steps:

2.6.5.1 Select the Consequence Level

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

2.6.5.2 Select the Likelihood Level

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

Table 2-4: Woodside risk matrix likelihood levels

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

2.6.5.3 Calculate the Risk Rating

The risk level is derived from the consequence and likelihood levels determined above in accordance with the risk matrix shown in **Figure 2-6**. A likelihood and risk rating is only applied to environmental risks using the Woodside risk matrix.

This risk level is used as an input into the risk evaluation process and ultimately for prioritising further risk reduction measures. Once each risk is treated to ALARP, the risk rating articulates the ALARP baseline risk as an output of the ENVID studies.

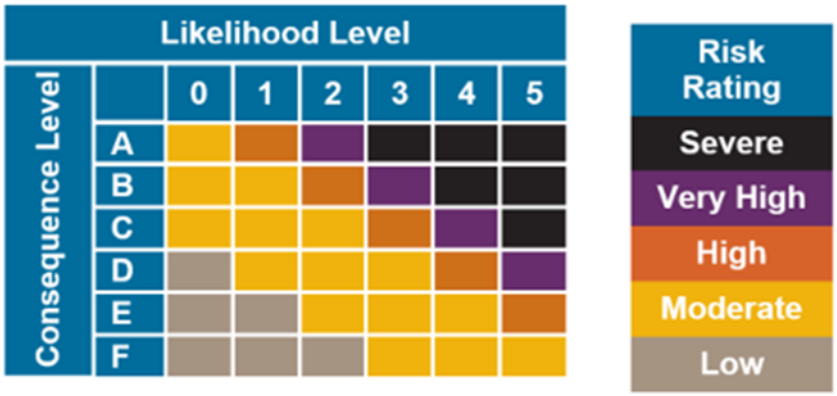


Figure 2-6: Woodside risk matrix – risk level

To support ongoing risk management (a key component of Woodside's Process Safety Management Framework – refer to Implementation Strategy in **Section 8**), 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 ensure risk is continually managed to ALARP by identifying risk reduction measures and assessing acceptability.

2.7 Impact and Risk Evaluation

Environmental impacts and risks cover a wider range of issues, differing species, persistence, reversibility, resilience, cumulative effects and variability in severity than safety risks. Determining the degree of environmental risk, and the corresponding threshold for whether a risk or impact has

been reduced to ALARP and is acceptable, is evaluated to a level appropriate to the nature and scale of each impact or risk. Evaluation includes considering the:

- decision type
- principles of ESD – as defined under the EPBC Act
- internal context – ensuring the proposed controls and risk level are consistent with Woodside policies, procedures and standards (**Section 8** and **Appendix A**)
- external context – the environment consequence (**Section 7**) and stakeholder acceptability (**Section 6**)
- other requirements – ensuring the proposed controls and risk level are consistent with national and international standards, laws and policies.

In accordance with Environment Regulations 10A(a), 10A(b), 10A(c) and 13(5)(b), Woodside applies the process described in the next subsections to demonstrate ALARP and acceptability for environmental impacts and risks, appropriate to the nature and scale of each impact or risk.

2.7.1 Demonstration of As Low As Reasonably Practicable

Descriptions have been provided in **Table 2-5** to articulate how Woodside demonstrates that different risks, impacts and decision types identified within the EP are ALARP.

Table 2-5: Summary of Woodside's criteria for 'as low as reasonably practicable' demonstration

Risk	Impact	Decision Type
Low and Moderate (below C level consequences)	***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 and risk reduction (beyond employing opportunistic measures) is not reasonably practicable without sacrifices grossly disproportionate to the benefit gained.		
High, Very High or Severe (C+ consequence risks)	***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) when: • 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.		

2.7.2 Demonstration of Acceptability

Descriptions have been provided in **Table 2-6** to articulate how Woodside demonstrates that different risks, impacts and decision types identified within the EP are acceptable.

Table 2-6: Summary of Woodside's criteria for acceptability

Risk	Impact	Decision type
Low and moderate	***Negligible, slight, or minor (D, E or F)***	***A***
Woodside demonstrates these lower order risks, impacts and decision types are of a level that is 'broadly acceptable' if they meet: • legislative requirements • industry codes and standards • applicable company requirements and where further effort towards reducing risk (beyond employing opportunistic measures) is not reasonably practicable without sacrifices grossly disproportionate to the benefit gained.		
High, very high or severe	***Moderate and above (D, E or F)***	***B and C***
Woodside demonstrates these higher order risks, impacts and decision types are 'acceptable' if it can be demonstrated that the predicted levels of impact and residual risk: • are managed to ALARP (as described in **Section 2.6.1**) • meet the following criteria, appropriate to the nature and scale of each impact and risk: – Impact or risk does not contravene relevant principles of ESD, as defined under the EPBC Act. – Internal context – the proposed controls and consequence or risk level are consistent with Woodside policies, procedures and standards. – External context – stakeholder expectations and feedback have been considered (**Section 6**). – Other requirements – the proposed controls and consequence or risk level are consistent with national and international industry standards, laws and policies, and applicable plans for management and conservation advices, conventions, and significant impact guidelines (such as for MNES) have been considered. Where there are significant complexities in assessing and managing impacts to different receptors and for demonstrating how these impacts are acceptable (for example, significant stakeholder concern for specific receptors, lack of consensus of appropriate controls or standards), acceptability may be demonstrated separately for key receptors. This is not applicable for risks, given the consequence of an unplanned risk event occurring may not be acceptable and, therefore, acceptability is demonstrated in the context of the residual likelihood of an event occurring.		

2.8 Recovery Plan and Threat Abatement Plan Assessment

To support the demonstration of acceptability, a separate assessment is performed to demonstrate the EP is not inconsistent with any relevant recovery plans or threat abatement plans (refer to **Section 1.8**). The steps in this process are:

1. Identify relevant listed threatened species and ecological communities (**Section 5.6**).
2. Identify relevant recovery plans and threat abatement plans (Section 3.2 of the Master Existing Environment).
3. List all objectives and (where relevant) the action areas of these plans, and assess whether these objectives and action areas apply to government, the Titleholder and the Petroleum Activities Program (**Section 7.8**).
4. For those objectives and action areas applicable to the Petroleum Activities Program, identify the relevant actions of each plan and evaluate whether impacts and risks resulting from the activity are clearly not inconsistent with that action (**Section 7.8**).

2.9 Environmental Performance Outcomes, Standards and Measurement Criteria

EPOs, EPSs and MC have been defined to address the potential environmental impacts and risks and are presented in **Section 7**.

2.10 Implementation, Monitoring, Review and Reporting

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

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

The implementation strategy is presented in **Section 8**.

2.11 Stakeholder Consultation

A stakeholder assessment is performed to identify relevant persons, as defined under Regulation 11A of the Environment Regulations. An activity update is issued electronically to relevant persons to provide a reasonable consultation period. Further details and information are provided to any relevant person if requested.

Each relevant person's response is summarised and assessed and a response, where appropriate, is provided by Woodside.

The relevant person consultation, along with the process for ongoing engagement and consultation throughout the activity, is presented in **Section 6**. A copy of the full text correspondence with relevant people is provided in **Appendix D**.

3. DECOMMISSIONING OPTIONS ASSESSMENT

3.1 Overview

A Decommissioning Options Assessment was performed for the wellheads to determine whether there were any suitable arrangements, as set out in Sections 572(7) and 270(3), as an alternative to removal outlined in Section 572(3) of the OPGGS Act (**Table 1-3**). The wellheads and associated infrastructure considered through the options assessment are described in **Section 4.6**. An options screening assessment determined the feasible decommissioning options to be included in this assessment as removal and leave *in situ*.

The Offshore Petroleum Decommissioning Guidelines proposed by the Department of Industry Science Energy and resources (DISER, 2018) and the NOPSEMA policy on Section 572 (NOPSEMA, 2020) suggests that alternative decommissioning options can be considered if the environmental outcomes are equal or better than removal and the environmental impacts and risks are ALARP and acceptable. This section outlines the assessment Woodside has performed to determine whether the arrangement to leave *in situ* complies with the OPGGS Act as well as aligning with DISER and NOPSEMA's concept of equal or better environmental outcomes when compared to removal.

The options assessment process Woodside performed has found the leave *in situ* option meets legislative requirements, is technically feasible, provides equal environmental outcomes, and has fewer health and safety risks when compared to removal. On this basis, Woodside is proposing *in situ* decommissioning as an arrangement that is consistent with the OPPGS Act.

Additional options associated with leave *in situ*, such as augmentation or installation of over-trawlable structures, are assessed in **Section 7** for each relevant impact or risk.

3.2 Options Assessment Process

The key steps in evaluating the decommissioning options were:

- Options screening – Identify the potentially feasible decommissioning options for the wellheads and the activities associated with the decommissioning options.
- Relevant legislation requirements – Evaluate options based on compliance with relevant legislation and guidelines.
- Review the engineering and scientific studies, either in scientific literature or commissioned by Woodside, to understand the existing environment of the EMBAs and how the wellheads may interact with the marine environment if removed or left *in situ*.
- Technical feasibility – Assess the practicability of each option from a technical perspective.
- Health and safety risk – Assess the practicability of each option from a health and safety risk perspective.
- Environmental impacts and risks – Assess the environmental impacts and risks associated with the activities required to implement each decommissioning option.

Once completed, a further evaluation was performed to determine if the preferred leave *in situ* decommissioning option had equal or better outcomes when compared to removal. The assessment also incorporated relevant stakeholder feedback and an assessment against the principles of ESD (**Table 3-8**). **Section 7** demonstrates impacts and risks associated with the recommended option are ALARP and acceptable.

3.3 Relevant Studies

To understand the environmental outcomes of the decommissioning options being considered, scientific studies of wellheads in the marine environment were reviewed. Five of the studies have

assessed fish and habitats found on wellheads on the North West Shelf (NWS): one assessed the food availability of wellheads in varying depths and another assessed the potential for decommissioned oil and gas infrastructure to cause snag risks for commercial fishers. It is important to note that although Browse is not located on the NWS, the basic structure of the wellheads is similar to those reported and are exposed to environmental and oceanic conditions that are indicative of the broader region. Each of these studies is summarised in **Table 3-1**.

The fish habitat studies observed a diverse range of reef-dependent and transient pelagic species associating with the wellhead structures, including commercially fished species (Pradella *et al*., 2014; McLean *et al*., 2018a, 2018b). These studies conclude the wellheads are used as a habitat for fish, including commercial targeted species. McLean *et al*. (2018a), found species richness and abundance declined with water depth, most notably beyond 350 m, with only one individual recorded at 825 m, and 47 individuals recorded in a similar depth range (490 to 550 m) to that of the Browse wellheads (501 to 677 m). Beyond the 350 m depth, percentage cover of ascidians, black and octocorals, sponges and Gorgonocephalidae (basket stars) observed growing on the infrastructure also declined markedly.

McLean *et al*. (2018a) also states there are several variables in addition to water depth that would likely influence fish and invertebrate assemblages, but due to lack of replication in the study, it is not possible to statistically test all variables. No specific fish or habitat assessments have been performed on the Browse wellheads; however, based on their water depth (501 to 677 m), it is likely they support fish populations typical of the area. Woodside has, therefore, conservatively evaluated that the wellheads provide limited habitat value.

Table 3-1: Summary of scientific studies

Date	Title	Study Aim	Key Findings
2011	*Resource partitioning amongst co-occurring decapods on wellheads from Australia's North-West shelf. An analysis of carbon and nitrogen stable isotopes.* Cummings *et al.* (2011)	Assess stable isotope to infer how 11 co-occurring decapods species partition trophic resources and to describe their trophic positions.	On the NWS, assemblages of co-occurring decapods formed the dominant taxa that had colonised a series of wellheads. Decapods were collected from three deeper (Echo, 152 m; Yodel, 137 m; Goodwyn, 136 m) and two shallower (Wanaea, 84 m; Cossack, 82 m) wellheads on the NWS. The shrimp (*Rhynchocinetes balssi*) and crab (*Petrolisthes militaris*) were collected from all five wellheads, while the crab (*P. scabriusculus*), squat lobster (*Munidopsis rogeri*) and hermit crab (*P. pustulosa*) were collected from four of the five wellheads. Analysis of signatures indicated the species occupied similar trophic levels. However, comparison among wellheads revealed animals at wellheads located in greater depths (136 to 152 m) were more enriched than shallower locations (82 to 84 m), which is likely to arise from the microbial degradation of particulate organic matter descending from the photic zone. In deeper habitats, energy and flow will be much lower than in wave-swept habitats, and consequently the availability and quality of suspended food may not be sufficient to support such a filter-feeding strategy.
2012	*Evidence of sustained populations of a small reef fish on artificial structures. Does depth affect production on artificial reefs?* Fowler and Booth (2012)	Examine the length frequencies and age structures of resident red-belted anthias *Pseusanthias rubrizonatus* at four isolated artificial reef structures previously used in the oil and gas industry, off the north-west of Australia, to	Structures surveyed in the study were not specified beyond being made of steel, rectangular prismoidal in shape, and due for removal. The study found structures were capable of developing and sustaining populations of reef fishes through arrival of pelagic larvae over a timescale of years. The isolation of subsea structures, lack of surrounding natural habitat and reef, and the presence of large predators make it unlikely red-belted anthias identified on site moved, and after settlement it is highly likely they were produced at this location. This study states structures similar to these may be important for local production of this species, including larval production, as the species examined have high site fidelity.

Date	Title	Study Aim	Key Findings
		determine whether these structures supported full populations of this species, or were attracting adult fish.	
2014	*Fish assemblages associated with oil industry structures on the continental shelf of north-western Australia.* Pradella *et al.* (2014)	Assess fish associations with oil and gas structures located in deep water on Australia's north-west continental shelf.	The aims of this study were to: • identify fish species associated with wellheads on the NWS, particularly commercially important species • determine any differences in assemblages among wellheads, and thereby assess the variability of assemblages on these structures. Three wellheads were surveyed located at a variety of depths (Wanaea 84 m, Goodwyn 133 m and Echo 175 m) and provided complex habitats, with high vertical relief and numerous holes and overhangs of a range of sizes. Fishes from 14 families and 31 species were observed associating with the structures, which included reef-dependant species and transient pelagic species. Ten commercially fished species were observed, of which three are major target species. The most abundant species was mangrove red snapper (*Lutjanus argentimaculatus*), with an estimated biomass for the two deepest structures (Goodwyn and Echo) of 109 kg.
2015	*Using otolith microchemistry and shape to assess the habitat value of oil structures for reef fish*. Fowler *et al.* (2015)	Assess the microchemistry of otoliths from fishes captured at wellheads on the NWS to determine whether these structures can support the recruitment of fishes.	This study looked at investigating age structures of resident red-belted anthias *P. rubrizonatus,* from wellheads studied on the NWS. The species that was the focus of this assessment has strong site fidelity, meaning it is highly likely they will produce larvae at this location. This study found wellheads provide suitable recruitment habitat, or at least for this species.
2018a	*Fish and habitats on wellhead infrastructure on the north west shelf of Western Australia Continental Shelf Research* 164: 10–27. McLean *et al.* (2018a)	Assess fish assemblages and habitats formed by colonising invertebrates on 25 oil and gas wellheads and associated infrastructure in depths of 78 to 825 m on the NWS.	Fish assemblages and colonising invertebrate habitats present on wellheads and associated infrastructure were strongly influenced by depth, age and height of the structures. Older, taller wellheads in depths less than 135 m, such as the Yodel/Capella wells, possessed greater abundances of groupers (family Epinephelidae), snappers (family Lutjanidae), site-attached reef species and transient pelagic fish species. Beyond 350 m depth, the number of species and total fish abundance declined markedly, as did the percentage cover of ascidians, black and octocorals, sponges and Gorgonocephalidae (basket stars) observed growing on the infrastructure. The wellhead at 825 m that was included in the study has significantly less abundance, with only one individual recorded during the study (belonging to the family Moridae [cod-like fish]). Commercially-important snapper and grouper species were common and most abundant on well infrastructure to depths of 135 m, but were absent in depths more than 350 m. Two speckled swellsharks (*Cephaloscyllium speccum*), believed to be endemic to north-west Australia, were observed for the first time *in situ*. Numerous fish species were observed at depths beyond their known limits and two International Union for Conservation of Nature vulnerable species were recorded: the grey nurse shark (*Carcharias taurus*) (135 m

Date	Title	Study Aim	Key Findings
			depth) and the round ribbon tail ray (*Taeniura meyeni*) (78 m depth).
2018b	*Fish-habitat associations on exploration and production wellheads, North-west Shelf.* McLean *et al.* (2018b)	Assess fish assemblages and habitats formed by colonising invertebrates on oil and gas wellheads and associated infrastructure in depths of 75 to 135 m on the NWS. Assess differences in fish and invertebrate structure over a five-year period.	This study builds on information presented by McLean *et al.* (2018a) and also opportunistically used existing industrial remotely operated vehicle (ROV) video records. Fish assemblages and colonising invertebrate habitats present on wellheads and associated infrastructure were strongly influenced by depth, age and height of the structures. Surveys of the shallowest wells, Lady Nora-2 and Lowendal-1, showed high abundances of the commercially targeted species Russell's snapper (*Lutjanus russellii*) (more than 400 individuals on each). Surveys of the three deeper exploration wells revealed lower abundances of fish but higher number of species than shallower surveys. Invertebrate growth on two production wellheads (Yodel-3 and Yodel-4) changed little between 2013 and 2018, while the abundance of fish and the number of different commercially targeted fish species was higher at both wellheads in 2018.
2020	*Commercial fisheries losses arising from interactions with offshore pipelines and other oil and gas infrastructure and activities.* Rouse *et al.* (2020)	Analyse interactions between commercial fishers and oil and gas infrastructure in the UK between 1989 and 2016 to understand the risks and consequences of interactions between commercial fishing and oil and gas infrastructure.	Between the years 1989 and 2016, there were 1590 recorded incidents of interactions between commercial fishers and oil and gas infrastructure in the UK. The consequences of these incidents included financial loss, vessel abandonment or an injury or fatality. When categorised by the type of oil and gas infrastructure involved in the interaction, the highest percentage of interactions were with debris from the oil and gas industry, which is defined as including scaffolding poles, safety equipment and metal frameworks. The second highest category of recorded interactions was with 'unknown' hazards. However, in 63.9% of cases where the hazard was unknown, the nearest known hazard was pipelines; therefore, it is assumed the cause of the interaction was the pipelines. Production infrastructure, which includes wellheads, accounted for 4% of the interactions. The study also found the number of recorded interactions has declined over time, despite the oil & gas industry activities increasing over the same period. This reduction in interaction numbers is thought to be a result of: • improvements in communication between commercial fishers and the oil and gas industry • improved mapping of the location of oil and gas infrastructure locations • advances in vessel geographic positioning system (GPS) technologies.

When assessing the potential for snag risks to arise from decommissioning the wellheads *in situ*, the outcomes of an overview of incidents in the United Kingdom (UK) from commercial fishers interacting with oil and gas infrastructure (Rouse *et al.*, 2020) were considered. Rouse *et al.* (2020) included wellheads in the study; however, it found most historic snag incidents have occurred with marine debris and pipelines. Pipelines and cables are often associated with 'clay berms' or 'free spans', which are irregular mounds of disturbed substratum, and sections of pipeline that lie unsupported above the substratum (Rouse *et al.*, 2020). These features can foul trawl and other towed gear, posing safety risks and gear damage.

Wellheads do not generate clay berms or free spans, reducing these risks of fouling towed equipment. Over time, the number of snag incidents have decreased, despite oil and gas operations and commercial fishing efforts increasing over the same period (Rouse *et al.*, 2020), potentially indicating improved communication, operation and coexistence between the two industries. Rouse

et al. (2020) does not describe the depths at which snag incidents occur, or whether water depth influences the likelihood of snagging occurring or the severity of the consequence. In the absence of depth-specific snagging studies, Woodside has used Rouse *et al.* (2020) to conservatively inform the risk for commercial fishers (**Section 3.8.1**).

In addition to using Rouse (2020), Woodside engaged a subject matter expert, the Australian Maritime College to undertake an independent assessment of the potential impacts of leaving the Browse wellheads *in situ* on commercial fishing activity in the region. The study found that from a range of set and towed fishing gears used in the vicinity of the Browse wellheads, the current and future impacts and risks were confined to the North West Slope Trawl Fishery (NWSTF).

The number of vessels in the fishery has remained low in recent years with 4 and 6 vessels operating across the 2018-19 and 2019-20 seasons respectively with only 3 vessels registered to the fishery in January 2022, with two of these confirmed to be smaller vessels (~24 m in length) (AMC, 2022).

The study found current impacts to these fishers were low based on:

- Most of the trawling activity is concentrated 200 km south of the wellheads while the northern most area of the fishery (in the vicinity of the wellheads) has a much lower fishing effort.
- The wellheads are located in deep water (**Table 4-2**). Whilst demersal trawling at such depths is possible, it necessitates having vessel/equipment specifications (horsepower and winch capacity) typically found on medium sized vessels (30 – 40 m in length. Smaller vessels could function at these depths although it usually requires considerable modification and expenditure to meet the same specifications.
- Oceanographic data for the region indicates there are generally southward moving surface waters with a northward moving subsurface current which would make demersal trawling challenging at the depth of the wellheads in terms of maintaining gear symmetry and stability. Further to this, peak wind and wave conditions registered through summer, would make trawling difficult for smaller vessels and as such they may opt not to fish.
- The trawlers are equipped with modern wheelhouse electronics including GPS plotters. GPS plotters accurately show the vessels position relative to marked seabed obstacles, such as these wellheads, and enable operators to safely navigate around these obstacles.
- NWSTF operators have numerous risk mitigation options available to them which either reduce interaction probability or harm level (e.g. modern wheelhouse electronics, vessel safety management systems, AMSA trawler hook-up safety procedures/guidelines, winch tension release mechanisms, hydroacoustic trawl monitoring systems, appropriate breaking load components on trawl gear).

Whilst fishing effort in the NWSTF is currently low, there is potential for this to increase in the future. The AMC study considered a fourfold increase in activity for the NWSTF when considering the future outlook, which could see activities expanding northward toward the wellhead locations; however, found that potential for interaction remained low.

To understand the consequence of snagging, the AMC study created a simulation ‘interaction event’ with scale models of the wellheads and a trawl net in a flume tank facility. Wellheads were grouped based on the infrastructure present. The Brecknock-4, Calliance-1 and Calliance-2 wellheads were considered as a group given there was only a wellhead present. The study found that the most credible outcome should a trawl net interact with the Brecknock-4, Calliance-1 and Calliance-2 wellheads was minor to moderate gear damage and subsequent catch loss. This result was based on the fact that without a TGB or PGB present the structure was relatively smooth and consequently more likely to allow trawl gear to be recovered with minor damage. A separate simulation event was run for the Calliance-3 wellhead which has a TGB, PGB and guideposts. The simulation for the Calliance-3 wellhead identified the most credible outcome should a trawl net interact with the wellhead was gear damage or net loss and subsequent catch loss. This was due to the presence of the PGB and TGB which extend outwards and create a gap above the seabed that has potential to

catch and trap the trawl net and the presence of the guide posts which may increase likelihood of net entanglement. Provided the skipper adheres to hook-up guidelines issued by AMSA, the risk of harm to the vessel and crew would remain very low.

The study was conservative and did not take into consideration the distribution of target species when assessing the interaction probability for current or future trawl fishers (e.g. depth); however this has been factored in to the impact assessment in this EP (**Section 5.9.2** and **7.6.1**).

3.4 Relevant Requirements

Table 3-2 provides an assessment of the decommissioning options against identified relevant legislation and guidelines.

Table 3-2: Assessment of relevant legislation and guidelines

Legislation/ Guideline	Relevant clause/requirement	Option 1	Option 2
		Removal	***Leave in situ***
OPGGS Act 2006	Section 572 requires titleholders to remove structures that are, and all equipment and property that is neither used nor to be used in connection with the operations. Section 270 requires titleholders to remove all infrastructure before the title can be surrendered or to make alternative arrangements that are satisfactory to NOPSEMA in relation to that infrastructure.	Removal meets requirements under the Act for removal from the title area.	The case for leaving the infrastructure *in situ* needs to be to the satisfaction of NOPSEMA and approved through acceptance of an EP.
Offshore Petroleum Decommissioning Guidelines (DISER, 2018	The Offshore Petroleum Decommissioning Guidelines (DISER, 2018) (the Decommissioning Guidelines) proposes that decommissioning options other than removal may be considered; however, the titleholder must demonstrate the alternative approach delivers equal or better environmental, safety and well integrity outcomes compared to removal.	Meets requirements for removal as the base case for decommissioning	Leaving infrastructure *in situ* is an alternative decommissioning option to removal and therefore, to fall within the DISER Decommissioning Guidelines, it needs to be demonstrated that leave *in situ* has equal or better environmental outcomes to removal.
NOPSEMA Section 572 Maintenance and Removal of Property Policy (2020)	Titleholders may deviate from the requirement to remove property if it can be demonstrated that a deviation delivers equal or better environmental outcomes compared to complete property removal.	Meets requirements for removal as the base case for decommissioning	Leaving infrastructure *in situ* is a deviation from removal requirements and therefore, to fall within the NOPSEMA Section 572 Policy, it must be demonstrated that the deviation delivers equal or better environmental outcomes compared to complete property removal. Regard to the DISER Decommissioning Guidelines is also required (see above)
Environment Protection (Sea Dumping) Act 1981	Section 10A of the *Environment Protection (Sea Dumping) Act 1981* requires a permit to be obtained for dumping controlled material into Australian waters. 'Controlled material' is defined in the *Environment Protection (Sea Dumping) Act 1981* as 'waste or other material (within the meaning of the Protocol [meaning the London Protocol])'. The London Protocol states sea dumping does not include 'the abandonment in the sea of matter (such as cables, pipelines and marine research devices)	Removal of infrastructure does not trigger any requirements under the *Environment Protection (Sea Dumping) Act 1981*, considering infrastructure will be removed from the marine environment.	A permit may be required under the *Environment Protection (Sea Dumping) Act 1981*.

Legislation/ Guideline	Relevant clause/requirement	Option 1	Option 2
		Removal	***Leave in situ***
	placed for a purpose other than the mere disposal thereof'.		
International Maritime Organisation (IMO) Resolution A.672(16) – Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and the Exclusive Economic Zone, adopted 1989[1]	Relevant paragraphs of IMO Resolution A.672(16) contain the following requirements: • Infrastructure within specified water depths (above 75 and 100 m) should be completely removed (paragraphs 3.1 and 3.2). • Infrastructure left *in situ* should not cause unjustifiable interference with other uses of the sea (paragraph 3.4.2). • Structures left *in situ* should be marked on navigational charts (paragraph 3.8). • Structures left *in situ* should remain on location and not move (paragraph 3.9). • Structures left *in situ* should be monitored, as necessary, for compliance against these guidelines (paragraph 3.10). • Responsibility for maintenance and liability for future damages from structures left *in situ* should be clearly established (paragraph 3.11).	Meets requirements for removal of abandoned or disused installations or structures.	Leaving the wellheads meets all the relevant requirements of IMO Resolution A.672(16), as follows: • The depth of water where wellheads are located ranges between 501 and 677 m and therefore far deeper than the depths paragraphs 3.1 and 3.2 recommend for removal. • Interference with other marine users has been assessed as 'low' in **Section 3.8.1** and **Section 7**, as supported by the absence of feedback from relevant marine users during stakeholder consultation (**Section 6**) (paragraph 3.4.2). • Through this EP, Woodside commits to marking wellheads on navigation charts (paragraph 3.8). • Wellheads are in fixed positions and will not move from these locations (paragraph 3.9). • Periodic monitoring is not required to ensure ongoing compliance against IMO Resolution A.672(16) (paragraph 3.10). This is on the basis the wellheads will be marked on navigational charts and the degradation of the wellheads are not expected to result in release material that will pose a risk to navigation. • No ongoing maintenance is required beyond decommissioning of the wellheads. Upon acceptance of this EP, Woodside will complete all post acceptance commitments described in **section 7 and 8** of the EP. Once these commitments have been fulfilled, Section 270 of the OPPGS Act provides for the title to be relinquished, at which point Woodside's responsibility for liability would cease. **Section 7** provides an assessment of the residual risks that are expected to remain at the time the title is relinquished (paragraph 3.11).

[1] IMO Resolution A.672(16) sets out the matters to be considered by State parties to United Nations Convention on the Law of the Sea when making decisions dealing with abandoned or disused installations on the Continental Shelf. Australia's decommissioning policies consider the requirements of IMO Resolution A.672(16) (DISER, 2018).

3.5 Technical Feasibility and Health and Safety Assessment

3.5.1 Technical Feasibility

Each decommissioning option has been assessed for technical feasibility, whereby 'technical feasibility' is defined as 'the expected ability to successfully execute the decommissioning option'. The technical feasibility assessment in **Table 3-3** incorporates the definitions used for technical complexity and the estimated cost of each option. Technical feasibility is only assessed for the removal decommissioning option, given the alternate option to leave *in situ* does not require any activities.

Table 3-3: Technical feasibility assessment for removal decommissioning options

Method	Description	Technical Feasibility
Mechanical internal cutting tool	**Method:** Uses mechanical cutting knives that are inserted into the inner well casing and rotated. Where possible, cut is made at sufficient depth below the mudline (more than 3 m) in accordance with International Well Standard practice, such as Well Decommissioning Guidelines (OGUK, 2018). This may also allow for additional cut attempts by moving up. **Uses:** Suitable for wells with multiple casing strings where an internal cut can be achieved, and within all water depths.	Feasible Mechanical internal cutting tool is available as a feasible method to remove the Browse wellheads. This option is widely employed through the industry for similar activities.
Diamond wire saw (DWS)	**Method:** Uses a hydraulically-driven motor and pulley system to operate an industrial diamond cutting wire via a vessel or ROV. **Uses:** Suitable for wells with multiple casing strings and within all water depths. May require up to 1 m of well infrastructure to be left *in situ* above mudline due to external cut. Limited global availability of saws large enough for wells where there is an external structure such as a temporary guide base. These structures would also require long cut duration and carry a lower likelihood of success.	Feasible Diamond wire cutting saw is available as a feasible method to remove the Browse wellheads. This option is widely employed through the industry for similar activities.
Abrasive water jet (AWJ) cutting	**Method:** Uses a system of high-pressure water entrained with grit and flocculant pumped via an umbilical from a vessel to a subsea cutting tool that is inserted into the inner well casing. Where possible, cut is made at sufficient depth below the mudline (more than 3 m) in accordance with International Well Standard practice, such as Well Decommissioning Guidelines (OGUK, 2018). This may also allow for additional cut attempts. **Uses:** Suitable where an internal cut can be achieved and within water depths shallower than around 300 to 350 m, due to the requirement for high-pressure jetting. Not restricted by number of casing strings.	Not feasible Abrasive water jet cutting is suitable within water depths shallower than 300 to 350 m, due to the requirement for -high pressure jetting. Therefore, it is not technically feasible at the depth the wellheads are located.

3.5.2 Health and Safety Assessment

A high-level health and safety (HS) assessment was performed to compare the HS risks associated with each decommissioning option. Wellhead removal activities are vessel based and therefore have HS risks (with the potential to cause injury to personnel or fatalities) associated with the introduction of a vessel and wellhead cutting and removal, summarised as:

- vessel collision risks
- loss of control of lifting equipment, such as crane when retrieving the wellhead
- offshore occupational and manual handling hazards.

These activities are considered standard operations; therefore, HS risk would be adequately managed through industry standards and good practice. Leave *in situ* presents a better HS option as there are no offshore activities associated with it; therefore, there would be no HS risks.

3.6 Environmental Impacts and Risks Screening

Under the Environment Regulations, an environmental impact 'means any change to the environment, whether adverse or beneficial, that wholly or partially results from an activity of an operator'. The definition of 'environment' under the Environment Regulations is:

- ecosystems and their constituent parts, including people and communities
- natural and physical resources
- the qualities and characteristics of locations, places and areas
- the heritage value of places.

It includes the social, economic and cultural features of the matters listed above.

Table 3-5 evaluates the environmental impacts and risks associated with each decommissioning option. Impacts and risks are classified in accordance with the Woodside Risk Management Procedure and Risk Matrix (**Section 2.2**).

The assessment of environmental impacts and risks (**Table 3-5**) also considers the timeframe of the impact and risk. The definitions that have been used are:

- short-term – impact or risk during decommissioning operations (such as when vessels are in the field)
- long-term – impact or risk beyond short-term (on completion of decommissioning option activity until infrastructure has reached a steady state, determined to be complete degradation).

Key outputs of the assessment are summarised in **Table 3-4**.

Table 3-4: Summary of environmental impact and risk assessment for decommissioning options

Sub-criteria	Decommissioning Options	
	***Remove*[1]**	***Leave in situ***
Summary of planned activities and impacts		
Physical Presence: Interactions with Other Users	F-Negligible (short-term)	F-Negligible (long-term)
Physical Presence: Alteration of Seabed and Benthic Habitats	F-Negligible (short-term)	F-Negligible (long-term)
Routine Acoustic Emissions from the Vessel, Positioning Equipment and Helicopter Operations	F-Negligible (short-term)	No impact
Routine and Non-routine Discharges from the Vessel	F-Negligible (short-term)	No impact
Subsea Discharges: Associated with Wellhead Decommissioning Options	F-Negligible (short-term)	F-Negligible (long-term)
Routine Atmospheric Emission: Fuel Combustion and Incineration on the Vessel	F-Negligible (short-term)	No impact
Routine Light Emissions: External Lighting on the Vessel	F-Negligible (short-term)	No impact
Summary of unplanned activities and risks		
Interaction with Third party Users: Future Disruption to Commercial Fisheries	No impact	Low (long-term)
Accidental Hydrocarbon (Marine Diesel) Release: Result of a Vessel Collision	Moderate (short-term)	No impact
Unplanned Discharges: Hydrocarbons/Chemicals from use of Vessel and ROV	Low (short-term)	No impact
Unplanned Discharges: Release of Hazardous and Non-hazardous Solid Wastes from the Vessel	Low (short-term)	No impact
Vessel Collision with Marine Fauna	Low (short-term)	No impact
Physical Presence: Dropped Object During Wellhead Removal Resulting in Seabed Disturbance	Low (short-term)	No impact
Physical Presence: Accidental Introduction and Establishment of Invasive Marine Species (IMS)	Low (short-term)	No impact

[1] *Impacts for the removal option are based on using the removal technique with the highest environmental impact, which is the diamond wire cutting saw.*

Table 3-5: Environmental impact and risk assessment of decommissioning options

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
Evaluation of planned activities and impacts				
Physical Presence: Interactions with Other Users	Long-term physical presence of wellheads: displacement of current and future third-party activities.	Long-term, after decommissioning operations	NA	F-Negligible
			Removal of the wellheads results in no long-term interactions with current third-party activities.	Leaving the wellheads *in situ* results in their ongoing presence on the seabed (and up to 3.5 m above it). This introduces potential for interactions with commercial fishers who target demersal species. For trawl fishers this may result in displacement from the immediate area around a wellhead; the potential for snagging trawl equipment on infrastructure is assessed below in the evaluation of unplanned activities and risks. Since trap fishers have been known to target subsea infrastructure including wellheads to target the increased abundances of commercially targeted species around wellheads (McLean et al., 2018b), no negative impacts to trap fishers are expected from the wellheads remaining *in situ*. The wellheads may become partially or fully buried overtime due to surrounding hydrodynamic conditions (**Section 7.6.2**) and will eventually fully degrade into seabed sediments over approximately 150 years (**Section 7.6.3**). The height of each wellhead (up to 3.5 m) is considered a worst-case scenario and the potential impacts from displacement will remain until the wellheads are significantly degraded or buried. One trawl fishery and two fisheries utilising traps were identified as having a potential for interaction with the wellheads. The NWSTF overlaps the wellhead locations and fishing effort has been recorded within 60 nm grids encompassing all four wellheads (**Sections 3.3** and **5.9.2**). However, water depths of

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
				Brecknock-4 (651 m), Calliance-1 (575 m), Calliance-3 (677 m) wellheads do not overlap with the depth ranges of target species, and trawl fishing at these wellhead locations is not currently expected but may occur in the future should species distributions change. The Calliance-2 wellhead is located in water depths at the limit of the commercial target species depth range (501 m), therefore, current and future trawl fishing at this location is possible. An independent study undertaken on the Browse wellheads found current impacts to trawl fishers were low based on current fishing effort, the location of the wellheads presenting limitations for trawling and due to modern navigational systems (AMC, 2022; **Section 3.3**). Given this, it is possible that trawl fishing may occur within the EMBAs currently or in the future. However, is it unlikely and any displacement would be negligible based on the small area occupied by the wellheads when compared to the total area of the fishery (0.0002% per EMBA), and that the wellheads will continue to be marked on navigational charts (**Section 7.6.1**). No comments were received from this fishery during consultation. The wellheads also occupy a very small portion of the West Coast Deep Sea Crustacean Managed Fishery (WCDSCMF); and Northern Demersal Scalefish Managed Fishery (NDSMF), however, given these fishery only utilises trap demersal fishing methods, no negative interactions are predicted (**Section 5.9.2**).
			F-Negligible	NA

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
	Proximity of a vessel used for decommissioning causing interference with or displacement to third-party vessels (commercial and recreational fisheries, including charter operators, shipping and defence).	Short-term, during decommissioning operations	Several State- and Commonwealth-managed fisheries overlap the wellhead locations (**Section 5.9.2**). The presence of a vessel used for decommissioning activities may restrict the use of the area by commercial fishers. However, because the vessel will be in the area for short periods over a defined amount of time, and because the fisheries' areas extend beyond that of the wellhead locations, impacts during decommissioning activities will be negligible and with no lasting effect. No shipping fairways intercept the area. Shipping density at the wellhead locations is low (**Section 5.9.5**). Due to the temporary nature of the decommissioning activity and low shipping density, impacts are expected to be negligible and with no lasting effect.	No activities would be required and, therefore, there would be no temporary disturbances to other users during the decommissioning phase.
Physical Presence: Alteration of Seabed and Benthic Habitats	Disturbance to seabed as a result of wellhead removal.	Short-term, during decommissioning operations	F-Negligible	NA
			Removal of the wellheads would result in localised seabed disturbance at each wellhead location as a result of removal and ROV activities. The habitat at the wellhead locations is flat and relatively featureless and comprised primarily of soft sediments, with a low abundance and patchy distribution of filter feeders and other epifauna. Potential impacts of removal activities include localised and temporary elevated turbidity and clogging of respiratory and feeding parts (turbidity) of filter-feeding organisms. The communities found around the infrastructure are common to the broader region. Seabed disturbance from the decommissioning activities will result in some short-term impacts to benthic communities.	No activities would be required and, therefore, there would be no disturbance to the seabed or benthic habitats as a result of removal activities.
	Disturbance to seabed and benthic habitat from wellheads remaining *in situ* permanently.	Long-term, after decommissioning operations	NA	F-Negligible
			As there would be no infrastructure remaining *in situ*, this removes any potential impacts in the long term.	Leaving the wellheads *in situ* may continue to alter the localised seabed around the wellheads (within around 10 m) over the long-term (approximately 150 years; **Section 7.6.3**) through processes

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
				resulting from scouring and accretion, which may impact associated benthic habitats.
Routine Acoustic Emissions from the Vessel, Positioning Equipment and Helicopter Operations	Generation of acoustic signals from the vessel during normal operations (dynamic positioning [DP] thrusters) and generation of atmospheric noise from helicopter transfers.	Short-term, during decommissioning operations	F-Negligible	NA
			Vessel and helicopters will generate noise both in the air and underwater during decommissioning activities. The main source of noise from a DP vessel relates to using DP thrusters. Listed threatened and listed migratory species that could be potentially impacted by noise and vibration may be present within the water column above the wellheads, primarily including cetaceans, sharks and turtles. All four wellheads are located in the pygmy blue whale migration biologically important area (BIA), and one of them (Brecknock-4) is located within a possible foraging BIA for this species (**Section 5.6**). Given the noise levels associated with routine operations of the vessel, the potential impacts are unlikely to be significant. It is reasonable to expect fauna may demonstrate avoidance or attraction behaviour to the temporary noise generated by the vessel and helicopter activities. It is considered noise generated by the vessel and helicopters will result in localised impacts to marine fauna with no lasting effect.	As there would be no activities required, this removes any potential impacts from acoustic emissions during decommissioning activities.
Routine and Non-routine Discharges from the Vessel	Routine discharges from the vessel (sewage, grey water, putrescible wastes, deck and bilge water, cooling water or brine) to the marine environment.	Short-term, during decommissioning operations	F-Negligible	NA
			The vessel will routinely generate and discharge small volumes of treated sewage, putrescible wastes and grey water to the marine environment. It will also routinely and periodically discharge relatively small volumes of bilge water, and discharge deck drainage directly overboard or overboard via deck drainage systems. Cooling water from machinery engines or mud cooling units and brine water is produced during the desalination process of reverse osmosis to produce potable water onboard the vessel. Routine and non-routine discharges will be temporary and intermittent in nature for the duration of the decommissioning activities. It is possible marine fauna transiting the localised area may come into contact with these discharges (such as cetaceans,	As there would be no activities required, this removes any potential impacts from routine discharges during decommissioning activities.

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
			turtles and sharks), as they traverse the water column above the wellheads. However, it is expected the small volumes of discharges will be rapidly diluted and dispersed in the open water marine environment. Therefore, impacts are expected to be negligible with no lasting effect.	
Subsea Discharges: Associated with Wellhead Decommissioning Options	Subsea discharges during wellhead removal as a result of cutting and water jetting.	Short-term, during decommissioning operations	F-Negligible	NA
			During wellhead cutting, there is potential for subsea discharges. This includes displacement of well fluids and small amounts of metal and cement shavings. If an internal cutting tool is used, it is likely the majority of discharges will be disposed down well; however, if diamond wire cutting is used, the discharges may be discharged directly to the marine environment. Displacement fluids above the top cement plug and within the casing annulus may be discharged during removal of the wellheads (**Section 4.6.2**). The benthic habitat around the wellheads is comprised primarily of soft substrates, some with a low abundance and patchy distribution of filter feeders and other epifauna. The communities found around the infrastructure are common to the broader region. Subsea discharges from decommissioning will result in localised impacts with no lasting effect.	As there would be no activities, this removes any potential for an instantaneous release of well fluids during decommissioning activities.
	Corrosion and breakdown as a result of the wellheads being left *in situ* permanently.	Long-term, after decommissioning operations	NA	F-Negligible
			There would be no long-term impact as the wellheads and residual fluids would be removed from the marine environment.	There is potential for well fluids (**Section 4.6.2**)) to be slowly released to the environment as the wellheads degrade over time (approximately 150 years; **Section 7.6.3**). Given the slow release rate and the rapid dilution of well fluids in the open ocean environment, it is likely any impacts to marine sediments, benthic habitats and water quality will be largely localised and negligible. As they degrade, the wellheads will release corrosion material. The wellheads are comprised predominantly of mild steel (around 7500 kg weight). Mild steel is comprised mainly of iron

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
				(around 98%) and also contains small amounts of carbon, manganese, chromium, silicon and phosphorus. Two plastic components, Teflon and Viton, are present within seal components (up to 750 g per wellhead). Iron, the main constituent of the wellheads (around 98%), is not considered a significant contaminant in the marine environment and is only toxic to marine organisms at extremely high concentrations (Grimwood and Dixon, 1997). All iron oxides are included on the OSPAR PLONOR list (Substances Used and Discharged Offshore which Are Considered to Pose Little or No Risk to the Environment). As the wellheads degrade, the very small volumes of elastomeric materials such as Teflon and Viton (up to 750 g per wellhead) may be released. However, corrosion of the steel is likely to be a relatively slow process, about 0.2 mm/year (Melchers, 2005), reducing the rate of potential discharge. Surface coatings and paints comprise zinc oxide, which will also degrade and release slowly over time as the wellhead corrodes. Given the low toxicity of iron and the slow release rate of the corrosion and paint materials, it is likely any impacts to marine sediments, benthic habitats and water quality will be largely temporary and negligible. Given the small volume of plastic components within the wellheads (comparable to that in seal components of household taps), the degradation and subsequent release of up to 750 g of Teflon and Viton is also expected to result in negligible impacts.

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
Routine Atmospheric Emission: Fuel Combustion and Incineration on the Vessel	Internal combustion engines and incinerators on the vessel used for decommissioning.	Short-term, during decommissioning operations	F-Negligible	NA
			Atmospheric emissions will be generated by the vessel from internal combustion engines (including all equipment and generators) and incineration activities (including on-board incinerators). Emissions will include SO_2, NO_x, ozone-depleting substances, CO_2, particulates and volatile organic compounds. Given the short duration of the activity and exposed location of the wellheads which will lead to the rapid dispersion of the low volumes of atmospheric emissions in an offshore environment, the potential impacts are expected to be negligible with no lasting effect.	As there would be no activities, this removes any potential for atmospheric emission from incineration and fuel combustion.
Routine Light Emissions: External Lighting on the Vessel	External light emissions onboard the vessel used to remove the wellheads. Lighting is typically managed to maintain good visibility for crew members at night.	Short-term, during decommissioning operations	F-Negligible	NA
			Light emissions have the potential to cause localised and temporary disturbance to fauna (seabirds, migratory shorebirds and turtles) in the vicinity of the vessel. The surface waters above the wellheads may be occasionally visited by migratory and pelagic birds. The risk associated with collision from seabirds attracted to the light is considered to be low, given the low numbers expected to transit the area. The surface waters above the wellheads may also be occasionally visited by marine turtles. Individuals would not be exhibiting behaviours which are sensitive to artificial light within the immediate vicinity of the wellhead locations. Light emissions from the vessel are expected to be localised with no lasting effects on EPBC listed species.	As there would be no activities, this removes any potential for light emissions from a vessel.
Evaluation of unplanned activities and risks				
Physical Presence: Interactions with Other Users	Long-term physical presence of wellheads, interaction with third-party activities.	Long-term after decommissioning operations	NA	Low (E – 1)
			Removal of the wellheads results in no interactions with current and future third-party activities.	*In situ* decommissioning of the wellheads may present a snag risk to trawl fishing vessels in the NWSTF currently or in the future. The wellheads may become partially or fully buried overtime due to surrounding hydrodynamic conditions (**Section 7.6.2**) and will eventually fully degrade into

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
				seabed sediments over approximately 150 years (**Section 7.6.3**). The height of each wellhead (up to 3.5 m) is considered to be a worst-case scenario and the risk will remain until the wellheads are significantly degraded or buried. An independent study undertaken on the Browse wellheads found current risks to trawl fishers were low based on current fishing effort, the location of the wellheads presenting limitations for trawling and due to modern navigational systems effectively reducing the risk of snagging as well as other controls available to reduce interaction probability or harm level (AMC, 2022; **Section 3.3**). Whilst current effort is low, this could increase in the future. The study considered a fourfold increase in activity to account for this; however, found that potential for interaction remained low (AMC, 2022). The study also found that the most credible outcome should a trawl net interact with the Brecknock-4, Calliance-1 or Calliance-2 wellheads was minor to moderate gear damage and subsequent catch loss. The most credible outcome should a trawl net interact with the Calliance-3 wellhead was moderate gear damage or net loss and subsequent catch loss (AMC, 2022). Given the wellheads will continue to be marked on navigational charts and the negligible area the wellheads occupy in the overall fishery, the likelihood of interaction (in other words, snagging) is considered highly unlikely and the overall risk low (**Section 7.7.1**).
			Moderate (D – 1)	NA

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
Accidental Hydrocarbon (Marine Diesel) Release: Result of a Vessel Collision	Loss of hydrocarbons (diesel) to marine environment due to a vessel collision (such as vessels and other marine users) resulting in a worst-case spill of up to 500 m^3 to the marine environment.	Short-term, during decommissioning operations	Marine diesel is a mixture of both volatile and persistent hydrocarbons. Given the environmental conditions experienced at the wellhead locations, marine diesel is expected to undergo rapid spreading and this, together with evaporative loss, is likely to result in a rapid dissipation of the spill. Hydrocarbon spills have the potential to impact marine fauna, marine and coastal habitats, socio-cultural receptors and protected places. Surface hydrocarbons can result in smothering of emergent features, such as emergent reefs, sandy beaches and mangrove habitats, and marine fauna resulting in toxic impacts. Entrained and dissolved hydrocarbons can result in toxic impacts to receptors in the water column, including submerged habitats such as reefs and shoals, and marine fauna. Socio-cultural values, such as tourism and commercial fisheries, can be impacted directly by exclusion from an area due to the presence of a surface slick, and indirectly through effects on target species. While the spatial extent of a hydrocarbon spill can extend greater distances from the source, the wellheads are located 15 km from the nearest emergent feature (Sandy Islet within Scott Reef), and 248 km from the nearest landfall (Dampier Peninsula). Protected places which could be impacted by a spill include Scott Reef and surrounds: Commonwealth area, Seringapatam Reef and surrounds, Mermaid Reef–Rowley Shoals and surrounding Commonwealth waters, Ashmore Reef, Cartier Island and surrounding Commonwealth waters, and the Dampier Marine Park. Sensitive habitats could include coral reef communities at Scott Reef and Seringapatam Reef, the Rowley Shoals, Ashmore Reef, and mangrove habitats, intertidal mudflats and sandy beaches, along the Dampier Peninsula. All four wellheads are located in the pygmy blue whale migration biologically important area (BIA), and one of them (Brecknock-4) is located within a possible foraging BIA for this species (**Section 5.6**). The potential for short-term impacts, such as irritation of skin, to pygmy blue whale is limited to transient	As there would be no activities, this removes any potential risk of accidental hydrocarbon (marine diesel) release as a result of a vessel collision.

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
			individuals that may be in offshore waters near the release location. An accidental hydrocarbon release as a result of a vessel collision represents a moderate risk rating and may result in minor, short-term impacts to species and habitat (but not affecting ecosystems function, physical or biological attributes).	
Unplanned Discharges: Hydrocarbons/ Chemicals from Use of Vessel and ROV	Accidental discharge to the marine environment of other hydrocarbons/ chemicals from the vessel deck activities and equipment (such as cranes), including subsea ROV hydraulic leaks.	Short-term, during decommissioning operations	Low (F - 2)	NA
			An unplanned release of hydrocarbons and chemicals will result in a decrease in water quality in the immediate area of the spill. An unplanned release has the potential to cause minor impacts to marine megafauna (ingestion, irritation), plankton and fish populations (surface and water column biota) in the immediate vicinity of the spill. Unplanned discharges from deck and subsea spills represent a low current risk rating and may result in slight, short-term impacts to species and habitat (but not affecting ecosystems function physical or biological attributes).	As there would be no activities, this removes any potential risk of unplanned discharges of hydrocarbons and chemicals.
Unplanned Discharges: Release of Hazardous and Non-hazardous Solid Wastes from the Vessel	Accidental loss of hazardous or non-hazardous solid wastes to the marine environment (excludes sewage, grey water, putrescible waste and bilge water) from a project vessel.	Short-term, during decommissioning operations	Low (F - 2)	NA
			The potential impacts of solid wastes accidentally discharged to the marine environment include direct pollution and contamination of the environment and secondary impacts relating to potential contact of marine fauna with wastes, resulting in entanglement or ingestion and leading to injury and death of individual animals. If one of the wellheads is dropped during retrieval, this could result in seabed disturbance. Unplanned discharges of solid hazardous and non-hazardous wastes represent a low risk rating and may result in localised impacts with no lasting effect to water quality, habitats (but not ecosystems) and species.	As there would be no activities, this removes any potential risk of unplanned discharges of solid hazardous and non-hazardous wastes.

Aspect	Impact/Risk Description	Time Horizon	Impact/Risk and/or benefit of decommissioning options	
			Removal	***Leave in situ***
Vessel Collision with Marine Fauna	Accidental collision between the vessel and protected marine fauna.	Short-term, during decommissioning operations	Low (F – 1)	NA
			Cetaceans and whale sharks may be at risk of injury or mortality from vessel collision or being caught in thrusters during station-keeping operations. The vessel would typically be stationary or moving at low speeds when performing the activity, resulting in a collision event being highly unlikely. All four wellheads are located within the pygmy blue whale migration, and one of them (Brecknock-4) is located within a possible foraging BIA for this species (**Section 5.6**), potentially increasing the likelihood of a collision during peak migration periods. A vessel collision with marine fauna represents a low risk rating that may result in slight, short-term impacts to species.	As there would be no activities, this removes any potential for vessel collision with marine fauna.
Physical Presence: Dropped Object During Wellhead Removal Resulting in Seabed Disturbance	Dropped objects during the wellhead removal, resulting in the disturbance of benthic habitat.	Short-term, during decommissioning operations	Low (F – 2)	NA
			Potential impacts from a dropped object, the largest being a wellhead itself during a removal operation, include localised and temporary elevated turbidity and clogging of respiratory and feeding parts (turbidity) of filter feeding organisms. The communities found around the infrastructure are common to the broader region. Seabed disturbance as a result of a dropped object represents a low risk ranking that will result in some temporary negligible impacts to benthic communities.	As there would be no activities, this removes any potential for dropped objects.
Physical Presence: Accidental Introduction and Establishment of Invasive Marine Species	Introduction of IMS from project vessel use.	Short-term, during decommissioning operations	Low (E – 0)	NA
			Deep offshore waters, such as those of the wellhead locations (501 to 677 m) are not conducive for IMS establishment; therefore, the accidental introduction and establishment of IMS represents a low risk rating and may result in slight impacts to habitats.	As there would be no activities, this removes any potential for introduction and establishment of IMS.

3.7 Decommissioning Options Assessment Summary

The outcomes of the Decommissioning Options Assessment are summarised in **Table 3-6**. This summary takes into consideration the outcomes of the technical feasibility assessment, health and safety assessment and the environmental risks and impacts assessment. Legislative requirements were not considered here as all options complied with, or were consistent with, the requirements of the relevant legislation. The outcomes of the environmental and risk assessment are evaluated in terms of the overall timeframe for both decommissioning options, from short-term impacts during decommissioning to longer term impacts associated with corrosion and degradation of wellheads.

The assessment determined that leave *in situ* offered the best decommissioning option, as it presented no health and safety risks, and equal environmental impacts and lower risks when compared to removal.

Table 3-6: Summary of the decommissioning options assessment

Option	Relevant Legislation	Technical Feasibility	Health and Safety Risk	Environment Impacts		Environmental Risks	
				Short-term	***Long-term***	***Short-term***	***Long-term***
Removal	Compliant	Feasible	Yes	F-Negligible	NA – No impacts	Low to Moderate	NA – No risks
Leave *in situ*	Compliant	Feasible	No	NA – No impacts	F-Negligible	NA – No risks	Low

3.8 Equal or Better Outcomes

To determine whether a decommissioning option presents an equal or better environmental outcome, the following criteria have been considered:

- Do the short and long-term environmental impacts and risks of leaving *in situ* outweigh or equal those associated with removal?
- Is the activity consistent with the principles of ESD?

3.8.1 Environmental Risks and Impacts

Short-term and long-term impacts and risks of removal compared to leaving *in situ* are compared in **Table 3-7**.

Table 3-7: Assessment of short- and long-term impacts and environmental risks and impacts

Time horizon	Assessment	Outcome
Short-term – impact or risk during decommissioning operations	Removal Short-term impacts associated with removal include those arising from vessel use (such as vessel discharges, noise impacts, light emissions) and the wellhead removal itself (such as seabed disturbance, displacement fluids releases from the wellheads), as well as low and moderate risk events (such as vessel collision, spill risks and marine fauna collision). Leave *in situ* One fishery currently has the potential to be displaced by the wellheads, the NWSTF. Although fishing effort has been recorded in the 60 nm grid overlapping all four EMBAs, only the Calliance-2 wellhead is located within water depths where target species are currently expected to occur. This and the negligible area the EMBAs occupy within the overall fishery (0.0002% per EMBA), indicates any displacement will not significantly impact the functioning of the fishery and impacts will be negligible with no lasting effect. The risk of snagging to current trawl fishers is also assessed as low. Summary Leave *in situ* represents a better environmental option in the short-term as it eliminates the impacts associated with removal, including those arising from vessel use (such as vessel discharges, noise impacts, light emissions) and the wellhead removal itself (such as seabed disturbance), as well as low and moderate risk events (such as vessel collision, spill risks and marine fauna collision).	Leaving *in situ* delivers better environmental outcome
Long-term – impact or risk beyond decommissioning operations	Removal Removal of the wellheads removes the long-term impacts associated with leaving the wellheads *in situ*, such as possible future displacement of trawl fishers or snagging of trawl nets on the wellheads, and long-term corrosion and the release of materials to the marine environment. Leave *in situ* The wellheads are comprised predominantly of steel, which is non-toxic, and negligible quantities of plastic (Teflon and Viton, up to 750 g). Corrosion of steel occurs at a slow rate, about 0.2 mm/year (Melchers, 2005), meaning the dilution of corroded steel will occur in the open ocean, reducing the concentration at any location at any one time. This will result in a localised increase in the iron content of the seabed, given iron's low toxicity. Coupled with the ongoing sedimentation of the seabed as a result of natural forces, impacts in the long term are expected to be negligible. Possible future displacement of trawl fishers will not be significant, given the negligible area the wellheads comprise and depth at which they are located. The risk of snagging to future trawl fishers is also assessed as low. Summary	Removal delivers better environmental outcome

	Removal delivers better environmental outcome in the long term as it removes any impact to the seabed as the wellheads degrade.	

3.8.2 Principles of Ecologically Sustainable Development

The Environment Regulations require the titleholder to ensure the activity is performed in a manner consistent with the principles of ESD. The equal or better environmental outcomes evaluation assesses the activity against the relevant principles of ESD, as summarised in **Table 3-8**.

Table 3-8: Assessment of the decommissioning options against the principles of ecologically sustainable development

Principles of ESD	Assessment
Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations (the 'integration principle').	The Decommissioning Options Assessment process assessed the long-term and short-term environmental and social aspects associated with each option. The outcomes of this assessment are summarised in **Section 3.6**.
If there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (the 'precautionary principle').	The main constituents of the wellheads are known and the potential effects of their degradation on the receiving environment understood. Considering the main constituents of the wellheads is iron (98%), which is not considered a contaminant in the marine environment, and small volumes of plastics (less than 1% Teflon and Viton, 750 g), no threat of serious or irreversible damage is associated with leaving the infrastructure *in situ*. The greatest risk of the removal option is a hydrocarbon spill. The marine environment is expected to fully recover from such an event and, therefore, there is no threat of serious or irreversible damage associated with removal of the wellheads.
The principle of intergenerational equity - that the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations (the 'intergenerational principle').	Removal of the wellheads removes any potential impact associated with long-term degradation of the wellheads in the marine environment or interference with other users. Wellheads brought onshore for disposal will be recycled, where feasible, or be disposed in a landfill where they will undergo a similar degradation process. Leaving the wellheads *in situ* has no significant impacts to future generations. This is on the basis that all impacts from leaving the wellheads *in situ* are ALARP and acceptable (**Section 7**).
The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision -making (the 'biodiversity principle').	The introduction of a vessel for removal of the wellheads results in more environmental risks and impacts in the short term than leaving the wellheads *in situ* (**Table 3-5**). However, the risks and impacts associated with either decommissioning option will not impact biological diversity or ecological integrity in the long term, should risks and impacts be managed to ALARP and acceptable levels (**Section 7**).

3.8.3 Recommendation

The recommendation is that the wellheads remain *in situ*. The leave *in situ* decommissioning option meets the requirements of subsection 572(3) and subsection 270(3)(c) of the OPGGS Act, if those arrangements are satisfactory to NOPSEMA, and subsection 572(7)(d) if application to DAWE for a sea dumping permit is required and subsequently successful (**Table 1-3**). The option also aligns with the NOPSEMA policy on Section 572 (NOPSEMA, 2020) and DISER Decommissioning Guideline (DISER, 2018), which allows for consideration of alternatives to removal if those alternatives deliver equal or better environmental, safety and well integrity outcomes.

Regarding environmental outcomes more specifically, the leave *in situ* option is consistent with the relevant principles of ESD and overall provides a better or equal environmental outcome when comparing short- and long-term impacts and risks.

In the short term, the leave *in situ* option poses no environmental impacts and risks since no activity would occur. The wellhead removal activity would pose negligible environmental impacts, and risks from low to moderate.

Conversely, in the long term, once the seabed has recovered from the temporary disturbance, wellhead removal will eliminate any environmental impacts and risks. The perpetual presence of the wellheads *in situ* will result in planned impacts of negligible consequence, and a highly unlikely risk ranked as low.

The differing timeframes characterising short- and long-term impacts make direct comparison difficult. However, the consequence of the short-term impacts and risks are greater compared to the consequence of the long-term impacts and risks. Since the long-term impacts associated with the leave *in situ* option will have no lasting effect, and they are not expected to be sequentially cumulative (in other words, increase with time), the environmental outcomes of leaving the wellheads *in situ* are considered equal or better than the removal option.

Therefore, Woodside proposes to leave the wellheads *in situ* permanently.

4. DESCRIPTION OF THE ACTIVITY

4.1 Overview

This section has been prepared in accordance with Regulation 13(1) of the Environment Regulations, and describes the activity to be performed as part of the Petroleum Activities Program under this EP.

4.2 Petroleum Activities Program Overview

An overview of the Petroleum Activities Program is provided in **Table 4-1**.

Table 4-1: Petroleum Activities Program overview

Item	Description
Title	WA-32-R, WA-28-R
Wells	Brecknock-4, Calliance-1, Calliance-2, Calliance-3
Vessels	None required
Key activities	Permanent abandonment *in situ* of four Browse wellheads and associated infrastructure

4.3 Location

The wells are located within Permit Areas WA-32-R and WA-28-R in Commonwealth waters, around 380 km to Broome from the Calliance-2 well (**Figure 4-1**). Details of the wellhead seabed locations and water depths are provided in **Table 4-2**. Well positions were recorded using dynamic GPS positioning at the time they were drilled, giving a high level of confidence in their accuracy. The accuracy of the wellhead locations is provided in **Table 4-2**.

Table 4-2: Location details for the Petroleum Activities Program

Well name	Water depth (m LAT)	Height of wellhead (m)	Latitude (S)	Longitude (E)	Confidence
Brecknock-4	651	3.3 m	-14°21'45.913"	121°39'33.854"	+/- 5 m
Calliance-1	575	2.5 m	-14°32'21.870"	121°33'11.910"	+/- 20 m
Calliance-2	501	2.5 m	-14°34'26.270"	121°34'43.960"	+/- 10 m
Calliance-3	677	3.5 m	-14°31'51.840"	121°29'53.380"	+/- 5 m

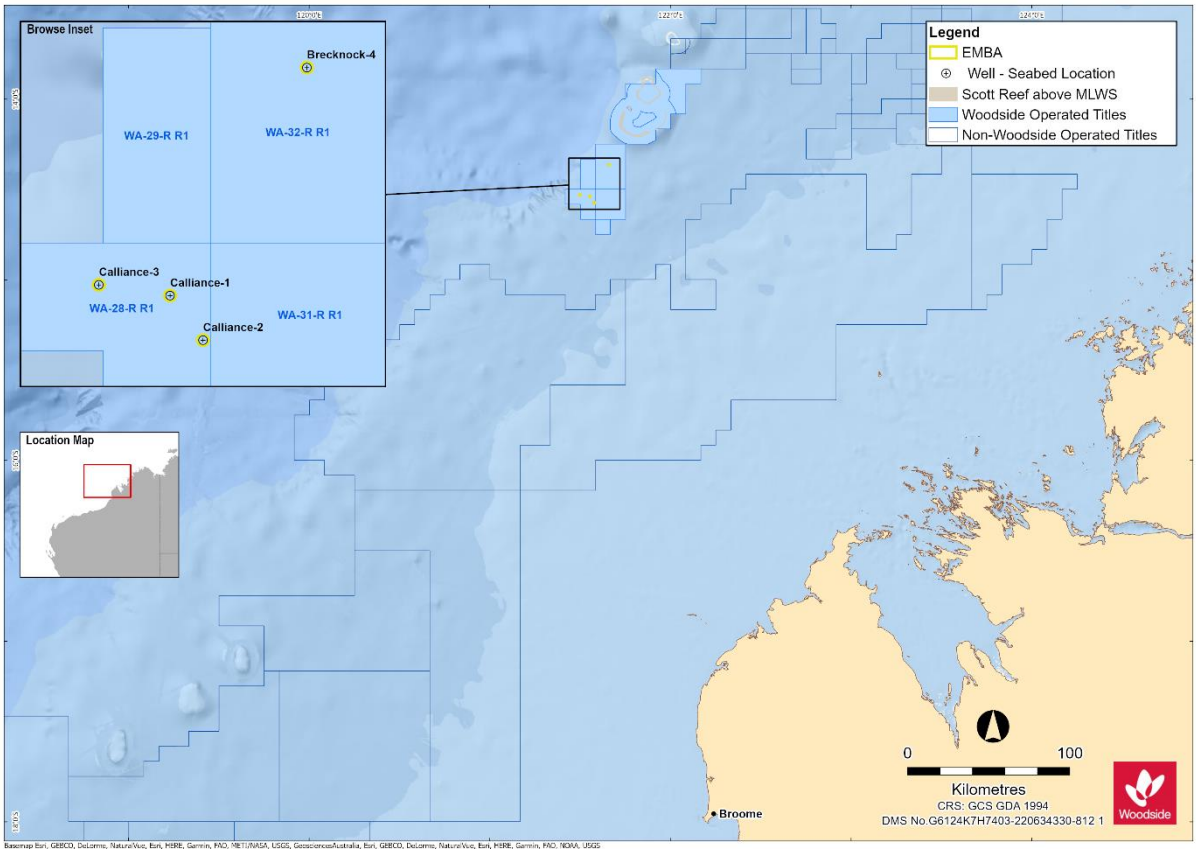


Figure 4-1: Location of the Petroleum Activities Program

4.4 Operational Area

As no planned operations are proposed, an Operational Area has not been defined. However, the area each of the wellheads occupy and an area around each wellhead where environmental impacts have potential to occur have been defined. These areas are referred to throughout this EP as the EMBAs.

The EMBAs for each wellhead are shown in **Figure 4-1**. The EMBAs are the spatial boundary of the Petroleum Activities Program, defined by the impacts and risks assessed and managed by this EP. The EMBAs only include the area encompassing a 500 m radius around the wellhead and the water column 20 m above it.

4.5 Timing

The proposed Petroleum Activities Program involves leaving the wellheads and associated infrastructure *in situ* and, therefore, no field activities are proposed. The Petroleum Activities Program will end after Woodside has completed post acceptance requirements described in **Sections 7** and **8** of this EP, which is proposed to take approximately four months.

4.6 Infrastructure Overview

The wells' history and composition are summarised in **Table 4-3**. An example of a wellhead with TGB, PGB and guideposts is presented in **Figure 4-2**.

Table 4-3: Summary of Petroleum Activities Program infrastructure

Well	Year drilled	Status	Drilling fluids	Displacement fluids (above the top cement plug)	Fluids within casing annuli (above the top cement plug)	Wellhead and associated infrastructure remaining
Brecknock-4	2009	Well barriers were approved for abandonment by NOPSEMA on 15 August 2017	Seawater, high viscosity pre-hydrated gel sweeps, water-based muds (WBM)	1.5 m^3 inhibited seawater	70 m^3 seawater and chemicals as described in **Table 4-4**	One exploration wellhead
Calliance-1	2005		Seawater, inhibited brine, high viscosity pre-hydrated gel sweeps, WBM	5.5 m^3 inhibited seawater	78 m^3 seawater and chemicals as described in **Table 4-4**	One exploration wellhead
Calliance-2	2007		Seawater, high viscosity pre-hydrated gel sweeps, WBM	1.5 m^3 inhibited seawater	70 m^3 seawater and chemicals as described in **Table 4-4**	One exploration wellhead
Calliance-3	2008		Seawater, high viscosity pre-hydrated gel sweeps, WBM	3 m^3 inhibited seawater	73 m^3 seawater and chemicals as described in **Table 4-4**	One exploration wellhead and temporary guide base, permanent guide base and guideposts

`

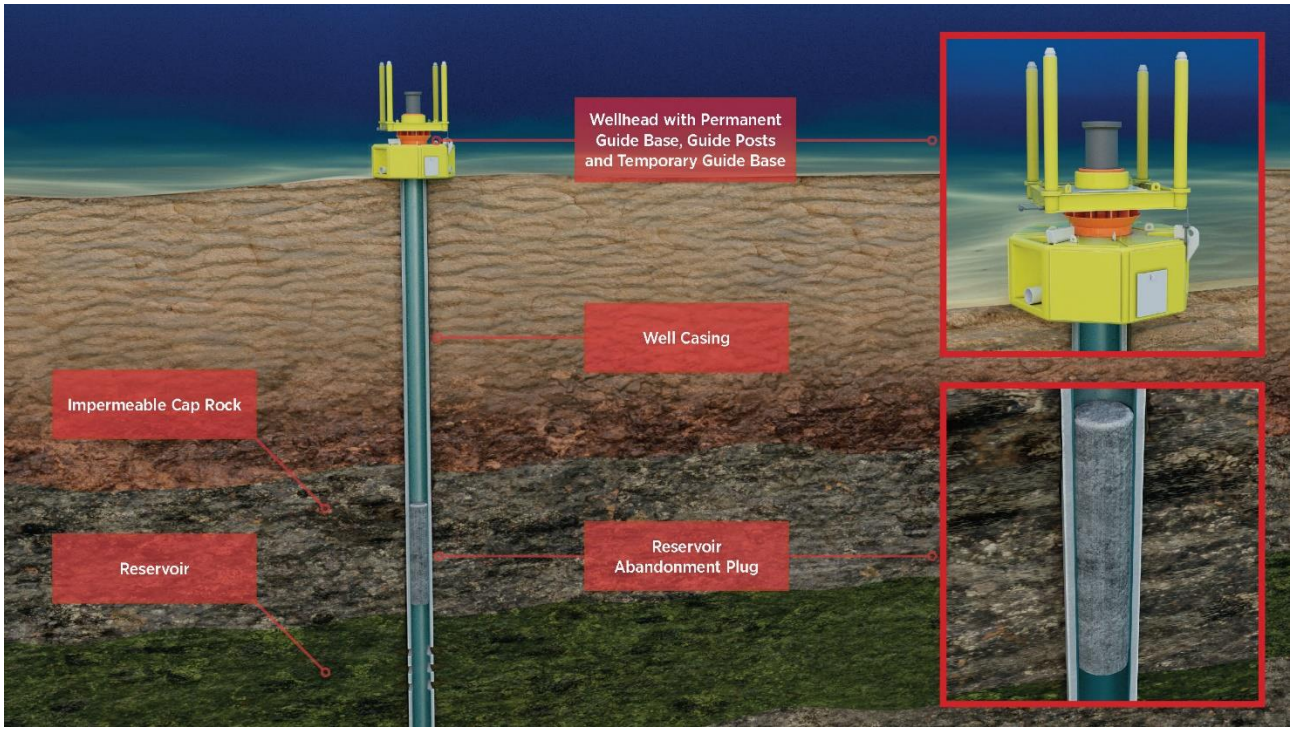


Figure 4-2: Example image of wellhead including TGB, PGB and guideposts

4.6.1 Wellhead and Associated Infrastructure Composition

The wellheads are comprised of mild steel (around 7500 kg) and small amounts of elastomeric materials such as Teflon and Viton used within seal components (up to 750 g, less than 0.1%).

Surface coatings and paints have been used on the wellheads for corrosion protection and are likely to be zinc-oxide based, given the age of the wellheads. Volume of coating material is around 3 to 5 kg per wellhead. If fitted, Steel debris or corrosion caps sit on top of the wellheads to protect them from marine growth and corrosion. The total weight of the steel material varies very little between each wellhead and is estimated to be about 7500 kg; the height above the seabed varies between 2.5 and 3.5 m.

Naturally-occurring radioactive materials are not considered to be present within the wellheads or associated infrastructure.

4.6.2 Residual Chemicals and Fluids

Chemicals and fluids within the well, either above the top cement plug or behind the casing annulus have the potential to leak from the well over time. The volumes remaining depend on the depth of the shallowest plug, diameter of the inner casing/well and status of the wellhead. It is estimated that, for all wells combined, a total of approximately 11.5 m^3 of displacement fluids (Brecknock-4, 1.5 m^3; Calliance-1, 5.5 m^3; Calliance-2, 1.5 m^3; Calliance-3, 3 m^3), and around 291 m^3 of fluids within the annulus (Brecknock-4, 70 m^3; Calliance-1, 78 m^3; Calliance-2, 70 m^3; Calliance-3, 73 m^3) are present (**Table 4-3**). There is no credible risk of fluids below this plug being released to the marine environment, given the well has been approved for abandonment (**Section 3.8**).

The typical chemicals within the displacement fluids and residual fluids behind the casing annulus are presented in **Table 4-4**, along with their function and Centre for Environment, Fisheries and Aquaculture Science Offshore Chemical Notification Scheme (OCNS) ranking.

Table 4-4: Residual chemicals and fluids above the top cement plug

Chemical	Function	OCNS ranking
Displacement fluids		
Corrosion Inhibitor	Prevent corrosion in the wellheads	Gold
Biocide	Prevent marine growth in the wellheads	E
Fluids behind casing annulus		
Bentonite clay	WBM weighting chemical	E
Barite	WBM weighting chemical	E
Carboxymethyl cellulose	Viscosifier	E
Flowzan	Viscosifier	E
Drispac SL and Drispac R	Viscosifier	E
Dextrid (potato starch)	Drilling fluid (fluid loss control)	E
SperSene (lignosulfonate)	Drilling fluid (thinner)	E
Soda Ash	Drilling fluid (additive)	E
Caustic Soda	Drilling fluid (acidity control)	E
Potassium chloride	Well stimulation chemical	E

4.6.3 Other Property in the Permit Area

There is no other property remaining within the WA-32-R or WA-28-R titles.

5. DESCRIPTION OF THE EXISTING ENVIRONMENT

5.1 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 7**). As per **Section 2.4.2**, references to the Master Existing Environment, Appendix H in the Enfield Plug and Abandonment EP (hereafter referred to as the Master Existing Environment), have been made throughout this EP.

For the purposes of this EP, Woodside has identified the EMBAs as the area encompassing a 500 m radius from the Browse wellhead locations and the water column 20 m above it (as defined in **Section 4.1**). It is noted there is no credible spill risk associated with the Petroleum Activities Program (**Section 3.8**). Furthermore, no vessel-based activities are proposed.

The term 'EMBAs' will be used to conservatively describe the area where potential impacts from the Petroleum Activities Program have potential to occur. No Operational Area has been defined as there are no planned operations associated with the Petroleum Activities Program.

5.2 Regional Context

The EMBAs are located in Commonwealth waters within the North-west Marine Region (NWMR), as defined under the Integrated Marine and Coastal Regionalisation of Australia (v4.0) (Commonwealth of Australia, 2006), in water depths ranging from around 501 to 677 m. Within the NWMR, the EMBAs lie in the Timor Province bioregion (**Figure 5-1**). Woodside's Description of the Existing Environment (Section 2 of the Master Existing Environment) provides a full summary of the characteristics of the NWMR and the Northwest Province.

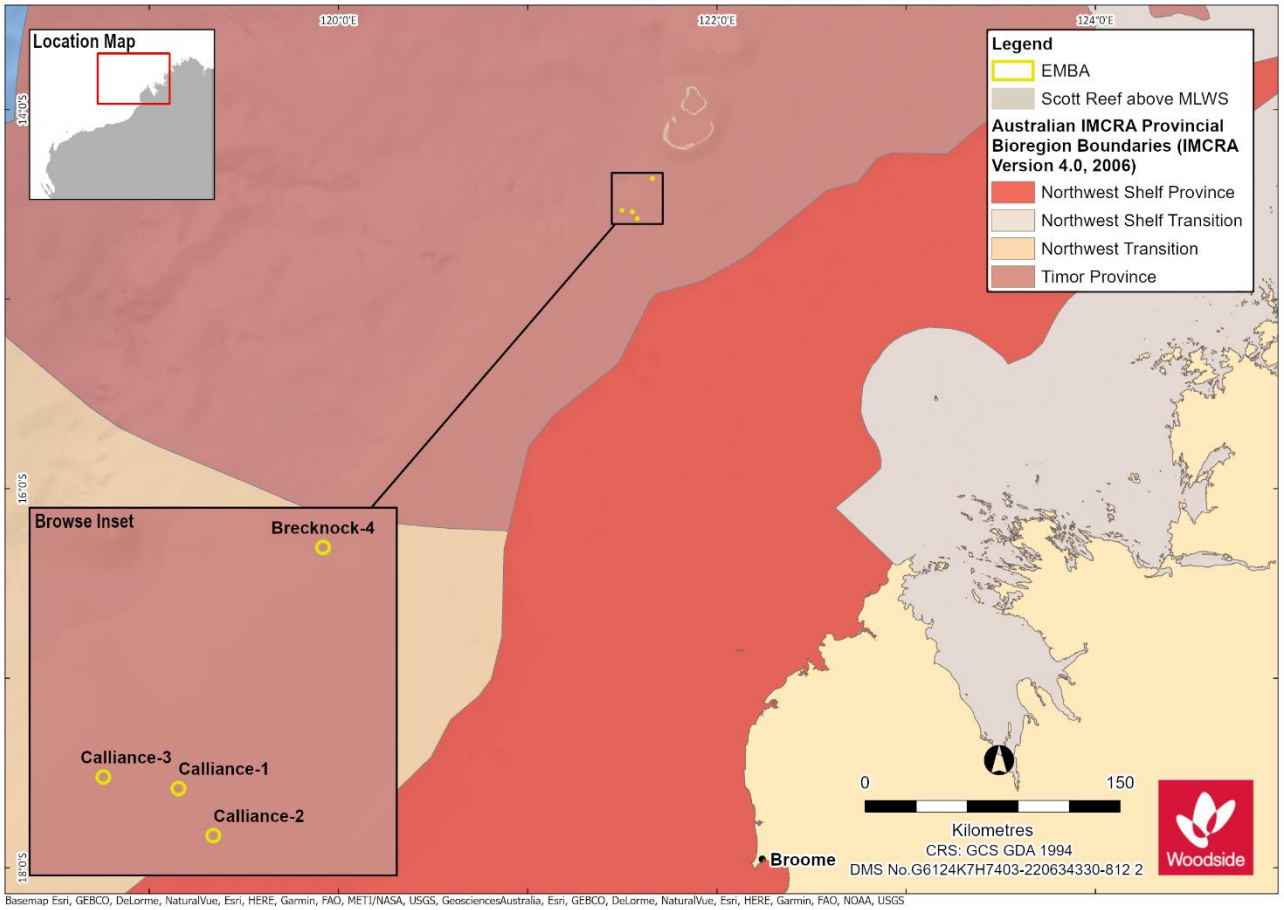


Figure 5-1: Location of the environments that may be affected and relevant marine bioregions

5.3 Matters of National Environmental Significance (Environment Protection and Biodiversity Conservation Act)

Table 5-1 summarises the MNES overlapping the wellhead locations, according to Protected Matters Search Tool (PMST) results (**Appendix C**). It should be noted the EPBC Act PMST is a general database that conservatively identifies areas in which protected species have the potential to occur.

Additional information on these MNES is provided in subsequent sections of this chapter and described in detail in Section 3 of the Master Existing Environment.

Table 5-1: Summary of matters of national environmental significance identified by the Protected Matters Search Tool as potentially occurring at the wellhead locations

MNES	Number	Relevant Section
World Heritage Properties	0	NA
National Heritage Places	0	NA
Wetlands of International Importance (Ramsar)	0	NA
Commonwealth Marine Area	1	NA – Exclusive Economic Zone and Territorial Sea
Listed Threatened Ecological Communities	0	NA
Listed Threatened Species	17	**Section 5.6** and Sections 5 to 8 of the Master Existing Environment
Listed Migratory Species	31	**Section 5.6** and Sections 5 to 8 of the Master Existing Environment

5.4 Physical Environment

The EMBAs are located on the continental shelf in waters around 501 to 677 m deep. The bathymetry of the EMBAs and surrounding area is shown in **Figure 5-2**. The area is largely characterised by two key ecological features (KEFs): the Seringapatam Reef and Commonwealth waters in the Scott Reef Complex, and the Continental Slope Demersal Fish Communities (described further in **Section 5.7**).

Oceanography in the EMBAs is largely characterised by two distinct seasons comprising of a mild, dry winter between April to September and a hot, wet summer between October to March. Swell directions can vary widely in the region, depending on wind direction, locations of major storms, and local bathymetric effects that occur in areas such as the shelf break and Scott Reef. Currents within the EMBAs are influenced by several factors, including different types of waves and regional current systems like the Indonesian Throughflow.

Sediments in the region generally become finer with increasing water depth, ranging from sand and gravels on the continental shelf to mud on the continental slope and abyssal plain. Around 60 to 90% of the sediments in the region are carbonate-derived (skeletal remains of carbonate-secreting marine organisms) (Brewer *et al*., 2007). Particle size distribution analyses showed sediments around the region are generally classified as muddy sand with variable gravel components. The seabed sediments in the EMBAs are generally soft silt and clay, with areas of sand and stiff, hard or cemented material (Fugro, 2006; Gardline, 2009). Epifauna consists of isolated individual bryozoan colonies, brittlestars, basket stars and sea anemones (Gardline, 2009). Brewer *et al.* (2007) also reported the seabed surrounding the wellheads consists of muddy substrates, with epifauna likely limited to deposit-feeders rather than suspension-feeders such as sponges and soft corals.

Section 2.3 of the Master Existing Environment provides a full description of the physical characteristics of the environment within the EMBAs.

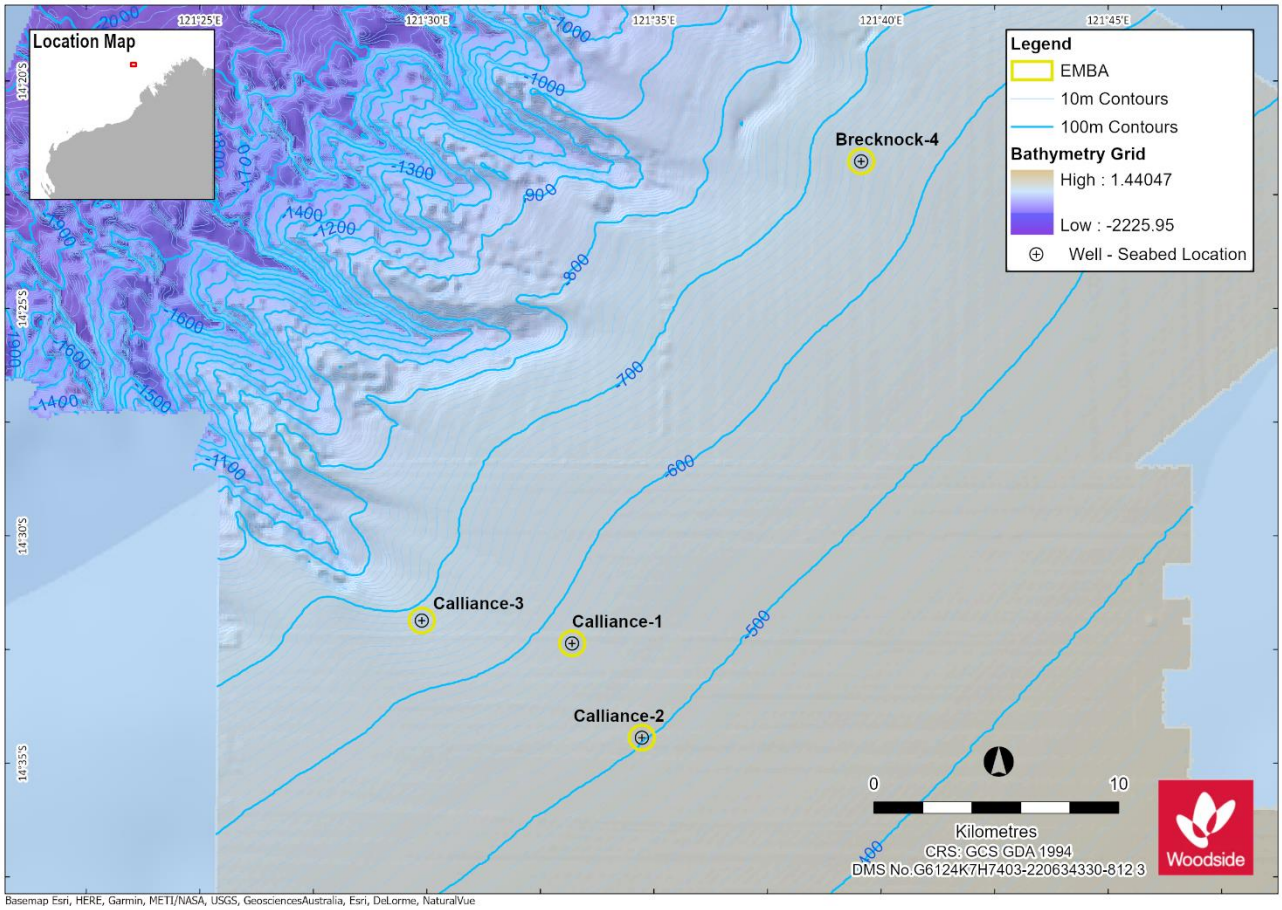


Figure 5-2: Bathymetry of the environments that may be affected

5.5 Habitats and Biological Communities

Key habitats and ecological communities within the EMBAs are identified in **Table 5-2** and described in Section 4 of the Master Existing Environment.

Table 5-2: Habitats and communities within the environments that may be affected

Habitat/Community	Key locations within the EMBA
Marine primary producers	
Corals	None located within the EMBAs. Wellheads located in depths (501 to 677 m) beyond the photic zone, prohibiting benthic primary producers. Closest hard corals are located within Scott Reef, around 22 km north of the Brecknock-4 wellhead EMBA.
Seagrass beds and macroalgae	None located within the EMBAs. Wellheads located in depths (501 to 677 m) beyond the photic zone, prohibiting benthic primary producers. Closest seagrass beds are located within Scott Reef, around 22 km north of the Brecknock-4 wellhead EMBA.
Mangroves	None located within the EMBAs. Closest mangroves are located on the Dampier Peninsula, around 250 km south-east of the Brecknock-4 wellhead EMBA.
Other communities and habitats	
Plankton	Phytoplankton within the EMBAs is expected to reflect the distribution and abundance of the NWMR; refer to Section 4.3 of the Master Existing Environment.
Pelagic and demersal fish populations	Fish populations within the EMBAs are typical of the continental slope of the Timor Province, which supports the second richest area for demersal fish species across the entire NWMR. Scott Reef supports a diverse fish assemblage in shallow and deep waters.
Epifauna and infauna	Deepwater feeding communities may be present in the sediments of the EMBAs, including deposit-feeding epifauna and infauna (Heyward and Rees, 2001); refer to Section 5.5 of the Master Existing Environment.

5.6 Protected Species

A total of 32 EPBC Act listed species (one threatened and non-migratory, 15 threatened and migratory and 16 migratory only) considered to be MNES were identified as potentially occurring at the wellhead locations, based on search results from the PMST (full PMST results are provided in **Appendix C**).

Since the EMBAs only include the area encompassing a 500 m radius around the wellhead and the water column 20 m above it, species identified in the PMST search that are confined to surface waters are unlikely to occur within the EMBAs. Within the EMBAs, only cetacean and shark species are expected to occur, which include nine threatened and migratory species and three migratory only species.

The next subsections detail the MNES that may be expected within the EMBAs, including any areas that are considered BIAs for those species or habitats identified as habitat critical to the survival of the species (Habitat Critical). Detailed discussion of protected species is provided in Sections 5 to 8 of the Master Existing Environment.

5.6.1 Fishes, Sharks and Rays

Table 5-3: Threatened and Migratory fish, shark and ray species predicted to occur within the environments that may be affected

Species name	Common name	Threatened status	Migratory status	EMBAs
Anoxypristis cuspidata	Narrow sawfish	NA	Migratory	Species or species habitat may occur within area
Carcharhinus longimanus	Oceanic whitetip shark	NA	Migratory	Species or species habitat may occur within area
Carcharodon carcharias	Great white shark	Vulnerable	Migratory	Species or species habitat may occur within area
Isurus oxyrinchus	Shortfin mako	NA	Migratory	Species or species habitat likely to occur within area
Isusrus paucus	Longfin mako	NA	Migratory	Species or species habitat likely to occur within area
Manta birostris	Giant manta ray	NA	Migratory	Species or species habitat likely to occur within area
Rhincodon typus	Whale shark	Vulnerable	Migratory	Species or species habitat may occur within area

5.6.2 Marine Reptiles

Table 5-4: Threatened and Migratory marine reptile species predicted to occur within the environments that may be affected

Species name	Common name	Threatened status	Migratory status	EMBAs
Caretta	Loggerhead turtle	Endangered	Migratory	Species or species habitat known to occur within the water column at the wellhead location but not expected within the EMBAs
Chelonia mydas	Green turtle	Vulnerable	Migratory	
Dermochelys coriacea	Leatherback turtle	Endangered	Migratory	
Eretmochelys imbricata	Hawksbill turtle	Vulnerable	Migratory	
Lepidochelys olivacea	Olive Ridley turtle	Endangered	Migratory	
Natator depressus	Flatback turtle	Vulnerable	Migratory	

5.6.3 Marine Mammals

Table 5-5: Threatened and Migratory marine mammal species predicted to occur within the environments that may be affected

Species name	Common name	Threatened status	Migratory status	EMBAs
Balaenoptera borealis	Sei whale	Vulnerable	Migratory	Species or species habitat known to occur within area
Balaenoptera edeni	Bryde's whale	NA	Migratory	Species or species habitat likely to occur within area
Balaenoptera musculus	Blue whale	Endangered	Migratory	Migration route known to occur within area
Balaenoptera physalus	Fin whale	Vulnerable	Migratory	Species or species habitat known to occur within area
Megaptera novaeangliae	Humpback whale	NA	Migratory	Species or species habitat known to occur within area
Orcinus orca	Killer whale	NA	Migratory	Species or species habitat may occur within area
Physeter macrocephalus	Sperm whale	NA	Migratory	Species or species habitat may occur within area
Tursiops aduncus	Spotted bottlenose dolphin (Arafura/Timor Sea populations)	NA	Migratory	Species or species habitat may occur within area

Table 5-6: Marine mammal biologically important areas within the environments that may be affected

Species	BIA type	Approximate distance and direction from EMBAs (km)
Pygmy blue whale (*Balaenoptera musculus brevicauda*)	Migration and Possible Foraging (North-west Marine Region)	Migration BIA overlapped by all four EMBAs Possible foraging BIA overlapped by Brecknock-4 EMBA only

5.6.4 Seabirds and Migratory Shorebirds

Table 5-7: Threatened and Migratory seabird and migratory shorebird species predicted to occur within the environments that may be affected

Species name	Common name	Threatened status	Migratory status	EMBAs
Actitis hypoleucos	Common sandpiper	NA	Migratory	Individuals may traverse the air or water above the wellheads but will not occur in the EMBAs
Anous stolidus	Common noddy	NA	Migratory	
Anous tenuirostris melanops	Australian lesser noddy	Vulnerable	NA	
Calidris acuminata	Sharp-tailed sandpiper	NA	Migratory	
Calidris canutus	Red knot	Endangered	Migratory	
Calidris ferruginea	Curlew sandpiper	Critically Endangered	Migratory	
Calidris melanotos	Pectoral sandpiper	NA	Migratory	
Calonectris leucomelas	Streaked shearwater	NA	Migratory	
Fregata ariel	Lesser frigatebird	NA	Migratory	
Fregata minor	Great frigatebird	NA	Migratory	
Numenius madagascariensis	Eastern curlew	Critically Endangered	Migratory	

5.6.5 Seasonal Sensitivities for Protected Species

Seasonal sensitivities for protected threatened or migratory species identified as potentially occurring within the EMBAs (as in, within the 20 m of water column above the wellheads) are identified in **Table 5-8**. Threatened or migratory species identified in **Sections 5.6.1** to **5.6.4**, but not listed in **Table 5-8**, are expected to have year-round low-density presence.

Movement patterns of all protected species identified in **Section 5.6** are described in Sections 5 to 8 of the Master Existing Environment.

Table 5-8: Key seasonal sensitivities for protected Threatened and Migratory species identified as occurring within the environments that may be affected

Species	January	February	March	April	May	June	July	August	September	October	November	December
Fish, sharks and rays												
Manta rays – presence, aggregation, breeding (Ningaloo)[1]												
Shortfin mako shark												
Mammals												
Blue whale – northern migration (Exmouth, Montebello, Scott Reef)[2]												
Blue whale – southern migration (Exmouth, Montebello, Scott Reef)[3]												
Bryde's whale – foraging (Shark Bay)[1]												
Humpback whale – northern migration (Jurien Bay to Montebello)[4]												
Humpback whale – southern migration (Jurien Bay to Montebello)[5]												
	Species may be present in the EMBAs											
	Peak period. Presence of animals is reliable and predictable each year											

References for species seasonal sensitivities:

1. *Chevron Australia Pty Ltd, 2015; DSEWPaC, 2012a, 2012c*
2. *DSEWPaC, 2012a; McCauley and Jenner, 2010; McCauley, 2011*
3. *DSEWPaC, 2012a; McCauley and Jenner, 2010*
4. *Environment Australia, 2002; Jenner et al., 2001a; McCauley and Jenner, 2001*
5. *McCauley and Jenner, 2001*

5.7 Key Ecological Features

One KEF has been identified as overlapping the EMBAs: the Continental Slope Demersal Fish Communities, as shown in **Figure 5-3**. KEFs are described in more detail in **Section 9** of the Master Existing Environment.

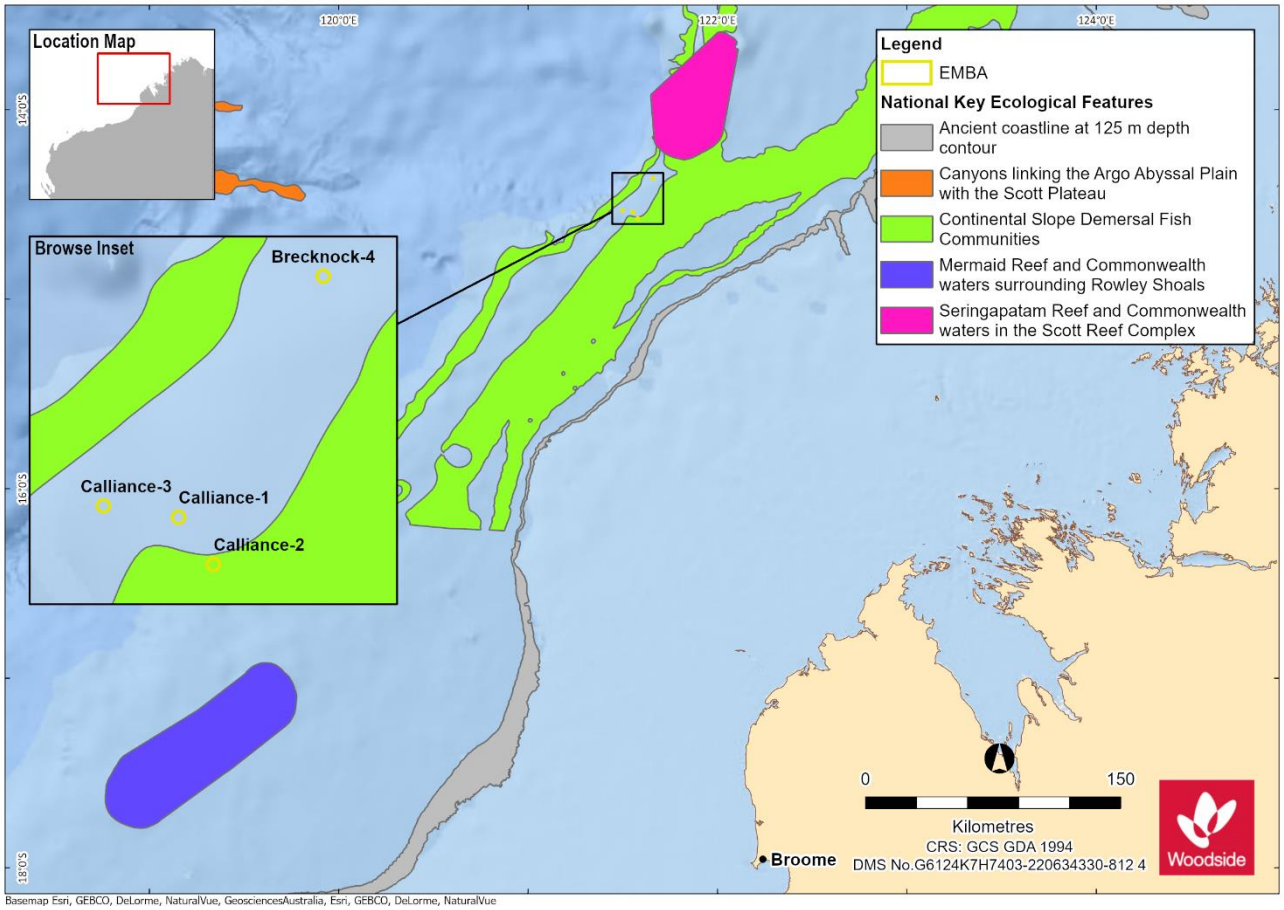


Figure 5-3: Key ecological features overlapping the environments that may be affected

5.8 Protected Places

No protected places overlap the EMBAs.

5.9 Socio-economic Environment

5.9.1 Cultural Heritage

5.9.1.1 European Sites of Significance

There are no known sites of European cultural heritage significance within the EMBAs.

5.9.1.2 Indigenous Sites of Significance

Indigenous Australian people have a strong continuing connection with the area that extends back some 50,000 years. Woodside acknowledges this unique connection between Aboriginal peoples and the land and sea in which the company operates. Woodside also understands that while marine resources used by Indigenous people are generally limited to coastal waters for activities such as fishing, hunting and maintenance of culture and heritage, many Aboriginal groups have a direct cultural interest in decisions affecting the management of deeper offshore waters.

The longstanding relationship between Aboriginal people and the land and sea is prevalent in Indigenous culture today and Indigenous heritage places, including archaeological sites which are protected under the *Aboriginal Heritage Act 1972* (WA) or EPBC Act.

The Department of Aboriginal Affairs Heritage Inquiry System was searched for the EMBAs, which indicated no registered Indigenous heritage places (**Appendix E**).

5.9.1.3 Underwater Heritage

A search of the Australian National Shipwreck Database, which records all known Maritime Cultural Heritage (shipwrecks, aircraft, relics and other underwater cultural heritage) in Australian waters, found the shipwreck *Yarra* located at South Scott Reef, around 1 km away from the nearest wellhead (Scott Reef-1); however, there were no shipwrecks found within the EMBAs.

5.9.1.4 World, National and Commonwealth Heritage Listed Places

No listed heritage places overlap the EMBAs.

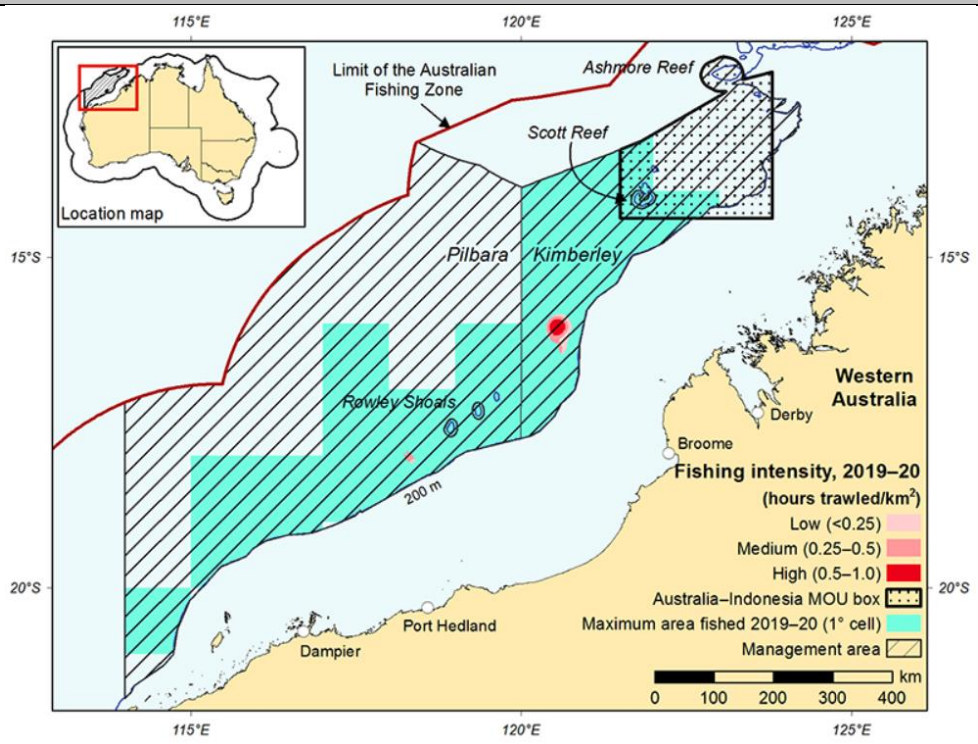
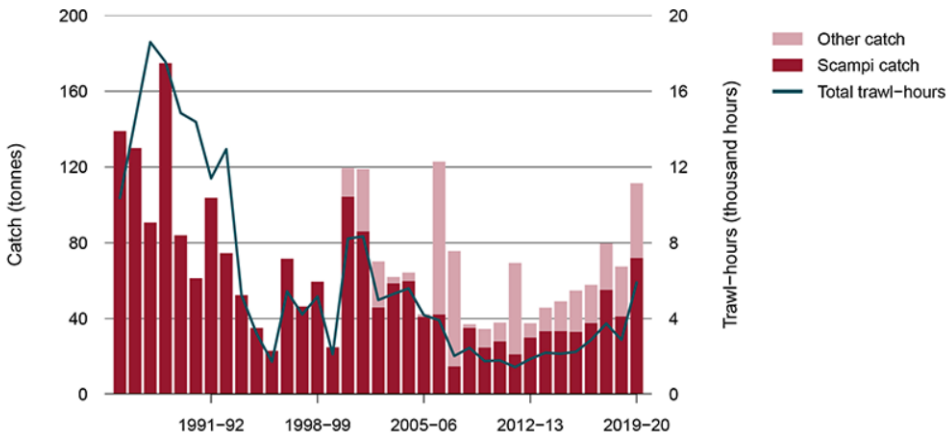
5.9.2 Commercial Fisheries

A number of Commonwealth and State fishery management areas are located within the EMBAs. FishCube and ABARES data were used to analyse the potential for interaction of fisheries within the EMBAs.

Table 5-9 provides an assessment of the potential interaction based on the licences and number of registered vessels; Section 11.5.1 of the Master Existing Environment provides further detail about the fisheries that have been identified through desk-based assessment and consultation (**Section 5**). **Figure 5-6** and **Figure 5-7** show fisheries identified as having a potential interaction with the Petroleum Activities Program.

Table 5-9: Commonwealth and State commercial fisheries overlapping the environments that may be affected

Fishery Name	Potential for interaction within EMBA	
Commonwealth Managed Fisheries		
North West Slope Trawl Fishery	✓	This fishery operates off north-western Australia from 114°E to 125°E, seaward of the 200 m isobath, using demersal trawl methods. During the past five years, the fishery experienced low but stable levels of fishing effort, with modest increases recorded in 2017–18 to the 2019–20 season (Patterson *et al.,* 2020; **Figure 5-5**). The number of vessels in the fishery has remained low in recent years with 4 and 6 vessels operating across the 2018-19 and 2019-20 seasons respectively with only 3 vessels registered to the fishery in January 2022 (AMC, 2022). All four EMBAs overlap a 60 nm grid square where fishing effort was recorded between 2015–2016 and 2019–2020. The fishery targets three commercially important species of scampi (*M. australiensis, M. velutinus* and *M. boschmai*) which are taken from different depth distributions between 260 to 500 m (Wallner and Phillips, 1995). Based on logbook data since 2010, provided by AFMA, methods to target this species was confined to low-opening prawn trawl nets (AMC, 2022). Given current fishing effort and depth, both current and future interaction with the wellheads is possible. Although fishing effort has been recorded in the 60 nm grid overlapping all four EMBAs, the water depths of three (Brecknock-4 (651 m), Calliance-1 (575 m), Calliance-3 (677 m)) exceed that of the target species range (500 m), and the fourth, Calliance-2, is at the deepest limit (501 m). Therefore, it is unlikely a large amount of fishing effort recorded in the 60 nm grid square overlapping the EMBAs occurred within the EMBAs themselves. Indeed, the highest intensity of fishing effort recorded in the 2019-2020 season occurred around 200 km southwest of the EMBAs (**Figure 5-4**). Considering current fishing effort and water depths, current interaction with the Brecknock-4, Calliance-1 and Calliance-3 EMBAs is not expected. However, should target species or fishing methods change in the future, interaction with these wellheads is possible. Given that the Calliance-2 EMBA is at the limit of the target species depth range, current and future interaction is possible. Leaving the wellheads *in situ* results in an ongoing presence on the seabed (and up to 3.5 m above it). This introduces potential for interactions with commercial fishers, including snag hazards. Wellheads left *in situ* will continue to be marked on navigation charts. The area occupied by the Calliance-2 EMBA is negligible (0.0002%) when compared to the total area of the fishery.

Fishery Name	Potential for interaction within EMBA	
		 **Figure 5-4: Area fished in the North West Slope Trawl Fishery, 2019 to 2020**  **Figure 5-5: Catch and effort in the North West Slope Trawl Fishery**
Southern Bluefin Tuna Fishery	×	Fishing effort for the Southern Bluefin Tuna *Thunnus maccoyii* Fishery occurs in the Great Australian Bight and north-east of Eden in New South Wales. Further, the target species, *T. maccoyii,* and fishing methods (purse-seine and longlining) are entirely pelagic, meaning there is no current or future potential for interaction within the EMBAs.
Western Tuna and Billfish Fishery	×	Fishing effort occurs in offshore waters between Carnarvon and south-west Australia. Further, the target species' (bigeye tuna *Thunnus obesus*, yellowfin tuna *Thunnus albacares,* albacore *Thunnus alalunga* and striped marlin *Kajikia audax*) and longline fishing methods are entirely pelagic, meaning there is no current or future potential for interaction within the EMBAs.
Skipjack Tuna Fishery	×	There have been no active vessels operating since 2009, indicating there is no current potential for interaction within the EMBAs. Further, the target species, skipjack tuna *Katsuwonus pelamis,* and fishing methods (purse seine) are entirely pelagic, meaning there is no current or future potential for interaction within the EMBAs.

Fishery Name	Potential for interaction within EMBA	
State Managed Fisheries		
Northern Demersal Scalefish Managed Fishery	✓	The fishery operates within waters off the north coast of Western Australia, east of longitude 120°E. These waters extend out to the edge of the Australian Fishing Zone. The permitted means of operation within the fishery include handline, dropline and fish traps, although since 2002 it has primarily operated as a trap-based fishery. Target species are red emperor (*Lutjanus sebae*) and goldband snapper (*Pristipomoides multidens*). These species have an estimated depth range of up to 180 m and 350 m, respectively (Froese and Pauly, 2000). It is unlikely *L. sebae* and *P. multidens* will be present within the EMBAs as they exceed the species' depth ranges (501 to 677 m). Indeed, there has been no fishing effort within the 10 nm grid squares overlapping the EMBAs in the last five years (DPIRD, 2022). Given the water depths of the EMBAs and current fishing effort, current interaction with the EMBAs is not expected. Should target species, or distribution of target species change in the future, interaction could occur.
Mackerel Managed Fishery (Area 1 Kimberley)	×	The fishery has not been active in the EMBAs within the last five years (DPIRD, 2022). Further, target species' narrow-barred Spanish mackerel (*Scomberomorus commerson*) and broad-barred king mackerel (*S. semifasciatus)* and fishing methods (trolling or handline) are entirely pelagic, meaning there is no current or future potential for interaction within the EMBAs.
Marine Aquarium Fishery	×	The fishery has not been active in the EMBAs within the last five years (DPIRD, 2022). As a dive-based fishery (targeting fish, coral, algae, live rock), water depths in the EMBAs are not conducive to current methods for this fishery (typically around 30 m), meaning there is no potential for interaction.
Pearl Oyster Managed Fishery	×	The fishery targets the Indo-Pacific silver-lipped pearl oyster (*Pinctada maxima*). As a dive-based fishery, water depths in the EMBA are not conducive to current methods for this fishery (typically around 30 m) and no interaction within the EMBAs is predicted.
Specimen Shellfish Fishery	×	The fishery targets shells (cowries, cones) and is based on the collection of individual shells for the purposes of display, collection, cataloguing, classification and sale. The fishery is dive-based, operating all year throughout Western Australian waters but restricted by diving depths. As a dive-based fishery, water depths in the EMBAs are not conducive to current methods for this fishery (typically around 30 m) and no interaction within the EMBAs is predicted. Should fishing methods change in the future (such as ROV), interaction may occur.
Kimberley Crab Managed Fishery	×	Target species are the green mud crab *Scylla serrata* and brown mud crab *Scylla olivacea* using traps between Broome and Cambridge Gulf. Fishing effort targets inshore waters, meaning there is no current or future potential for interaction within the EMBAs.
Western Australian North Coast Shark Fishery	×	The area between North-West Cape and a line of longitude at 120°E and all waters south of latitude 18°S has been closed indefinitely to protect shark stocks. No fishing has occurred since 2008/09. Target species include the sandbar (*Carcharhinus plumbeus*), blacktip *Carcharhinus* spp., tiger *Galeocerdo cuvier* and lemon *Negaprion acutidens* sharks. Since the shark fishery is currently closed and unlikely to open in the near future, no interaction within the EMBAs is predicted.
South-West Coast Salmon Managed Fishery	×	The known distribution of the Western Australian salmon (*Arripis truttaceus*) does not include the EMBAs or general vicinity. The fishery has not been active in the EMBAs within the last five years (DPIRD, 2021) and the Western Australian Fishing Industry Council (WAFIC) has advised that no fishing occurs north of the Perth metropolitan area. Further, target species and shore-based fishing methods (using beach seine nets) mean there is no current or future potential for interaction within the EMBAs.

Fishery Name	Potential for interaction within EMBA	
West Coast Deep Sea Crustacean Managed Fishery (WCDSCMF)	✓	The fishery has not been active in the EMBAs within the last five years (DPIRD, 2022). Fishing targets the crystal (snow) crab (*Chaceon albus)* (depth range of 300 to 1200 m), champagne (spiny) crab (*Hypothalassia acerba*) (depth range of 450 to 1220 m) and giant (king) crab (*Pseudocarcinus gigas*) (depth range of 20 to 600 m) using baited crab pots operated in a long-line formation in water depths more than 150 m (Smith *et al.*, 2004; Currie and Ward 2009). Target species occupy depth zones similar to all four EMBAs, making it possible for these species to occur here. Given the trap methods utilised, negative interaction such as snagging resulting in loss or damage to fishing equipment in the EMBAs is not credible. Due to the dominant mobile taxa present on all wellheads are decapods (Cummings et al., 2011), trap fishers have reported targeting these structures in order to increase catch rates, which can be considered a positive interaction. The area occupied by the EMBAs is negligible (0.0002%) when compared to the total area of the fishery. Given current fishing effort and depth, both current and future interaction within the EMBAs is possible (DPIRD, 2022).
Western Australian Sea Cucumber Fishery (formerly known as Beche-de-mer Fishery)	×	The fishery has not been active in the EMBAs within the last five years (DPIRD, 2022). Fishing occurs in the northern half of Western Australia from Exmouth Gulf to the Northern Territory border and is managed under Ministerial Exemptions. The two main species targeted are sandfish (*Holothuria scabra*) and deepwater redfish (*Actinopyga echinites*). Although permitted to fish within the EMBAs, the fishery is restricted to shallow coastal waters suitable for diving and wading. As a dive-based fishery, waters are typically not conducive for this fishery and no interaction within the EMBAs is predicted currently or in the future.

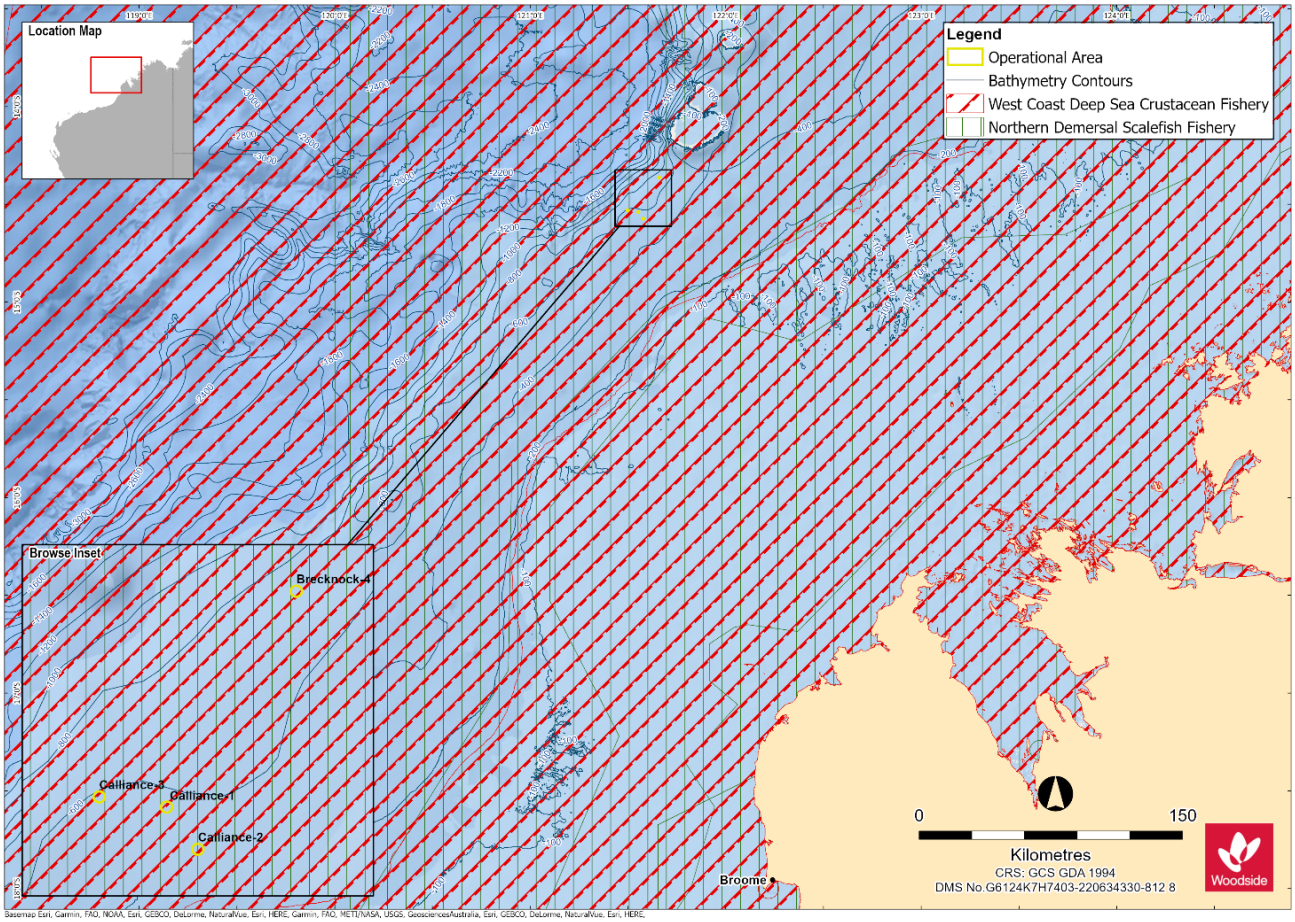


Figure 5-6: State commercial fisheries overlapping the environments that may be affected with a potential for interaction with the Petroleum Activities Program

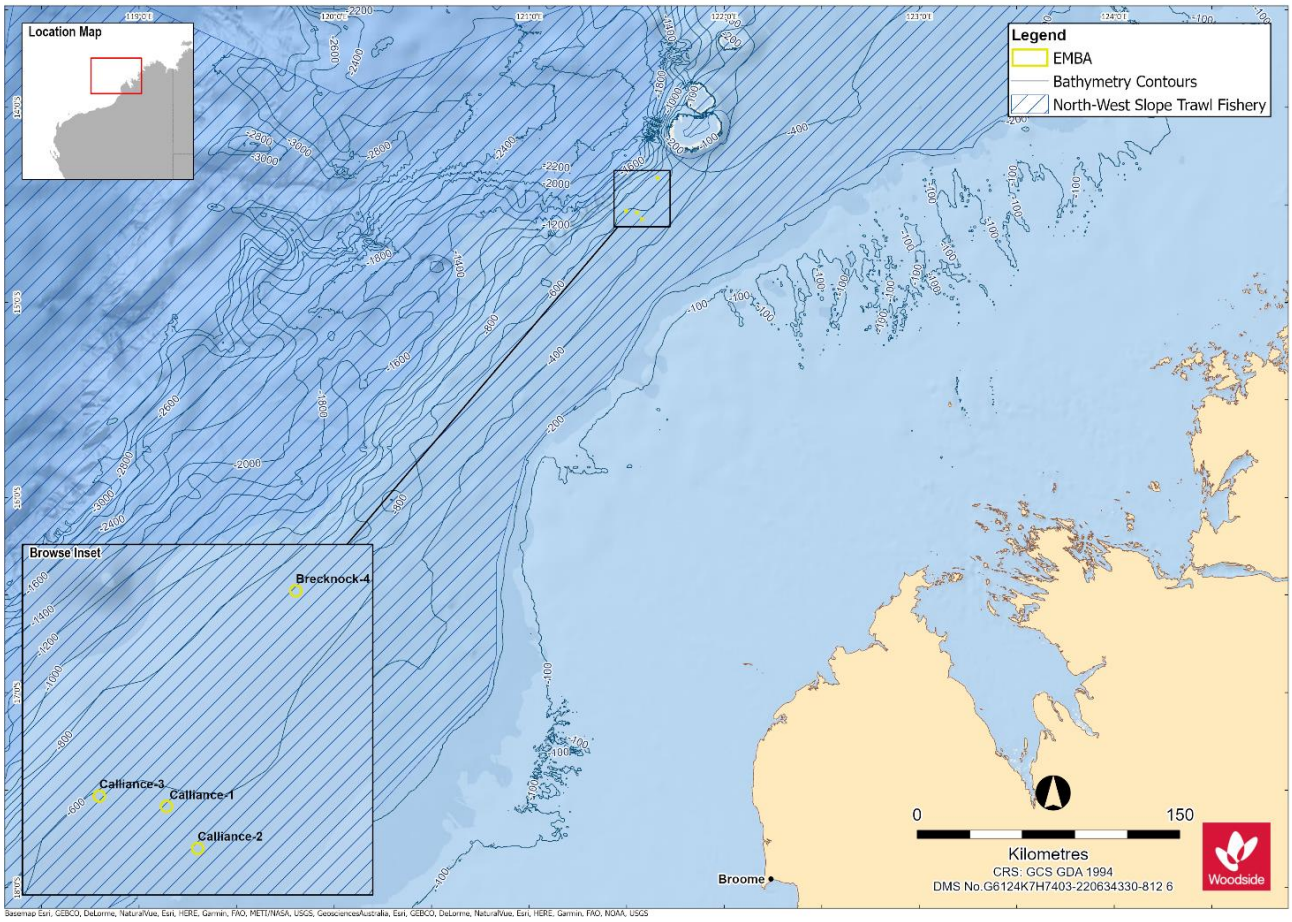


Figure 5-7: Commonwealth commercial fisheries overlapping the environments that may be affected with a potential for interaction with the Petroleum Activities Program

5.9.3 Traditional Fisheries

One EMBA (Brecknock-1) is located within the Australia-Indonesia Memorandum of Understanding box and Indonesian fishers are known to fish at Scott Reef infrequently on a seasonal basis as described in **Appendix F: Section 11.6**. Traditional fishers are typically restricted to coastal waters and/or areas with suitable fishing structures such as reefs. Given the water depths, traditional fishing is not expected within any of the four EMBAs, including the Brecknock-1 EMBA.

5.9.4 Tourism and Recreation

There are tourism companies that offer recreational fishing trips to Scott Reef several times a year; however, given the water depths of the EMBAs, recreational fishing and tourism are not expected.

5.9.5 Commercial Shipping

Australian Maritime Safety Authority has introduced a network of marine fairways across the NWMR off Western Australia to reduce the risk of vessel collisions with offshore infrastructure. None of these fairways intersect with the EMBAs and vessel drafts would not occur at the depth of the EMBAs. The closest main shipping routes to the EMBAs are located more than 50 km away.

5.9.6 Oil and Gas

There are no other oil and gas facilities located within 50 km of the EMBAs. The closest operating projects are Ichthys (INPEX) and Prelude (Shell), more than 120 km from the EMBAs.

5.9.7 Defence

There are no defence areas overlapping the EMBAs.

6. STAKEHOLDER CONSULTATION

6.1 Summary

Woodside consults relevant persons in the course of preparing EPs to obtain appropriate feedback from relevant persons to inform planning for proposed petroleum activities and build upon Woodside's ongoing stakeholder consultation for its offshore petroleum activities in the region.

6.2 Stakeholder Consultation Objectives

In support of this EP, Woodside has sought to:

- Ensure relevant persons are identified and engaged in a timely and effective manner.
- Develop and make available communications material for a reasonable period to relevant persons that is sufficient 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.
- Incorporate relevant person feedback into the management of the proposed activity where relevant and practicable.
- Provide feedback to relevant persons on Woodside's assessment of their feedback and keep a record of all engagements.
- Provide opportunities to provide feedback during the life of this EP.

6.3 Stakeholder Expectations for Consultation

Relevant person consultation for this activity has also been guided by relevant person expectations for consultation on planned activities. This guidance includes:

NOPSEMA:

- *GL1721 - Environment plan decision making – June 2021*
- *GN1847 - Responding to public comment on environment plans - September 2020*
- *GN1344 - Environment plan content requirements - September 2020*
- *GN1488 - Oil pollution risk management - February 2021*
- *GN1785 – Petroleum activities and Australian Marine Parks – June 2020*
- *GL1887 – Consultation with Commonwealth agencies with responsibilities in the marine area – July 2020*
- *NOPSEMA Bulletin #2 – Clarifying statutory requirements and good practice consultation – November 2019*

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*

6.4 Identification of Relevant Persons

Woodside has followed the requirements of subregulation 11A (1) of the Environment Regulations to identify relevant persons in the course of preparing this EP, these being:

- Each Department or agency of the Commonwealth Government to which the activities to be carried out under the Environment Plan, or the revision of the Plan, may be relevant.
- Each Department or agency of a State or the Northern Territory Government to which the activities to be carried out under the Environment Plan, or the revision of the 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 Plan.
- Any other person or organisation that the Titleholder considers relevant.

The identification of a person or organisation whose functions, interests or activities may be affected by the activity is informed by a number of factors, including but not limited to:

- consideration of the nature and scale of the activity
- understanding the potential for interaction based on the timing and location of the activity
- a review of the most recent fishery data such as DPIRD FishCube
- consideration of previous Woodside consultation in the activity area
- advice from representative industry associations
- input from other stakeholders as to other potentially relevant persons
- consideration of stakeholders who can materially contribute to improving the environment plan

Woodside considers factors including the above criteria as part of a case-by-case approach for each EP to identify relevant persons.

Self-identification:

- Woodside acknowledges that, in the course of preparing the EP, additional stakeholders may contact Woodside self-identifying themselves as a relevant person.
- Woodside will assess the self-identified person based on factors including the criteria above to determine if Woodside considers the person to be a relevant person for the purposes of consultation on this EP. Those determined to be relevant persons for the purposes of consultation will be contacted, provided with information relevant to their interests, and invited to provide feedback about the proposed activity.
- The result of Woodside's assessment of stakeholder relevance and stakeholders that self-identify as relevant during the development of the EP are outlined in **Table 6-1**.

6.5 Consultation Material and Timing

Woodside produces a Stakeholder Consultation Information Sheet for each EP. This is provided to relevant persons and is also available on the Woodside website for interested parties to review and provide feedback. The information provided generally includes a summary of the activity description, timing and duration, location map, relevant exclusion zones, mitigation and/or management control measures and contact details to provide feedback to Woodside. Additional targeted consultation material may be developed such as specific information sheets or presentation material, depending on the nature and scale of the activity. This may include, for example, providing commercial fishing licence holders and representative bodies with additional information relevant to their fishery.

Woodside consultation arrangements typically provide relevant persons up to 30 days (unless otherwise agreed) to review and respond to proposed activities where relevant persons are potentially affected. Woodside considers this consultation period a reasonable timeframe. Woodside will continue to accept feedback from stakeholders during the assessment of this EP and throughout the duration of the accepted EP.

6.6 Providing Feedback

Feedback can be provided through the Woodside feedback email or via the Woodside feedback toll free phone line as outlined in the Stakeholder Consultation Information Sheet and the Woodside website. Depending on the nature and scale of the activity and the specific feedback provided, where appropriate, consultation with relevant persons may also be supported by phone calls or meetings.

6.7 Assessment of Merit of Objections or Claims

Feedback is reviewed and objections and claims about an adverse impact of an activity to which the EP relates will be assessed for merit for instance, through review of data and literature and for relevancy to the nature and scale of the activity outlined in the EP. Where the objection or claim is substantiated, it will be assessed in the EP and additional controls may be applied where reasonable or practical to manage impacts and risks to ALARP and acceptable levels.

Table 6-2 includes Woodside's response to relevant persons' feedback, consideration of the merits of objections or claims, and, where appropriate, changes incorporated in the EP as a result of the feedback.

Table 6-1: Assessment of relevant persons for the proposed activity

Stakeholder	Relevant person	Reasoning
Commonwealth Government department or agency		
Australian Border Force (ABF)	No	Responsible for coordinating maritime security. No field activities are planned following Environment Plan acceptance.
Australian Fisheries Management Authority (AFMA)	Yes	Responsible for managing Commonwealth fisheries. ABARES data indicates active fishing by the NWSTF.
Australian Hydrographic Office (AHO)	Yes	Responsible for maritime safety and Notices to Mariners.
Australian Maritime Safety Authority (AMSA) – Marine Safety	Yes	Statutory agency for vessel safety and navigation in Commonwealth waters. Whilst the wellheads outside of maritime shipping channels and do not currently pose a hazard to commercial shipping, Woodside has provided information considering potential impacts from the ongoing presence of the wellheads.
Australian Maritime Safety Authority (AMSA) – Marine Pollution	No	Legislated responsibility for oil pollution response in Commonwealth waters. There is no oil spill risk as the wellheads have been permanently plugged and there are no planned field activities.
Department of Agriculture, Water and the Environment (DAWE) – Fisheries	Yes	Responsible for implementing Commonwealth policies and programs to support agriculture, water resources, the environment and our heritage. The proposed activity does not have the potential impact to DAWE's interests in the prevention of introduced marine species. ABARES data indicates active fishing by the NWSTF.
DAWE – Biosecurity (marine pests, vessels, aircraft and personnel)	No	DAWE administers, implements and enforces the Biosecurity Act 2015. The Department requests to be consulted where an activity has the potential to transfer marine pests. DAWE also has inspection and reporting requirements to ensure that all conveyances (vessels, installations and aircraft) arriving in Australian territory comply with international health regulations and that any biosecurity risk is managed. The Department requests to be consulted where an activity involves the movement of aircraft or vessels between Australia and offshore petroleum activities either inside or outside Australian territory. No field activities are planned following Environment Plan acceptance.
DAWE – Sea Dumping	Yes	DAWE administers the *Environment Protection (Sea Dumping) Act 1981*. The Department is required to be consulted where an activity has the potential to require a sea dumping permit under the Act.
Department of Defence	No	Responsible for defending Australia and its national interests. The wellheads are not within a defence area.

Stakeholder	Relevant person	Reasoning
Department of Industry, Science, Energy and Resources (DISER)	Yes	Department of relevant Commonwealth Minister and is required to be consulted under the Regulations.
Director of National Parks (DNP)	Yes	Responsible for managing AMPs and therefore 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). Whilst the activities are not directly relevant to DNP, the wellheads overlap habitats which are considered key values to AMPs (e.g. KEFs and BIAs).
WA Government department or agency		
Department of Biodiversity, Conservation and Attractions (DBCA)	No	Responsible for managing WA's parks, forests and reserves. Planned activities do not impact DBCA's functions, interests or activities. Woodside has chosen to consult DBCA given proximity to state protected areas.
Department of Mines, Industry Regulation and Safety (DMIRS)	Yes	Department of relevant State Minister and is required to be consulted under the Regulations.
Department of Primary Industries and Regional Development (DPIRD)	Yes	Responsible for managing State fisheries. DPIRD data indicates active fishing in the area by the Northern Demersal Scalefish Managed Fishery.
Department of Transport	No	Legislated responsibility for oil pollution response in State waters. There is no oil spill risk as the wellheads have been permanently plugged and there are no planned field activities.
Commonwealth fisheries*		
North West Slope Trawl Fishery	Yes	The fishery overlaps the area and ABARES data indicates active fishing.
Southern Bluefin Tuna Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active within the last eight years. Woodside does not consider that leaving the wellheads in-situ will present a future risk to licence holders, 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). In addition, future interactions are not expected given the species' pelagic distribution. Woodside has provided information to the fishery's representative organisation – the Australian Southern Bluefin Tuna Industry Association and Commonwealth Fisheries Association – 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.

Stakeholder	Relevant person	Reasoning
Western Tuna and Billfish Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active within the last eight years. Woodside does not consider that that leaving the wellheads in-situ will present a future risk to licence holders, given fishing methods for species fished by licence holders. Future interactions are not expected given the species' pelagic distribution. Woodside has provided information to the fishery's representative organisation – Tuna Australia – 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.
Western Skipjack Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active within the last eight years. Woodside does not consider that leaving the wellheads in-situ will present a future risk to licence holders, given fishing methods for species fished by licence holders. Future interactions are not expected given the species' pelagic distribution. Woodside has provided information to the fishery's representative organisation – Commonwealth Fisheries Association and Australian Southern Bluefin Tuna Industry Association – 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.
State fisheries*		
Northern Demersal Scalefish Managed Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active at the wellhead locations within the last eight years. Woodside does not consider leaving the wellheads *in situ* will present a future snag risk to licence holders, given fishing methods and location and water depth for species fished by licence holders. Woodside has chosen to consult the fishery, given potential for future interaction from the wellheads being left *in situ*.
Pearl Oyster Managed Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active within the last eight years. Woodside does not consider that the activity will present a future risk to licence holders, given fishing methods and location for species fished by licence holders (fishing effort is mostly focussed on shallow coastal waters of 10-15 m depth, with a maximum depth of 35 m) (Lulofs et al. 2002).
Mackerel Managed Fishery – Area 1	No	The wellheads are located in the fishery, but commercial fishing has not been active at the wellhead locations within the last eight years. Woodside does not consider that leaving the wellheads in-situ will present a future risk to licence holders, given fishing methods (near-surface trawling gear and jig fishing).
South West Coast Salmon Managed Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active at the wellhead locations within the last eight years.

Stakeholder	Relevant person	Reasoning
		Woodside does not consider that leaving the wellheads in-situ will present a future risk to licence holders, given fishing methods and location for species fished by licence holders (fishers are active south of Perth and from the beach (previous WAFIC advice).
Western Australian Sea Cucumber Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active at the wellhead locations within the last eight years. Woodside does not consider that the activity will present a future risk to licence holders, given fishing methods, location, and water depth for species fished by licence holders. Although the wellheads overlap this fishery, it is a dive and wade fishery with activities generally restricted to waters less than 30 m deep (previous WAFIC advice).
Marine Aquarium Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active at the wellhead locations within the last eight years. Woodside does not consider that leaving the wellheads in-situ will present a future risk to licence holders, given fishing methods (dive and wade fishery, with activities generally restricted to waters less than 30 m deep (previous WAFIC advice).
Kimberley Crab Managed Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active at the wellhead locations within the last eight years. Woodside does not consider that leaving the wellheads in-situ will present a future risk to licence holders, given fishing methods (fishing effort targets inshore waters) and location for target species (traps between Broome and Cambridge Gulf).
West Coast Deep Sea Crustacean Managed Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active at the wellhead locations within the last eight years. Woodside does not consider that leaving the wellheads in-situ will present a future snag risk to licence holders, given fishing methods and location for species fished by licence holders. In recent years fishing has only been undertaken along the continental shelf edge and in waters south of Exmouth (West Coast Deep Sea Crustacean Managed Fishery; DPIRD, 2005). Activities are generally restricted to waters deeper than 150 m but mostly at depths of between 500 m – 800 m. Woodside has chosen to consult the fishery given potential for future interaction from the wellheads being left *in situ*.
WA North Coast Shark Fishery	No	The wellheads are located in the fishery, but it has not been active since 2008/09 (DPIRD, 2022). Future interaction with the fishery is not expected given fishing methods and the species' pelagic distribution.
Specimen Shell Fishery	No	The wellheads are located in the fishery, but commercial fishing has not been active at the wellhead locations within the last eight years. Woodside does not consider that leaving the wellhead in-situ will present a future risk to licence holders, given fishing methods, location, and water depth for species fished by licence holders. Although the wellheads overlap

Stakeholder	Relevant person	Reasoning
		the area of this fishery, it is a dive and wade fishery with activities generally restricted to waters less than 30 m deep (previous WAFIC advice).
Industry representative organisations		
Australian Petroleum Production and Exploration Association (APPEA)	Yes	Represents the interests of oil and gas explorers and producers in Australia.
Commonwealth Fisheries Association (CFA)	Yes	Represents the interests of commercial fishers with licences in Commonwealth waters. AFMA data indicates active fishing by the NWSTF.
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	No	Represents the interests of the Southern Bluefin Tuna Fishery. The Fishery isn't active in the EMBA. Woodside has provided information to ASBTIA 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.
Tuna Australia	No	Represents the interests of the Western Tuna and Billfish Fishery. The Fishery isn't active in the EMBA. Woodside has provided information to Tuna Australia 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.
Pearl Producers Association (PPA)	No	Although interactions with licence holders in the Pearl Oyster Managed Fishery are unlikely, PPA has requested to be informed of Woodside's planned activities.
Recfishwest	Yes	Represents the interests of recreational fishers in WA. Activities have the potential to impact recreational fishers.
Marine Tourism WA	Yes	Represents the interests of recreational fishers in WA. Activities have the potential to impact recreational fishers.
WA Game Fishing Association	Yes	Represents the interests of recreational fishers in WA. Activities have the potential to impact recreational fishers.
Western Australian Fishing Industry Council	Yes	Represents the interests of commercial fishers with licences in State Waters. DPIRD data indicates active fishing in the area by the Northern Demersal Scalefish Managed Fishery. ABARES data indicates active fishing in the area by the NWSTF.
Other Stakeholders		
Broome based charter boat, tourism and dive operators	Yes	DPIRD data indicates active tour operator activity in the area.
Kimberley Development Commission	Yes	Statutory authority responsible for promoting the economic and social development of the Kimberley region.

Stakeholder	Relevant person	Reasoning
Brome Chamber of Commerce and Industry (BCCI)	Yes	Not-for-profit group that represents local businesses.
Shire of Broome	Yes	Local government entity for the Broome region. Broader interest in activities in the region.
Kimberley Marine Tourism Association	Yes	Represents the interests of recreational fishers in the Kimberley region. Activities have the potential to impact recreational fishers.
Regional Development Australia – Kimberley	Yes	Part of the Regional Development Australian national network. The Committee is responsible for bringing together all levels of government to enhance the development of the Kimberley region.
Environs Kimberley	Yes	Not-for-profit organisation that is involved in protecting the terrestrial and marine environment of the Kimberley region.
Kimberley Land Council (KLC)	Yes	Native Title Representative Body for the region.
Murujuga Aboriginal Corporation (MAC)	No	Approved Body Corporate for the Burrup and Maitland Industrial Estates Agreement (BMIEA). Woodside has chosen to provide information to the Corporation based on the potential for stakeholder interest.

* Fisheries have been identified as being relevant on the basis of fishing licence overlap with the proposed Operational Area, as well as consideration of fishing effort data, fishing methods, water depth, and likelihood of fishing in the future. **Table 5-9** provides a detailed assessment of Commonwealth and State fisheries within or adjacent to the EMBA.

6.8 Stakeholder Consultation Summary

A Stakeholder Consultation Information Sheet was provided to relevant persons which included details such as an activity overview, maps, a summary of key risks and/or impacts and management measures (Appendix F, reference 1.16).

Since the commencement of the consultation period, the Stakeholder Consultation Information Sheet has also been available on Woodside's website - it includes a toll-free 1800 phone number and Woodside's feedback email address (feedback@woodside.com.au).

The Woodside Historical Exploration Wellhead Decommissioning Information Sheet (Appendix F, reference 1.17) is published on the Woodside website.

Where appropriate, additional targeted information was provided to relevant persons including maps and information relevant to the specific functions, interests and activities.

The relevant persons were provided a 30 day period in which to provide feedback.

Woodside considered relevant person responses and assessed the merits and relevancy of objections and claims about the potential adverse impact of the proposed activity set out in the EP.

6.9 Stakeholder Consultation

Consultation activities conducted for the proposed activity with relevant persons are outlined in **Table 6-2**.

The Consultation Information Sheet (Appendix F, reference 1.16) is published on the Woodside website and includes a toll-free 1800 phone number.

The Woodside Historical Exploration Wellhead Decommissioning Information Sheet (Appendix F, reference 1.17) is published on the Woodside website.

Table 6-2: Stakeholder consultation activities

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
Australian Government department or agency				
AFMA	On 22 February 2022, Woodside emailed AFMA advising of the proposed activity (Appendix F, reference 1.3) and provided a Consultation Information Sheet, fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 5.9.2** of this EP and consulted all Commonwealth fisheries with entitlement to fish in the area on advice from the AFMA. Woodside has consulted DAWE, CFA, ASBTIA, Tuna Australia, WAFIC and NWSTF Licence Holders. Woodside has addressed feedback received from WAFIC as outlined below. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
	On 23 March 2022, Woodside emailed AFMA following up on the 22 February 2022 consultation Appendix F, reference 2.2) and re-provided the Consultation Information Sheet and fisheries map for feedback.	On 30 March 2022, AFMA emailed Woodside advising that: Due to limited resources AFMA is unable to comment on individual proposals. It is important to consult with all fishers who have entitlements to fish within the proposed area, which can be done through the relevant fishing industry associations or directly with fishers who hold entitlements in the area.	On 30 March 2022, Woodside emailed AFMA thanking it for its feedback and confirmed that it had provided information to relevant fishery licence holders as well as representative organisations on behalf of Commonwealth fishing licence holders who have entitlements to fish within the proposed area.	

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
AHO	On 22 February 2022, Woodside emailed AHO advising of the proposed activity (Appendix F, reference 1.4) and provided a Consultation Information Sheet, shipping lane map and Historical Exploration Wellhead Decommissioning Information Sheet.	On 23 February 2022, the AHO responded acknowledging receipt of Woodside's email.	Woodside notes the AHO has received the consultation materials.	The wellheads are outside of maritime shipping channels and will continue to be marked on navigational charts. Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
AMSA (Marine Safety)	On 22 February 2022, Woodside emailed AMSA advising of the proposed activity (Appendix F, reference 1.4) and provided a Consultation Information Sheet, shipping lane map and Historical Exploration Wellhead Decommissioning Information Sheet.	On 24 February 2022, AMSA emailed Woodside requesting: • 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 be notified at least 24 to 48 hours before operations commence • provide updates to the AHO and Joint Rescue Coordination Centre should there be changes to the activity • vessels exhibit appropriate lights and shapes to reflect the nature of operations and comply with the International Rules of Preventing Collisions at Sea. AMSA provided advice on obtaining vessel traffic plots, including digital datasets and maps.	On 1 March 2022, Woodside emailed AMSA advising that as per the consultation information provided, the wellheads are proposed to be left *in situ* and there are no field activities. The wellheads will continue to be marked on navigational charts. Notifications will therefore not be required under the EPs.	The wellheads are outside of maritime shipping channels and will continue to be marked on navigational charts. Woodside has responded to AMSA feedback, including confirming that notifications will not be required under the Environment Plan. There is no oil spill risk as the well was permanently plugged and there are no planned field activities. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
DAWE – Fisheries	On 22 February 2022, Woodside emailed DAWE advising of the proposed activity (Appendix F, reference 1.5) and provided a Consultation Information Sheet, fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet. On 23 March 2022, Woodside emailed DAWE following up on the 22 February 2022 consultation Appendix F, reference 2.3) and re-provided the Consultation Information Sheet and fisheries map for feedback.	No feedback received.	No response required.	No feedback provided. Woodside has consulted AFMA, CFA, ASBTIA, Tuna Australia, WAFIC and NWSTF licence holders. Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 5.9.2** of this EP. Woodside has addressed maritime biosecurity issues in **Section 6** of this EP based on previous offshore activities. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
DAWE – Sea Dumping		On 27 October 2021, Woodside received a letter from DAWE relating to the *Environment Protection (Sea Dumping) Act 1981* and advised that a sea dumping permit is required for the Thebe-1 and Calthorpe-1 wellheads, with implications for this EP.	On 9 May 2022, Woodside and DAWE had a meeting to discuss Sea Dumping permit applications and provided an overview of upcoming permits and approximate submission dates, including the Browse State exploration wellheads. DAWE confirmed that wells with a wellhead in place that were drilled and subsequently plugged and abandoned prior to the date the act came into force did not require a permit to leave the wellhead *in situ*.	Woodside has consulted DAWE – Sea Dumping regarding requirements under the *Environment Protection (Sea Dumping) Act 1981.* Woodside will continue to engage with DAWE regarding the application of the *Environment Protection (Sea Dumping) Act 1981* and to comply with requirements under the Act as referenced as **PS 1.1** in this EP. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
DISER	On 22 February 2022, Woodside emailed DISER advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
DNP	On 22 February 2022, Woodside emailed DNP advising of the proposed activity (Appendix F, reference 1.6) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has addressed the DNP's feedback, including: Reaffirmed that Woodside has assessed potential impacts and risks to AMPs and their associated values in the development of the proposed Environment Plans and believe that there are no credible impacts. Advised that DAWE has been consulted on the EP and has been engaged with regard to Sea Dumping Permit requirements. Confirmed that Woodside will contact the DNP if details regarding the activity change and result in an overlap with or new impact to a marine park, or for emergency response.

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
	On 23 March 2022, Woodside emailed DNP following up on the 22 February 2022 consultation Appendix F, reference 2.1) and re-provided the Consultation Information Sheet for feedback.	On 29 March 2022, DNP emailed Woodside advising: • it notes that the planned activities do not overlap any Australian Marine Parks (AMPs) • BIAs are present in the title area and parts of the operational area and the operational area may intersect with the Continental Slope Demersal Fish Communities • these BIAs and KEF are identified values of the Kimberly and Argo-Rowley Terrace Marine Parks and it is expected activities that could affect these BIAs are managed accordingly • a Sea Dumping Permit, via DAWE, may be required. The DNP also referenced the NOPSEMA, and Parks Australia guidance note that outlines what titleholders need to consider and evaluate for an EP and the North-west Marine Parks Network Management Plan 2018. The DNP advised it should be made aware of oil AND gas pollution incidences which occur within a marine park or are likely to impact on a marine park as soon as possible.	On 31 March 2022, Woodside emailed DNP thanking it for its feedback and: • noted DNP's confirmation that planned activities do not overlap any AMPs and there are therefore no authorisation requirements from the DNP • reaffirmed Woodside has assessed potential impacts and risks to AMPs and their associated values in the development of the proposed EPs and believes there are no credible impacts • reaffirmed the wells have been permanently plugged and abandoned and there are no credible oil spill risks • advised DAWE has been consulted on the EP and has been engaged with regard to Sea Dumping Permit requirements • confirmed Woodside will contact the DNP if details regarding the activity change and result in an overlap with or new impact to a marine park, or for emergency responses.	Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
Western Australian Government department or agency or advisory body				
DBCA	On 22 February 2022, Woodside emailed DBCA advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and	On 11 March 2022, the DBCA emailed thanking Woodside for the information provided and advised: based on the documentation provided for review and other readily available	On 14 March 2022, Woodside emailed the DBCA thanking it for its feedback and confirmed that environment plan consultation information would continue to be emailed.	Woodside notes that the DBCA acknowledged consultation information provided and did not require further information.

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
	Historical Exploration Wellhead Decommissioning Information Sheet.	information, DBCA has no comments in relation to its Conservation and Land Management Act 1984 and Biodiversity Conservation Act 2016 related responsibilities. requested that all future notifications continue to be emailed.		Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
DMIRS	On 22 February 2022, Woodside emailed DMIRS advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	On 7 April 2022, DMIRS responded to Woodside: acknowledging receipt of consultation information. noted that the proposed activity would be assessed by NOPSEMA. advised that DMIRS did not require any further information at this stage.	No response required.	Woodside notes that DMIRS acknowledged consultation information provided and did not require further information. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
DPIRD	On 22 February 2022, Woodside emailed DPIRD advising of the proposed activity (Appendix F, reference 1.9) and provided a Consultation Information Sheet, fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted WAFIC and individual relevant licence holders. Woodside has assessed the relevancy of State fisheries issues in **Section 5.9.2** of this EP. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
	On 23 March 2022, Woodside emailed DPIRD following up on the 22 February 2022 consultation Appendix F, reference 2.6) and re-provided the Consultation Information Sheet and fisheries map for feedback.	No feedback received.	No response required.	
	On 27 May 2022, Woodside called DPIRD and left a voicemail message following up on consultation for feedback.	No feedback received.	No response required.	

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
	On 27 May 2022, Woodside had a phone conversation with DPIRD following up on consultation for feedback.	DPIRD thanked Woodside for following up on the EP consultation, confirmed that it had received the consultation materials and advised that it would respond if it had any feedback.	Woodside thanked DPIRD for its time and advised that it would send DPIRD a follow-up email to assist with review of the consultation materials.	
	On 27 May 2022, Woodside emailed DPIRD following up on the EP consultation materials (Appendix F, reference 2.6.1) and advised that Woodside would welcome DPIRD's feedback on the proposed activity.	No feedback received.	No response required.	
Commonwealth Fisheries				
North West Slope Trawl Fishery	On 22 February 2022, Woodside emailed the NWSTF advising of the proposed activity (Appendix F, reference 1.7) and provided a Consultation Information Sheet, fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted DAWE, AFMA, CFA, ASBTIA, Tuna Australia, WAFIC and NWSTF Licence Holders. As the representative industry body, WAFIC has provided a response. Woodside has addressed WAFIC's feedback as outlined below. Woodside has assessed the relevancy of Commonwealth fisheries issues in **Section 5.9.2** of this EP. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
	On 23 March 2022, Woodside emailed the NWSTF following up on the 22 February 2022 consultation Appendix F, reference 2.4) and re-provided the Consultation Information Sheet and fisheries map for feedback.	No feedback received.	No response required.	
State Fisheries				

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
Northern Demersal Scalefish Managed Fishery	On 22 February 2022, Woodside sent a letter to the Northern Demersal Scalefish Managed Fishery advising of the proposed activity (Appendix F, reference 1.12) and provided a Consultation Information Sheet, fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted DPIRD, WAFIC and individual relevant licence holders. As the representative industry body, WAFIC has provided a response. Woodside has addressed WAFIC's feedback as outlined below. Woodside has assessed the relevancy of State fisheries issues in **Section 5.9.2** of this EP. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
	On 23 March 2022, Woodside sent a letter to the Northern Demersal Scalefish Managed Fishery following up on the 22 February 2022 consultation Appendix F, reference 2.8) and re-provided the Consultation Information Sheet and fisheries map for feedback.	No feedback received.	No response required.	
West Coast Deep Sea Crustacean Managed Fishery	On 22 February 2022, Woodside sent a letter to the West Coast Deep Sea Crustacean Managed Fishery advising of the proposed activity (Appendix F, reference 1.13) and provided a Consultation Information Sheet, fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted DPIRD, WAFIC and individual relevant licence holders. As the representative industry body, WAFIC has provided a response. Woodside has addressed WAFIC's feedback as outlined below. Woodside has assessed the relevancy of State fisheries issues in **Section 5.9.2** of this EP. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
	On 23 March 2022, Woodside sent a letter to the West Coast Deep Sea Crustacean Managed Fishery following up on the 22 February 2022 consultation Appendix F, reference 2.9) and re-provided the Consultation Information Sheet and fisheries map for feedback.	No feedback received.	No response required.	
Industry representative organisations				

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
APPEA	On 22 February 2022, Woodside emailed APPEA advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
CFA	On 22 February 2022, Woodside emailed CFA advising of the proposed activity (Appendix F, reference 1.8) and provided a Consultation Information Sheet, fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted relevant Commonwealth fishery stakeholders including DAWE, AFMA, Tuna Australia, ASBTIA, WAFIC and NWSTF licence holders. Woodside has assessed the relevance of Commonwealth fisheries issues in Section 5.9.2 of this EP. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
	On 23 March 2022, Woodside emailed CFA following up on the 22 February 2022 consultation Appendix F, reference 2.5) and re-provided the Consultation Information Sheet and fisheries map for feedback.	No feedback received.	No response required.	
ASBTIA	On 22 February 2022, Woodside emailed ASBTIA advising of the proposed activity (Appendix F, reference 1.8) and provided a Consultation Information Sheet, fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted relevant Commonwealth fishery stakeholders including DAWE, AFMA, CFA, Tuna Australia, WAFIC and NWSTF licence holders. Woodside has assessed the relevance of Commonwealth fisheries issues in **Section 5.9.2** of this EP. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
	On 23 March 2022, Woodside emailed CFA following up on the 22 February 2022 consultation Appendix F, reference 2.5) and re-provided the Consultation Information Sheet and fisheries map for feedback.	No feedback received.	No response required.	

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
Tuna Australia	On 22 February 2022, Woodside emailed Tuna Australia advising of the proposed activity (Appendix F, reference 1.8) and provided a Consultation Information Sheet, fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted relevant Commonwealth fishery stakeholders including DAWE, AFMA, CFA, ASBTIA, WAFIC and NWSTF Fishery licence holders. Woodside has assessed the relevance of Commonwealth fisheries issues in **Section 5.9.2** of this EP. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
	On 23 March 2022, Woodside emailed CFA following up on the 22 February 2022 consultation Appendix F, reference 2.5) and re-provided the Consultation Information Sheet and fisheries map for feedback.	No feedback received.	No response required.	
PPA	On 22 February 2022, Woodside emailed PPA advising of the proposed activity (Appendix F, reference 1.11) and provided a Consultation Information Sheet and fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted relevant Commonwealth and State fishery stakeholders including DAWE, AFMA, CFA, Tuna Australia, ASBTIA, WAFIC, DPIRD and relevant licence holders. Woodside has assessed the relevancy of State fisheries issues in **Section 5.9.2** of this EP. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
Recfishwest	On 22 February 2022, Woodside emailed Recfishwest advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted WA Game Fishing Club, Marine Tourism Association of WA and individual relevant charter operators. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
Marine Tourism	On 22 February 2022, Woodside emailed Marine Tourism Association of WA advising of the proposed	No feedback received.	No response required.	Woodside has consulted Recfishwest, WA Game Fishing Club and individual relevant charter operators.

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
Association of WA	activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.			Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
WA Game Fishing Association	On 22 February 2022, Woodside emailed WA Game Fishing Association advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted Recfishwest, Marine Tourism Association of WA and individual relevant charter operators. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
WAFIC	On 22 February 2022, Woodside emailed WAFIC advising of the proposed activity (Appendix F, reference 1.10) and provided a Consultation Information Sheet, fisheries map and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted AFMA, DAWE, CFA, ASBTIA, Tuna Australia, DPIRD and relevant fishery licence holders. Woodside has assessed the relevancy of Commonwealth and State fisheries issues in **Section 5.9.2** of this EP.

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
	On 23 March 2022, Woodside emailed WAFIC following up on the 22 February 2022 consultation Appendix F, reference 2.7) and re-provided the Consultation Information Sheet and fisheries map for feedback.	On 23 March 2022, WAFIC emailed thanking Woodside for the information provided and: • queried whether the NWSTF had been consulted. • requested clarity on what materials were proposed to be left *in situ*, environmental impacts and whether any monitoring would be undertaken. • requested that the EP addresses snagging. • queried whether the EP will include compensation arrangements. • requested a summary from the EP regarding how the proposed *in situ* decommissioning delivers equal or better environmental outcomes.	On 25 March 2022, Woodside responded thanking WAFIC for its queries and advised: • Woodside consulted relevant fishery license holders including the NWSTF, NDSMF and West Coast Deep Sea Crustacean Managed Fishery on 22 February 2022 and followed up on consultation on 23 March 2022. • Exploration wellheads, including the North Scott Reef-1, Torosa-3 and Scott Reef-1 wellheads, are comprised of mild steel. It is likely that any impacts to marine sediments, benthic habitats and water quality will be negligible with no lasting effect. • There is no planned monitoring of the wellheads following EP acceptance as all wells have been accepted as permanently plugged and abandoned. • The wellheads occupy a very small portion of the NWSTF. The impact of displacement will be confined to a negligible portion of the overall fishery and will have no lasting effect or significant impact to the operation and commercial viability of this fishery. • Woodside has engaged a subject matter expert on the Australian fishing industry to provide independent advice on the impacts to current and future fishers (specifically snagging) from decommissioning the wellheads *in*	Woodside has addressed WAFIC's feedback, including advising: • Any impacts to marine sediments, benthic habitats and water quality will be negligible with no lasting effect. • The wellheads will continue to be marked on navigational charts and have been accepted as permanently plugged and abandoned. • The impact of displacement of the NWSTF will be confined to a negligible portion of the overall fishery and will have no lasting effect or significant impact to the operation and commercial viability of this fishery. • Woodside has undertaken a comprehensive assessment of decommissioning options and the environmental outcomes of leaving the wellheads *in situ* are considered equal or better than the removal option. • Confirmed that the Browse Commonwealth exploration wellheads are the only infrastructure present in the Browse WA-32-R and WA-28-R title areas and therefore all relevant infrastructure has been considered. Woodside provided WAFIC with a summary of outcomes from the Australian Maritime College's independent report.

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
			situ. The outcomes of this assessment will be included in the EP. • Woodside has undertaken a comprehensive assessment of decommissioning options and the environmental outcomes of leaving the wellheads *in situ* are considered equal or better than the removal option.	Woodside considers this adequately addresses stakeholder interests and no further consultation is required.

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
		On 12 April 2022, WAFIC emailed Woodside thanking it from its response and: • requested a copy of outcomes of the Australian Maritime College assessment. • noted that it's important to consider cumulative impacts on the fishery. • requested confirmation that cumulative impacts on the fishing industry have been considered in the EP and to be provided with a copy.	On 29 April 2022, Woodside emailed WAFIC thanking it for its feedback and advised: • The Australian Maritime College is working to finalise its independent report. Committed to providing a summary of the outcomes in coming weeks. • Confirmed that Woodside has considered fishing effort overlapping the Browse wellheads. Some wells are located inside or within close proximity to Scott Reef meaning trawl fishing is unlikely to occur at those sites given the natural snag hazards posed by the reef. • Woodside considers that the impact of displacement will be confined to a negligible portion of the overall fishery and will have no lasting effect or significant impact to the operation and commercial viability of the NWSTF. • Woodside is not able to speak to the decommissioning approach of other operators for their infrastructure. • Confirmed that the Browse Commonwealth explorations wellheads are the only infrastructure present in the Browse WA-32-R and WA-28-R title areas and therefore all relevant infrastructure has been considered.	
		On 31 May 2022, WAFIC responded and: • queried whether the EP had been submitted for assessment	On 3 June 2022, Woodside responded advising: • The EP had not yet been submitted for assessment.	

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome

		• requested a summary of the Australian Maritime College's study outcomes
		• requested a map of the spatial location of the Browse wellheads in relation to catch and effort from the NWSTF
		queried whether Woodside has undertaken a cumulative impact assessment, and if so, requested a summary.
			• Provided a summary of the AMC study outcomes, including that it:
			  • aligned with Woodside's assessment that current and future impacts and risk were limited to trawl fishers operating in the vicinity of the wellheads specifically fishers from the NWSTF.
			  • identified that the Browse State water wells are located in an area which is currently closed to trawling and as such did not consider current interaction credible. It was deemed unlikely the area would reopen in the future, however it is possible and potential for future interaction was considered.
			  • the risk to fishers from the Browse wells remaining *in situ* was considered to be low.
			• The EP considers historical catch and effort data when assessing the potential for interaction with current and future fishing and the wellheads.
			Confirmed that Woodside has included a cumulative impact assessment in the EP. The assessment found the wellheads occupy a negligible area of the total fishery and, therefore, will have no lasting effect or significant impact to the operation and commercial viability of this fishery.	

Other stakeholders				

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
Broome-based charter boat, tourism and dive operators	On 22 February 2022, Woodside sent a letter to Broome-based charter boat, tourism and dive operators advising of the proposed activity (Appendix F, reference 1.2) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has consulted Recfishwest, Marine Tourism Association of WA and WA Game Fishing Association. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
Kimberley Development Commission	On 22 February 2022, Woodside emailed the Kimberley Development Commission advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
BCCI	On 22 February 2022, Woodside emailed the BCCI advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
Shire of Broome	On 22 February 2022, Woodside emailed the Shire of Broome advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
Kimberley Marine Tourism Association	On 22 February 2022, Woodside emailed the Kimberley Marine Tourism Association advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback provided.	No response required.	Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
Regional Development Australia – Kimberley	On 22 February 2022, Woodside emailed Regional Development Australia - Kimberley advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback provided.	No response required.	Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
Environs Kimberley	On 22 February 2022, Woodside emailed Environs Kimberley advising of the proposed activity (Appendix F, reference 1.1) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback provided.	No response required.	Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
KLC	On 22 February 2022, Woodside emailed the KLC advising of the proposed activity (Appendix F, reference 1.14) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.
	On 1 March 2022, Woodside emailed the KLC providing the correct Consultation Information Sheet (Appendix F, reference 1.14.1).	No feedback received.	No response required.	

Stakeholder	Information provided	Relevant person response	Woodside response	Woodside assessment and outcome
MAC	On 22 February 2022, Woodside emailed MAC advising of the proposed activity (Appendix F, reference 1.15) and provided a Consultation Information Sheet and Historical Exploration Wellhead Decommissioning Information Sheet.	No feedback received.	No response required.	Woodside has provided sufficient information and opportunity to respond. Woodside considers this adequately addresses stakeholder interests and no further consultation is required.

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

7.1 Overview

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

7.2 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 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 EMBAs.

The impacts and risks identified during the ENVID workshop (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, being:

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

Within these categories, impact and 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 sources of environmental impacts and risks. A summary of the ENVID is provided in **Table 7-1**.

The impact and risk analysis and evaluation for the Petroleum Activities Program indicate 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 7.6** and **7.7**.

7.2.1 Cumulative Impacts

Woodside has assessed the cumulative impacts of the Petroleum Activities Program in relation to other relevant petroleum activities, which might result in overlapping temporal and spatial extents. No existing oil and gas infrastructure is located within or adjacent to the EMBAs. Any potential impacts from the Petroleum Activities Program are highly localised and concentrated around the wellhead locations.

Table 7-1: Environmental risk analysis and summary

Aspect	EP Section	Current Risk Rating				Acceptability of Impact/Risk
		Impact/Consequence	Potential Impact/Consequence Level	Likelihood	Current Risk Rating	
Planned Activities (Routine and Non-routine)						
Interaction with third-party users: Displacement of commercial fisheries	**7.6.1**	F	Environment – No lasting effect (less than one month). Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Physical presence: Alteration of seabed and benthic habitats	**7.6.2**	F	Environment – No lasting effect (less than one month). Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Discharges to the marine environment: well fluids	**7.6.3**	F	Environment – No lasting effect (less than one month). Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Discharges to the marine environment: Wellhead corrosion		F	Environment – No lasting effect (less than one month). Localised impact not significant to environmental receptors.	-	-	Broadly acceptable
Unplanned Activities (Accidents/Incidents)						
Interaction with third-party users: Future disruption to commercial fisheries	**7.7.1**	E	Social and Cultural – Slight, short-term impact (< 1 year) to a community or area or item of cultural significance.	1	L	Broadly acceptable

7.3 Environmental Performance Outcomes, Standards and Measurement Criteria

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

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

The EPOs, EPSs and MC specified are consistent with legislative requirements and Woodside's standards and procedures. They have been developed based on the Codes and Standards, Good Industry Practices and Professional Judgement outlined in **Section 2.7.2** as part of the acceptability and ALARP justification process.

The EPOs, EPSs and MC are presented throughout this section. A breach of these EPOs or EPSs constitutes a 'Recordable Incident' under the OPGGS Environment Regulations (refer to **Section 8**).

7.4 Presentation

The environmental impact and risk analysis and evaluation (ALARP and acceptability), EPOs, EPSs 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 OPGGS Environment Regulations or this EP.

<table>
<tr><th colspan="15">Context
<Description of the context for the impact/risk. Regulation 13(1, 13(2) and 13(3)></th></tr>
<tr><td colspan="3">Description of the Activity – Regulation 13(1)</td><td colspan="5">Description of the Environment – Regulations 13(2)(3)</td><td colspan="7">Consultation – Regulation 11A</td></tr>
<tr><th colspan="15">Impacts/Risks Evaluation Summary – Summary of ENVID outcomes</th></tr>
<tr><td rowspan="2">Source of Impact/Risk Regulation 13(1)</td><td rowspan="2">Time Horizon (refer Section 3.6)</td><td colspan="7">Environmental Value Potentially Impacted Regulations 13(2)(3)</td><td colspan="7">Evaluation Section 2.7</td></tr>
<tr><td>Soil and Groundwater</td><td>Marine Sediment</td><td>Water Quality</td><td>Air Quality (incl Odour)</td><td>Ecosystems/Habitat</td><td>Species</td><td>Socioeconomic</td><td>Decision Type</td><td>Impact/Consequence</td><td>Likelihood</td><td>Current Risk Rating</td><td>ALARP Tools</td><td>Acceptability</td><td>Outcome</td></tr>
<tr><td>Summary of source of risk or impact</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><th colspan="15">Description of Source of Impact/Risk</th></tr>
<tr><td colspan="15">Description of the identified impact or risk, including sources or threats that may lead to the risk or identified event. Regulation 13(1).</td></tr>
<tr><th colspan="15">Impact/Risk Assessment</th></tr>
<tr><td colspan="15">Discussion and assessment of the potential impacts or risks to the identified environment value(s). Regulation 13(5)(6).
Potential impacts or risks to environmental values have been assigned and discussed based on Woodside's Environmental Consequence Definitions for Use in Environmental Risk Assessments (Section 2.6.5.1).</td></tr>
</table>

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[1]***	***Benefit in Impact/Risk Reduction[2]***	***Proportionality***	***Control Adopted***
ALARP Tool Used – Section 2.7.1 and Section 2.7.2				
Summary of control considered to ensure the impacts and risks are continuously reduced to ALARP. *Regulation 13(5) (c)*	*Technical or logistical feasibility of the control.* *Cost or sacrifice required to implement the control (qualitative measure).*	*Qualitative commentary of impact or risk that could be averted or environmental benefit gained if the cost or sacrifice is made, and the control is adopted.*	*Proportionality of cost or sacrifice versus 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 based on the environmental risk assessment outcomes, use of the relevant tools appropriate to the decision type (**Section 2.7**) and a proportionality assessment. Regulation 10A(b).*				

Demonstration of Acceptability
Acceptability Statement: *Made based on applying the process described in **Section 2.7.2**, taking into account internal and external expectations, risk to environmental thresholds and use of environment decision principles. Regulation 10A (c).*

Environmental Performance Outcomes, Standards and Measurement Criteria			
Outcomes	***Controls***	***Standards***	***Measurement Criteria***
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 is measured.* *M: Performance against the outcome is measured by measuring implementation of the controls via the MC.* *A: Achievability or feasibility of the outcome demonstrated via discussion of feasibility of controls in ALARP demonstration. Controls are directly linked to the outcome.* *R: The outcome is relevant to the source of risk and the potentially impacted environmental value.* *T: The outcome states the timeframe during which the outcome will apply or by which it will be achieved.*	**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)*

[1] *Qualitative measure.*

[2] *Measured in terms of reduction of likelihood, consequence and current risk rating.*

7.5 Environmental Risks/Impacts Deemed Not Credible

The ENVID identified sources of environmental risk and impact that were assessed as not being applicable (not credible) within the EMBAs and, therefore, were determined to not form part of this EP (refer to **Section 2.5**). These are described in the next subsections for information only.

7.5.1 Interference with Third-Party Oil and Gas Operators

No oil and gas facilities are within the vicinity of the wellheads. Any future oil and gas operators will have access to the wellhead locations on the navigation charts. Impacts to third party oil and gas operators now or in the future as a result of the physical presence of the wellheads is assessed as not credible.

7.5.2 Interference with Commercial Shipping

Due to the water depths of the EMBAs, the wellheads are not expected to interfere with shipping in the short term. In the long term, degradation of the wellheads is not expected to result in the release of material that could present a navigation risk to shipping.

7.5.3 Release of Fluids from Below the Top Cement Plug

Before plugging the well, displacement fluids were circulated into the well to flush residual drilling fluids and facilitate installation of cement plug barriers. Residual fluids below the depths of the permanent abandonment cement plugs would, therefore, be trapped and there is no credible risk of exposure of these fluids. Fluids with the potential to be released to the marine environment are included in **Section 4.6.2**.

7.5.4 Loss of Well Integrity

There is no credible hydrocarbon release risk as the wells have been approved for abandonment with permanent barriers in place (**Section 3.8**).

7.6 Planned Activities (Routine and Non-routine)

7.6.1 Interaction with Third Party Users: Displacement of Current and Future Commercial Fisheries

Context	
Wellheads and associated infrastructure composition – **Section 4.6**	Socioeconomic environment – **Section 5.9** Stakeholder consultation – **Section 6**

Risk Evaluation Summary

Source of Impact	*Time Horizon (refer Section 3.6)*	*Environmental Value Potentially Impacted*						*Evaluation*						
		Marine Sediment	*Water Quality*	*Air Quality (incl Odour)*	*Ecosystems/Habitat*	*Species*	*Socioeconomic*	*Decision Type*	*Consequence/Impact*	*Likelihood*	*Risk Rating*	*ALARP Tools*	*Acceptability*	*Outcome*
Wellheads left *in situ* resulting in current and future displacement of commercial fishers	Long-term						X	A	F	-	-	LCS GP	Broadly acceptable	EPO 1

Description of Source of Impact

The Petroleum Activities Program will result in the long-term physical presence of the wellheads on the seabed (and up to 3.5 m above it). The presence of the wellheads may displace commercial fishers operating trawl equipment from the wellhead locations, in addition to a 500 m radius as displayed on navigation charts, as they avoid the area to prevent damage to equipment from snagging on the wellheads (**Section 7.7.1**). The wellheads may become partially or fully buried overtime due to surrounding hydrodynamic conditions (**Section 7.6.2**) and will eventually fully degrade into seabed sediments over approximately 150 years (**Section 7.6.3**). The height of each wellhead (up to 3.5 m) is considered a worst-case scenario and the potential impacts from displacement will remain until the wellheads are significantly degraded or buried.

Trap and line fishers are not expected to negatively interact with wellheads *in situ*. However, trap fishers have been known to target subsea infrastructure as the presence of aggregating fish improves catch rates.

Currently, there is one trawl-based fishery identified as having potential for current or future interaction within the EMBAs, the Commonwealth-managed NWSTF. This fishery operates off north-western Australia from 114°E to 125°E, seaward of the 200 m isobath. The fishery targets three commercially important species of scampi (*M. australiensis, M. velutinus* and *M. boschmai*) which are taken from different depth distributions between 260 to 500 m (Wallner & Phillips, 1995). (**Section 5.9.2**)

Two other State-managed fisheries, the NDSMF and the WCDSCMF, also overlap the EMBAs. These fisheries are both primarily trap based.

Impact Assessment

Although fishing associated with the NDSMF and WCDSCMF may occur within the EMBAs, the wellheads are not expected to displace these fishers given their fishing methods (i.e. traps). Studies have shown that decapods of the most prevalent taxa around wellheads (Cummings et al., 2011) and increased abundances of commercially targeted fish species have been reported around wellheads (McLean et al., 2018b) As a result, trap fishers have been known to target subsea infrastructure including wellheads and since equipment is unlikely to be damaged by interacting with the wellheads, no negative impacts to trap fishers are expected.

Given this, the impact of displacing current and future commercial fishers from the EMBAs is limited to fishing by one overlapping trawl fishery, the NWSTF. Although fishing effort in the NWSTF has been recorded in the 60 nm grid

overlapping all four EMBAs, the water depths of three (Brecknock-4 (651 m), Calliance-1 (575 m), Calliance-3 (677 m)) exceed that of the target species range (500 m), and the fourth, Calliance-2, is at the deepest limit (501 m). Therefore, it is unlikely a large amount of fishing effort recorded in the 60 nm grid square overlapping the EMBAs occurred within the EMBAs themselves, if any. Indeed, the highest intensity of fishing effort recorded in the 2019-2020 season occurred around 200 km southwest of the EMBAs (**Table 5-9**).

Should target species of the NWSTF change, or the distribution of current target species change, it is possible fishing in the area surrounding the EMBAs may occur in the future. However, impacts are expected to be negligible considering the total the EMBAs occupy represents a very small portion of the NWSTF overall (0.79 km^2 or 0.0002% per EMBA of the overall fishery area of approximately 394,507 km^2). Woodside consulted all fishing license holders within the NWSTF; however, no comments were received (**Section 6**).

Therefore, displacement, should it occur, would be confined to a negligible portion of the overall fishery and would have no lasting effect or significant impact to the operation and commercial viability of this fishery.

Woodside also engaged a subject matter expert, the Australian Maritime College to undertake an independent assessment of the potential impacts on commercial fishing activity in the EMBAs from leaving the Browse wellheads *in situ*. The study confirmed impacts were confined to trawl fishers operating in the NWSTF. The study also found that impacts to fishers were low based on (AMC, 2022; **Section 3.3**):

- Most of the trawling activity is concentrated 200 km south of the wellheads while the northern most area of the fishery (in the vicinity of the wellheads) has a much lower fishing effort.
- The wellheads are located in deep water. Whilst demersal trawling at such depths is possible, it necessitates having vessel/equipment specifications (horsepower and winch capacity) typically found on medium sized vessels (30 – 40 m in length). Smaller vessels could function at these depths although it usually requires considerable modification and expenditure to meet the same specifications.
- Oceanographic data for the region indicates there are generally southward moving surface waters with a northward moving subsurface current which would make demersal trawling challenging at the depth of the wellheads in terms of maintaining gear symmetry and stability. Further to this, peak wind and wave conditions registered through summer, would make trawling difficult for smaller vessels and as such they may opt not to fish.
- The trawlers are equipped with modern wheelhouse electronics including GPS plotters. GPS plotters accurately show the vessels position relative to marked seabed obstacles, such as these wellheads, and enable operators to safely navigate around these obstacles.

Cumulative Impacts

Cumulative future displacement from the four EMBAs represents 3.16 km^2 or 0.0008% of the overall fishery area. Three additional wellheads remain within WA State Waters and these are also planned to be left in situ, pending approval by the WA State regulator for petroleum activities, DMIRS. When the area of these EMBAs are included, total cumulative displacement from the seven EMBAs represents 5.5 km^2 or 0.0014% of the overall fishery. This remains a negligible proportion of the overall fishery

Summary of Potential Impacts to Environmental Values(s)

The wellheads remaining *in situ* permanently are not expected to result in an impact greater than localised displacement from 0.0014% of the overall NWSTF area. This displacement will have no lasting effect or significant impact to the operation of the fishery (Environment Impact – F).

Demonstration of ALARP

Control Considered	*Control Feasibility (F) and Cost/Sacrifice (CS)*[3]	*Benefit in Impact/Risk Reduction*	*Proportionality*	*Control Adopted*
Legislation, Codes and Standards				
Compliance with *Environmental Protection (Sea Dumping) Act 1981*	F: Yes. CS: Minimal to moderate cost. Standard practice.	Legislative requirement.	Control based on legislative requirements – must be adopted.	Yes **C 1.1**
Good Practice				
Notify relevant State and Commonwealth fisheries of wellheads left *in situ*	F: Yes. CS: Minimal cost. Standard practice.	Communication of the wellheads being left *in situ* to other marine users ensures they are informed and aware,	Benefits outweigh cost/sacrifice.	Yes **C 1.2**

[3] *Qualitative measure*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[3]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
		thereby reducing the risk of accidental damage to fishing equipment.		
Notify AHO so the wells can continue to be marked on navigation charts	F: Yes. CS: Minimal cost. Standard practice.	Communication of the wellheads being left *in situ* to AHO ensures the wellhead will continue to be marked on navigation charts, giving fisheries and other marine users sufficient information to plan activities around the infrastructure.	Benefits outweigh cost/sacrifice.	Yes **C 1.3**
As-left survey to verify wellheads' status and condition	F: Yes. CS: Moderate.	No additional benefits would be gained from performing an as-left survey given: • the wellhead location is known (**Section 4.3**) • impact assessment has considered impacts to commercial trawl fishers over the long-term and, therefore, any changes in the status/condition of the infrastructure would not alter the assessment (e.g. changing height of infrastructure due to partial burial or corrosion would still result in displacement) • conducting a survey adds additional risks to the activity, associated with vessel use and seabed disturbance from ROV use.	Cost of the control is disproportionate to the benefit that may be gained from it given impacts to current and future commercial trawl fishers have been assessed as negligible and outcomes of the survey would not credibly alter impact assessment.	No
Monitoring and/or remediation to make good any damage to the seabed or subsoil in the area of the wellheads.	F: Yes. CS: Moderate.	Displacement of current and future commercial trawl fishers from the ongoing presence of the wellheads was assessed as a negligible impact with no lasting effect or significant impact to the operation and commercial viability of the NWSTF fishery. This does not represent unacceptable damage to the seabed or subsoil given the small area each of the wellheads and EMBAs occupy in comparison to available fishing grounds to the NWSTF (0.0008%). There are no additional impacts to commercial trawl fishers from previous activities associated with the wells.	Cost of the control is disproportionate to the benefit that may be gained from it given impacts to current and future commercial trawl fishers have been assessed as negligible.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[3]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
		Therefore, there is no benefit to be gained from further monitoring or remediation of the seabed surrounding the wellheads.		
Professional Judgement – Eliminate				
Removal of wellheads	See **Section 3** Decommissioning Options Assessment.			No
Rock dumping over wellheads	F: Yes. CS: Substantial cost.	Additional benefits are low, as there is a low risk of snagging for commercial fisheries. Rock dumping over the wellheads adds additional risks to the activity, associated with vessel use and seabed disturbance from rock placement.	Cost/sacrifice outweigh potential benefits. This option would be a high cost due to the requirement of a specialised vessel.	No
Installing an over-trawlable structure	F: Yes. CS: Substantial cost.	Additional benefits are low as there is a low risk of snagging for commercial fisheries. Installing an over-trawlable structure over the wellheads adds additional risks to the activity, associated with vessel use and seabed disturbance from installation.	Cost/sacrifice outweigh potential benefits. There is considered little benefit from installing an over-trawlable structure.	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, Woodside considers the adopted controls appropriate to manage the displacement of commercial fisheries from the physical presence of the wellheads left *in situ*. As no reasonable additional/alternative controls were identified that would further reduce the risk without grossly disproportionate sacrifice, the impacts are considered ALARP.

Furthermore, no additional controls are required to make good any damage to the seabed or subsoil, as per Section 270(3)(f) of the OPGGS Act.

Demonstration of Acceptability

The residual impact is considered acceptable. This is on the basis that the area of the NWSTF that is occupied by the four EMBAs is very small when compared with the rest of the fishery area (cumulative 3.16 km^2 of the 394,507 km^2 fishery, 0.0008% of the overall fishery). Licence holders in the fishery were engaged during consultation for this EP; however, no response was received.

Woodside considers the adopted controls appropriate to manage the impact of displacement to commercial fishing from the physical presence of the wellheads left *in situ* to a level that is broadly acceptable.

In the context of Section 270(3)(e) and (f) of the OPGGS Act, impacts to current and future commercial trawl fisheries are of an acceptable level given:

- principles of ESD have been considered during the assessment of decommissioning options (**Section 3.8.2**) and no significant adverse impacts will occur to any natural resource
- impacts and risks from damage to the seabed or subsoil are demonstrated to be reduced to ALARP
- international and domestic requirements that apply to the activity will be complied with.

Environmental Performance Outcomes, Standards and Measurement Criteria			
Outcomes	***Controls***	***Standards***	***Measurement Criteria***
EPO 1 Prevent adverse interactions with other marine users from infrastructure	**C 1.1** Compliance with the *Environmental Protection (Sea Dumping) Act 1981.*	**PS 1.1** Woodside continues to engage with DAWE regarding the application of the *Environment Protection (Sea Dumping) Act 1981* and to comply with requirements under the Act.	**MC 1.1.1** Records demonstrate DAWE continue to be engaged on the application of the Environment Protection (Sea Dumping) Act 1981 relevant to the Petroleum Activities Program and demonstrate Woodside's commitment to complying with the Act.
	C 1.2 Notify relevant State and Commonwealth fisheries that the wellheads will remain *in situ* for perpetuity.	**PS 1.2** Woodside will notify relevant State and Commonwealth fisheries of the wellheads' location and that the wellheads will remain *in situ* for perpetuity.	**MC 1.2.1** Records demonstrate relevant State and Commonwealth fisheries have been notified of wellheads locations and that they will remain *in situ* for perpetuity.
	C 1.3 Notify AHO so the wells can continue to be marked on navigation charts.	**PS 1.3** Woodside will notify AHO that the wellheads will be left *in situ* so they can continue to be marked on navigation charts.	**MC 1.3.1** Records demonstrate AHO has been notified that the wellheads will remain *in situ*

7.6.2 Physical Presence: Alteration of Seabed and Benthic Habitats

Context	
Wellheads and associated infrastructure composition – **Section 4.6**	Physical environment – **Section 5.4** Habitats and biological communities – **Section 5.5** Stakeholder consultation – **Section 6**

Impact Evaluation Summary

Source of Impact	*Time Horizon (refer Section 3.6)*	*Environmental Value Potentially Impacted*						*Evaluation*						
		Marine Sediment	*Water Quality*	*Air Quality (incl Odour)*	*Ecosystems/Habitat*	*Species*	*Socioeconomic*	*Decision Type*	*Consequence/Impact*	*Likelihood*	*Risk Rating*	*ALARP Tools*	*Acceptability*	*Outcome*
Disturbance to seabed and benthic habitat from wellheads remaining *in situ* permanently	Long-term	X			X			A	F	-	-	LCS GP PJ	Broadly acceptable	EPO 2

Description of Source of Impact

The remaining wellheads infrastructure sits between 2.5 and 3.5 m above the seabed. The wellheads are primarily made from mild steel, as described in **Section 4.6**. The physical presence of the wellheads remaining *in situ* permanently has the potential to result in disturbance to the seabed and benthic habitats over the long-term (approximately 150 years; **Section 7.6.3**) by:

- altering hydrodynamic conditions around the wellheads, potentially resulting in scouring and accretion
- introducing hard substrate resulting in the creation of a new habitat.

Scouring and Accretion Around Wellheads

The presence of the wellheads on the seafloor can interact with the surrounding hydrodynamic conditions, potentially resulting in disturbance to the seabed (scouring and accretion) which may impact on associated benthic habitats.

Studies on the effects of sediment movements associated with anthropogenic structures on the seabed, such as shipwrecks and artificial reefs, indicate impacts to be limited to within 10 m of the structure (Smiley, 2006; Lewis and Pagano, 2015).

Habitat Creation

Analysis of habitats on exploration wellheads at depths ranging from 78 m to 825 m have shown a relatively high coverage of crustacea, hydroids, black and octocorals and sponges (McLean *et al.*, 2018b) which provides habitat in areas dominated by soft sediments. Several studies of wellheads on the NWS have observed a diverse range of reef-dependent and transient pelagic species associating with structures, including commercially fished species (Pradella *et al*., 2014; McLean *et al*., 2018a, 2018b; Fowler and Booth, 2012).

In addition, research suggests the structurally complex habitats provided by subsea infrastructure are used by many demersal fish for predator avoidance and foraging opportunities (Caddy, 2014).

Studies have found the presence of fish assemblages on wellheads is strongly influenced by depth, age and height of the structures. Wellheads at water depths between 135 m to 175 m possessed an abundance of reef-dependent and transient pelagic species, while the number of species declined markedly beyond 350 m depth (Pradella *et al.*, 2014; McLean *et al*., 2018a). Therefore, based on the depth of the EMBAs (501 to 677 m), the wellheads may provide a small area of hard substrate habitat for benthic fauna, but is unlikely to attract an abundance of fish species.

Impact Assessment
Scouring and Accretion Around Wellheads Studies on the effects of sediment movements associated with anthropogenic structures on the seabed, such as shipwrecks and artificial reefs, indicate impacts to be limited to within 10 m of the structure (Smiley, 2006; Lewis and Pagano, 2015). The wellheads are located adjacent to the Seringapatam Reef and Commonwealth waters in the Scott Reef Complex KEF. However, the nearest coral reef habitat is located 22 km north of the nearest EMBA. At these distances, impacts from scouring and accretion to the values of this KEF are not expected. The seabed surrounding the wellheads and within the EMBAs (400 to 600 m depth) is comprised of fine sand and silt, with epifauna limited to isolated individual bryozoan colonies, brittlestars, basket stars and sea anemones (Gardline, 2009). Brewer *et al.* (2007) also reported the seabed surrounding the wellheads consists of muddy substrates, with epifauna likely limited to deposit-feeders rather than suspension-feeders such as sponges and soft corals. Localised scouring and accretion around the wellheads, and up to 10 m from the wellheads, have the potential to alter associated benthic communities around the wellheads. Given benthic habitat at the wellheads location primarily consists of a featureless seabed dominated by soft sediments, impacts are expected to remain localised with no lasting effects to environmental receptors. ***Habitat Creation*** Although wellheads have been found to provide habitat on the NWS, these wellheads have typically been located at water depths far shallower than the Browse wellheads. Furthermore, studies have shown the number of fish species found on wellheads declines when the wellheads are located in water deeper than 350 m. Although the EMBAs are located within the Continental Slope Demersal Fish Communities KEF, water depths are between 501 to 677 m, and any benefits to habitat creation are expected to be limited.
Cumulative impacts
Given the distance between the individual EMBAs (3.7 to 24 km) and the localised impacts expected (within 10 m), cumulative impacts are not expected.
Summary of Potential Impacts to Environmental Values(s)
The wellheads remaining *in situ* permanently are not expected to result in an impact greater than localised scouring and accretion of sediments within 10 m of the wellheads, with no lasting effect to environmental receptors (Environment Impact – F).

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Compliance with *Environmental Protection (Sea Dumping) Act 1981*	F: Yes CS: Minimal to moderate cost. Standard practice.	Legislative requirement.	Control based on legislative requirements – must be adopted.	Yes **C 1.1**
Good Practice				
Monitoring program to assess any changes in seabed, sediment and settlement of marine organisms on the wellheads	F: Yes; an ROV equipped with a drop camera would be required to assess any changes in seabed, sediment and settlement of marine organisms on the wellheads. CS: High; remote location of EMBAs would result in significant costs associated with	Impacts to seabed and sediment from *in situ* wellheads are likely to be limited to within 10 m of the wellheads. There is limited environmental benefit (information) gained by monitoring sediment and settlement of marine organisms around the wellheads.	Cost of the control is disproportionate to the environmental benefit that may be gained from it. There is a high degree of certainty on the predicted degradation pathway of the wellheads. Even if changes were detected through monitoring, no remediation is possible other than	No

	mobilising vessel and ROV.		the removal of the wellheads to prevent further impacts. However, this is likely to result in increased environmental impacts (such as vessel- and ROV-based risks and further seabed disturbance from removal activities).	
As-left survey to verify wellheads' status and condition	F: Yes. CS: Moderate.	No additional benefits would be gained from performing an as-left survey given: • impact assessment has considered alteration of the seabed and benthic habitats over the long-term and, therefore, any changes in the status/condition of the infrastructure would not alter the assessment • conducting a survey adds additional risks to the activity, associated with vessel use and seabed disturbance from ROV use.	Cost of the control is disproportionate to the benefit that may be gained from it given impacts to the seabed and benthic habitats have been assessed as negligible and outcomes of the survey would not credibly alter impact assessment.	No
Monitoring and/or remediation to make good any damage to the seabed or subsoil and provide for conservation and protection of the natural resources in the area of the wellheads	F: Yes. CS: Moderate.	Physical impacts to the seabed and subsoil from the ongoing presence of the wellheads are limited to localised scouring and accretion and habitat creation, which will have a negligible impact to benthic habitats within an estimated 10 m around the wellheads. Impacts to benthic habitats from previous drilling activities (i.e. cuttings) are likely to be localised (~250 m radius around wellhead) and negligible given the low sensitivity of the area, that the wells were drilled with water-based muds, and given the time that has passed since the activities occurred (2005 - 2009) which would have provided sufficient duration for benthic habitats to recover and restabilise. These impacts do not represent unacceptable damage to the seabed or subsoil and allow for the conservation and protection of the natural resources in the area. Therefore, there is no benefit to be gained from	Cost of the control is disproportionate to the benefit that may be gained from it given impacts to the seabed have been assessed as negligible.	No

		further monitoring or remediation of the seabed surrounding the wellheads.		
Professional Judgement – Eliminate				
Removal of wellhead	See **Section 3** Decommissioning Options Assessment.			No
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
ALARP Statement: On the basis of the decommissioning options assessment outcomes (refer to **Section 3.8**), the environmental impact assessment outcomes and use of the relevant tools appropriate to the decision type (in other words, Decision Type A, **Section 2.6.1**), Woodside considers the potential impacts associated with seabed and benthic habitat alteration from the presence of the wellheads being left *in situ* to be ALARP. No reasonable additional or alternative controls were identified that would further reduce the impacts without significantly disproportionate sacrifice. Furthermore, no additional controls are required to provide for the conservation and protection of natural resources in the area of the wellheads, or to make good any damage to the seabed or subsoil, as per Section 270(3)(e) and (f) of the OPGGS Act.				

Demonstration of Acceptability
Acceptability Statement: The impact assessment has determined that alteration of the seabed and benthic habitats from the wellheads being left *in situ* represents a localised impact to sediments with no lasting effects. Further opportunities to reduce the impacts have been investigated above. In the context of Section 270(3)(e) and (f) of the OPGGS Act, impacts to benthic habitats are of an acceptable level given: • principles of ESD have been considered during the assessment of decommissioning options (**Section 3.8.2**) and no significant adverse impacts will occur to any natural resource • impacts and risks to natural resources or from damage to the seabed or subsoil are demonstrated to be reduced to ALARP • international and domestic requirements that apply to the activity will be complied with.

Environmental Performance Outcomes, Standards and Measurement Criteria			
Outcomes	***Controls***	***Standards***	***Measurement Criteria***
EPO 2 No impacts to benthic habitats greater than a consequence level of F[4] from leaving the wellheads *in situ*	**C 1.1** Refer **Section 7.6.1**.	**PS 1.1** Refer **Section 7.6.1**.	**MC 1.1.1** Refer **Section 7.6.1**.

[4] *Defined as 'No lasting effect (more than one month) or negligible impact. Localised impact not significant to environmental receptors' (**Section 2.6**).*

7.6.3 Discharges to the Marine Environment

Context	
Wellheads and associated infrastructure composition – **Section 4.6** Residual chemicals and fluids – **Section 4.6.2**	Habitats and biological communities – **Section 5.5**

Impact Evaluation Summary

Source of Impact	*Time Horizon (refer Section 3.6)*	*Environmental Value Potentially Impacted*						*Evaluation*						
		Marine Sediment	*Water Quality*	*Air Quality (incl Odour)*	*Ecosystems/Habitat*	*Species*	*Socioeconomic*	*Decision Type*	*Consequence/Impact*	*Likelihood*	*Risk Rating*	*ALARP Tools*	*Acceptability*	*Outcome*
Corrosion of wellheads resulting in the non-routine discharge of trace amounts of metals to the marine environment	Long-term	X	X		X	X		A	F	-	-	LCS GP	Broadly acceptable	EPO 2
Corrosion and breakdown of wellheads over time resulting in release of fluids	Long-term	X	X		X	X		A	F	-	-			

Description of Source of Impact

As the wellheads will remain *in situ* permanently, over time, the wellheads will corrode (either internal or external corrosion). In the long term, this could result in the introduction of contaminants from the wellheads' composition (such as iron) and residual well fluids (**Section 4.6**) to marine sediments. The release has the potential to adversely impact marine sediment and water quality in the surrounding water column in a localised area.

Release of Contaminants

The wellheads are between 2.5 and 3.5 m high and made predominantly from mild steel (refer to **Section 4.6**). Mild steel is mainly comprised of iron (around 98%) and also contain small amounts of other elements (**Table 7-2**). Each wellhead comprises approximately 7500 kg of mild steel and is coated in approximately 3-5 kg of paint (most likely zinc-oxide).

Table 7-2: Typical content of mild steel

Element	Carbon	Silicon	Manganese	Phosphorous	Sulphur	Chromium	Molybdenum
Typical content (%)	0.28-0.33	0.15-0.35	0.40-0.60	≤ 0.035	≤ 0.040	0.80-1.10	0.15-0.25

Corrosion of the wellheads over time could result in the release of trace amounts of metals (such as iron and manganese) to the water column and surrounding sediments. Due to the robustness of the materials of the wellheads and the deepwater location of the wellheads, corrosion is likely to be a relatively slow process of about 0.2 mm/year (Melchers, 2005).

Up to 750 g of Viton or Teflon (a fluoropolymer elastomer and synthetic rubber compound) is also present in each wellhead. Degradation of the wellheads over time may also result in the gradual, progressive release of the Viton or Teflon as these components slowly become exposed to seawater (in other words, after the metal casing around them corrodes).

Release of Fluids

In the long term, wells left *in situ* will corrode and break down. Chemicals and fluids either within the wellheads above the top cement plug or trapped behind the casing annulus have the potential to leak from the wellheads over time. Displacement fluids above the top cement plug include up to 5.5 m^3 of inhibited seawater per well, comprising corrosion inhibitors and biocides (**Section 4.6.2**).

Impact Assessment

Release of Contaminants

Deterioration of the wellhead will result in a much smaller footprint than the EMBA due to the passive nature of corrosion of the structure and lack of mechanical movement of the particles. Seafloor currents at the water depth of the wellhead are typically very low speed, in the range of 0.01 m/s to 1.03 m/s (**Section 5.4**). The structure is therefore likely to collapse in place and particles of material fall to the seafloor in the immediate vicinity. For example, shipwrecks at similar depths (aside from wreckage scatter) slump to the seafloor beneath the wreck. Based on the rate of corrosion anticipated, it is estimated that the structure will fully degrade and become incorporated into seabed sediments after approximately 150 years.

A radius of about 15 m around the wellhead is likely to delineate the limit of area of the seabed that may be impacted by deterioration of the wellhead (i.e. an area of about 700 m^2). This area is defined as the area in which the structure will rest on completion of its collapse following a period of slow corrosion. It is based on the wellhead structure with dimensions of up to 3 x 3 m length and breadth and an approximate height above the seabed of up to 3.5 m. This radius of impact permits consideration of physical movement of some of the material by larger benthic animals.

The main release of contaminants from the wellheads is iron, which makes up around 98% of the wellheads. Iron is not considered a significant contaminant in the marine environment, is only toxic to marine organisms at extremely high concentrations (Grimwood and Dixon, 1997), and is an abundant element in marine sedimentary systems (Taylor *et al*., 2011). The other elements, for example chromium and molybdenum (**Table 7-2**), are widely found in the environment and are not present in quantities that present a risk of impact. Given the low toxicity of iron (iron oxides are on the OSPAR PLONOR list), the slow release rate which will occur over many decades, and that the wellheads will eventually collapse and be covered in sediments, the iron and other minor constituents are expected to become buried and ultimately assimilated into the surrounding marine environment with no adverse effects. As such, any impacts to marine sediments, benthic habitats, and water quality will be localised and negligible. No impacts are expected to protected species that may occur at the depth of the wellhead.

Paint on the wellheads is likely to be zinc-oxide based. This type of paint is used to reduce corrosion of the mild steel and applied as a surface coating. Content of zinc-oxide in protective coatings can be up to 90%. Therefore, up to 2.7-4.5 kg of zinc could be present. As the structure degrades, the zinc coating is likely to break down over time and become mixed with the seabed sediments and corrosion particles from the wellhead. Distribution into the immediate vicinity of the wellhead will have a negligible impact on the marine environment as the deep water area of the wellhead location consists of soft substrate which typically support a low abundance and diversity of benthic communities (Heyward et al., 2001; Etter & Grassle, 1992).

Small amounts (up to 750 g) of Viton or Teflon are associated with the seals within the wellheads. This volume is comparable to that found in household taps. These components are unable to be removed in isolation and, therefore, will remain *in situ*. It is expected that as the iron around the seals corrode, the seals will be exposed to seawater and may begin to degrade. Plastics are generally known to break down in seawater over long periods of time (hundreds to thousands of years); therefore, these components are also expected to slowly break down into various particle sizes. The low rate of degradation, combined with the very small volumes of Viton or Teflon remaining *in situ*, means the concentrations of plastics in the EMBAs are expected to be low with negligible localised impacts.

Section 7.8 also identifies marine debris as a key threat to marine turtles in the Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia, 2017) and sawfishes in the Sawfish and River Shark Recovery Plan (Commonwealth of Australia, 2015b). While the term 'marine debris' in the Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia, 2017) relates to floating non-degradable debris, such as lost or discarded fishing gear, land-sourced garbage and ship-sourced materials disposed of at sea, the term can be applied to the materials released from the wellheads, such as plastic, as it degrades over time.

The Threat Abatement Plan for the Impacts of Marine Debris on the Vertebrate Wildlife of Australia's Coasts and Oceans (Commonwealth of Australia, 2018) includes an objective to understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations. The discharge of negligible quantities of plastic (around 750 g of Viton or Teflon) is therefore an applicable discharge under this plan.

An assessment against relevant recovery objectives and actions of both the recovery plan and threat abatement plan relating to marine debris is provided in **Section 7.8**. It is determined that leaving the wellheads *in situ* is not inconsistent with the objectives and actions within these plans.

Release of Fluids

As presented in **Table 4-4**, the chemicals within the displacement and annulus fluids are low risk to the marine environment, based on OCNS ranking and their slow-release to the marine environment as the wellheads degrades.

Seabed around the wellheads is comprised of relatively flat and featureless habitat, dominated by soft sediment (fine to coarse sands) inhabited by infauna and sparsely distributed epifauna. The release of fluids is unlikely to impact these species.

It is possible fish species transiting the localised area at the seabed or around the wellheads may come into contact with the fluids as they are released, albeit at very low concentrations. However, given the slow release of the fluids from the wellheads, the bottom currents, rapid dispersion on release and the transient nature of fish species, it is unlikely they will be within the leak for a period that causes any lasting impact.

As the fluids would be released slowly over a number of years, given the slow release rate, the rapid dilution in the open ocean environment, and low sensitivity of habitat, it is likely any impacts will be negligible, with no lasting effect.

Cumulative Impacts

The four wellheads will likely degrade at a similar rate, given they were drilled within a few years of each other. However, given the distance between wellheads and the expected footprint of impacts, no cumulative impacts are expected.

Summary of Potential Impacts to Environmental Values(s)

It is considered that the release of contaminants and fluids from the wellheads remaining *in situ* permanently will not result in an impact greater than localised impacts to marine sediments, benthic habitats and water quality, with no lasting effect, not significant to surrounding marine habitats (Environment Impact – F).

Demonstration of ALARP

Control Considered	*Control Feasibility (F) and Cost/Sacrifice (CS)*	*Benefit in Impact/Risk Reduction*	*Proportionality*	*Control Adopted*
Legislation, Codes and Standards				
Compliance with *Environmental Protection (Sea Dumping) Act 1981*	F: Yes. CS: Minimal to moderate cost. Standard practice.	Legislative requirement.	Control based on legislative requirements – must be adopted.	Yes **C 1.1**
Good Practice				
As-left survey to verify wellheads' status and condition	F: Yes. CS: Moderate.	No additional benefits would be gained from performing an as-left survey given: • there is no credible loss of well integrity or loss of fluids from below the permanent abandonment cement plugs (**Section 7.5**) • impact assessment has discharges to the marine environment over the long-term and, therefore, any changes in the status/condition of the infrastructure would not alter the assessment • conducting a survey adds additional risks to the activity, associated with vessel use and seabed disturbance from ROV use.	Cost of the control is disproportionate to the benefit that may be gained from it given impacts from the discharge of corrosion materials and fluids have been assessed as negligible and outcomes of the survey would not credibly alter impact assessment.	No
Monitoring program of water quality, sediment quality and benthic communities	F: Yes; an ROV with a payload of push corers and drop cameras would be required to sample	Impacts to water quality, sediment quality and benthic communities as a result of the release of trace metals are	Cost of the control is disproportionate to the environmental benefit that may be gained from it.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
	sediment and assess benthic communities. CS: High; remote location of EMBAs would result in significant costs associated with mobilising vessel and ROV.	likely to be localised and have no lasting effect. Therefore, there is limited environmental benefit (information) gained from monitoring sediment quality and benthic communities around the wellheads.	There is a high degree of certainty on the predicted degradation pathway of the wellheads. Even if changes were detected through monitoring, no remediation is possible other than the removal of the wellheads to prevent further impacts. However, this is likely to result in increased environmental impacts (such as vessel- and ROV based risks and further seabed disturbance from removal activities).	
Monitoring and/or remediation to make good any damage to the seabed or subsoil and provide for conservation and protection of the natural resources in the area of the wellheads	F: Yes. CS: Moderate.	Impacts to the seabed and subsoil from long-term corrosion of the wellheads will have a negligible impact to the environment within an estimated 15 m around the wellheads. Impacts to benthic habitats from previous drilling activities (e.g. cuttings) are likely to be localised (~250 m radius around wellheads) and negligible given the low sensitivity of the area, that the wells were drilled with water-based muds, and given the time that has passed since the activities occurred (2005-2009) which would have provided sufficient duration for benthic habitats to recover and restabilise. These negligible impacts do not represent unacceptable damage to the seabed or subsoil and allow for the conservation and protection of the natural resources in the area. Therefore, there is no benefit to be gained from further monitoring or remediation of the seabed surrounding the wellheads.	Cost of the control is disproportionate to the benefit that may be gained from it given impacts to the seabed have been assessed as negligible.	No
Professional Judgement – Eliminate				
Removal of wellheads	See **Section 3** Decommissioning Options Assessment.			No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
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 (refer to **Section 3.8** for discussion of wellhead management options) and use of the relevant tools appropriate to the decision type, Woodside considers the potential impacts of release of contaminants and fluids from the wellheads remaining *in situ* permanently to be ALARP. No reasonable additional/alternative controls were identified that would further reduce the impacts without significantly disproportionate sacrifice.

Furthermore, no additional controls are required to provide for the conservation and protection of natural resources in the area of the wellheads, or to make good any damage to the seabed or subsoil, as per Section 270(3)(e) and (f) of the OPGGS Act.

Demonstration of Acceptability

Acceptability Statement:

The impact assessment has determined that the release of contaminants and fluids from the wellheads remaining *in situ* permanently may result in localised impacts, with negligible effects to environmental receptors (sediment, water column and benthic habitats). Further opportunities to reduce the impacts have been investigated above. No concerns were raised regarding non-routine discharge of materials during stakeholder consultation.

Therefore, Woodside considers the impacts of discharge of trace metals as a result of wellhead corrosion to be broadly acceptable.

In the context of Section 270(3)(e) and (f) of the OPGGS Act, impacts to benthic habitats are of an acceptable level given:

- principles of ESD have been considered during the assessment of decommissioning options (**Section 3.8.2**) and no significant adverse impacts will occur to any natural resource
- impacts and risks to natural resources or from damage to the seabed or subsoil are demonstrated to be reduced to ALARP
- international and domestic requirements that apply to the activity will be complied with.

Environmental Performance Outcomes, Standards and Measurement Criteria			
Outcomes	***Controls***	***Standards***	***Measurement Criteria***
EPO 2 No impacts to benthic habitats or water quality greater than a consequence level of F[5] from leaving the wellheads *in situ*	**C 1.1** Refer **Section 7.6.1**.	**PS 1.1** Refer **Section 7.6.1**.	**MC 1.1.1** Refer **Section 7.6.1**.

[5] *Defined as 'No lasting effect (<1 month) or negligible impact. Localised impact not significant to environmental receptors' (**Section 2.6**).*

7.7 Unplanned Activities (Routine and Non-routine)

7.7.1 Interaction with Third-Party Users: Snag Risk to Commercial Trawl Fisheries

Context	
Wellheads and associated infrastructure composition – **Section 4.6**	Socioeconomic environment – **Section 5.9** Stakeholder consultation – **Section 6**

Risk Evaluation Summary

Source of Impact	*Time Horizon (refer Section 3.6)*	*Environmental Value Potentially Impacted*						*Evaluation*						
		Marine Sediment	*Water Quality*	*Air Quality (incl Odour)*	*Ecosystems/Habitat*	*Species*	*Socioeconomic*	*Decision Type*	*Consequence/Impact*	*Likelihood*	*Risk Rating*	*ALARP Tools*	*Acceptability*	*Outcome*
Wellheads left *in situ*, resulting in accidental snagging on trawl equipment	Long-term						X	B	E	1	Low	LCS GP PJ SV	Acceptable	EPO 1

Description of Source of Risk

The Petroleum Activities Program will result in the long-term physical presence of the wellheads on the seabed. The wellheads extend between around 2.5 and 3.5 m above the seabed and may present an ongoing potential snag hazard to commercial fisheries operating trawl equipment in the area. The wellheads may become partially or fully buried overtime due to surrounding hydrodynamic conditions (**Section 7.6.2**) and will eventually fully degrade into seabed sediments over approximately 150 years (**Section 7.6.3**). The height of each wellhead (up to 3.5 m) is considered to be a worst-case scenario and the risk will remain until the wellheads are significantly degraded or buried.

One fishery was identified as having a potential to operate trawl equipment within the EMBAs: The Commonwealth -managed NWSTF (**Section 7.6.1**).

Consequence Assessment

The EMBAs overlap the NWSTF. Currently, the fishery has only been identified as having potential for interaction within the Calliance-2 EMBA, but not within the remaining three EMBAs as these wellheads are at depths that exceed that of the target species (575 – 677 m) (**Section 7.6.1**). However, should target species of the NWSTF change, or the distribution of current target species change, it is possible fishing in the area surrounding the EMBAs may occur.

An independent study on the potential impacts and risks to NWSTF fishers from leaving the Browse wellheads *in situ* found the risk of snagging to be low (AMC, 2022; **Section 3.3**). The study identified that current fishing effort in the NWSTF was low with small number of vessels operating. Whilst current effort is low, there is a potential for increased fishing in the future. The study considered a fourfold increase in activity to account for this, which could see activities expanding northward toward the wellhead locations; however, found that potential for interaction remained low (AMC, 2022). The low ranking was based on:

- Most of the trawling activity is concentrated 200 km south of the wellheads while the northern most area of the fishery (in the vicinity of the wellheads) has a much lower fishing effort.
- The wellheads are located in deep water (**Table 4-2**). Whilst demersal trawling at such depths is possible, it necessitates having vessel/equipment specifications (horsepower and winch capacity) typically found on medium sized vessels (30 – 40 m in length. Smaller vessels could function at these depths although it usually requires considerable modification and expenditure to meet the same specifications.
- Oceanographic data for the region indicates there are generally southward moving surface waters with a northward moving subsurface current which would make demersal trawling challenging at the depth of the wellheads in terms of maintaining gear symmetry and stability. Further to this, peak wind and wave conditions registered through summer, would make trawling difficult for smaller vessels and as such they may opt not to fish.

- The trawlers are equipped with modern wheelhouse electronics including GPS plotters. GPS plotters accurately show the vessels position relative to marked seabed obstacles, such as these wellheads, and enable operators to safely navigate around these obstacles.
- NWSTF operators have numerous risk mitigation options available to them which either reduce interaction probability or harm level (e.g. modern wheelhouse electronics, vessel safety management systems, AMSA trawler hook-up safety procedures/guidelines, winch tension release mechanisms, hydroacoustic trawl monitoring systems, appropriate breaking load components on trawl gear).

Further, a review of historical fishing vessel incident data from AMSA Monthly Domestic Vessel Incident Reporting Database (2020-22) and Australian Transport Safety Bureau Marine Safety Investigation Reports (1982-2022) showed there was no reported fishing vessel incidents confirmed as related to offshore oil and gas infrastructure in Australia.

To understand the consequence of snagging, the AMC study also created a simulation 'interaction event' with scale models of the wellheads and a trawl net in a flume tank facility. Wellheads were grouped based on the infrastructure present. The Brecknock-4, Calliance-1 and Calliance-2 wellheads were considered as a group given there was only a wellhead present. The study found that the most credible outcome should a trawl net interact with the Brecknock-4, Calliance-1 and Calliance-2 wellheads was minor to moderate gear damage and subsequent catch loss. This result was based on the fact that without a TGB or PGB present the structure was relatively smooth and consequently more likely to allow trawl gear to be recovered with minor damage. A separate simulation event was run for the Calliance-3 wellhead which has a TGB, PGB and guideposts. The simulation for the Calliance-3 wellhead identified the most credible outcome should a trawl net interact with the wellhead was moderate gear damage or net loss and subsequent catch loss. This was due to the presence of the PGB and TGB which extend outwards and create a gap above the seabed that has potential to catch and trap the trawl net and the presence of the guide posts which may increase likelihood of net entanglement. Provided the skipper adheres to hook-up guidelines issued by AMSA, the risk of harm to the vessel and crew would remain very low.

Snagging may result in financial loss to commercial fishers either through lost fishing time or damages to, and losses of, fishing gear (Rouse *et al*., 2020). Studies of historical snag incidents in the UK have found that vessel damage or abandonment occurred less than 0.5% of the time, with capsizes only occurring in 0.06% of incidents between 1989 and 2016 (Rouse *et al*., 2020). Rouse *et al.* (2020) found pipelines and marine debris were responsible for most (> 50%) of the snagging interactions between 1989 and 2016, with other production equipment, including wellheads, involved in 4% of incidents over the same period. Overall, the likelihood of interactions between trawl equipment and oil and gas infrastructure is reducing over time, with an increase in communication between the oil and gas industry and improvement in fishery GPS equipment being the reasons for this reduction in incidents (Rouse *et al.*, 2020).

The likelihood of interaction between fishing vessels and the wellheads is further reduced by the size of the NWSTF. As described in **Section 7.6.1**, the wellheads and EMBAs occupy a very small portion of the fishery (cumulatively around 3.16 km^2), which covers an area of around 394,507 km^2 (0.0008% of the overall fishery). If current trends in fishing effort continue with few vessels (between four and six per year), the likelihood of a fishing vessel interacting with the wellheads is highly unlikely and the overall risk of snagging for the NWSTF is low.

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[6]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Legislation, Codes and Standards				
Compliance with *Environmental Protection (Sea Dumping) Act 1981*	F: Yes. CS: Minimal to moderate cost. Standard practice.	Legislative requirement.	Control based on legislative requirements – must be adopted.	Yes **C 1.1**
Good Practice				
Notify relevant State and Commonwealth fisheries of wellheads left *in situ*	F: Yes. CS: Minimal cost. Standard practice.	Communication of the wellheads being left *in situ* to other marine users ensures they are informed and aware, thereby reducing the risk of accidental damage to fishing equipment.	Benefits outweigh cost/sacrifice.	Yes **C 1.2**

[6] *Qualitative measure*

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[6]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Notify AHO so the wells can continue to be marked on navigation charts	F: Yes. CS: Minimal cost. Standard practice.	Communication of the wellheads being left in-situ to AHO ensures the wellheads will continue to be marked on navigation charts, giving fisheries and other marine users sufficient information to plan activities around the infrastructure.	Benefits outweigh cost/sacrifice.	Yes **C 1.3**
As-left survey to verify wellheads' status and condition	F: Yes. CS: Moderate.	No additional benefits would be gained from performing an as-left survey given: • the wellhead location is known (**Section 4.3**) • risk assessment has considered impacts to commercial trawl fishers over the long-term and, therefore, any changes in the status/condition of the infrastructure would not alter the assessment (e.g. changing height of infrastructure due to partial burial or corrosion would still result in a potential snag hazard) • conducting a survey adds additional risks to the activity, associated with vessel use and seabed disturbance from ROV use.	Cost of the control is disproportionate to the benefit that may be gained from it given risk to current and future commercial trawl fishers has been assessed as low and outcomes of the survey would not credibly alter impact assessment.	No
Monitoring and/or remediation to make good any damage to the seabed or subsoil in the area of the wellheads.	F: Yes. CS: Moderate.	Risks to commercial trawl fishers from the ongoing presence of the wellheads were assessed as low. These impacts do not represent unacceptable damage to the seabed or subsoil given the small area each of the wellheads and EMBAs occupy in comparison to available fishing grounds by the NWSTF (0.0008%) and low potential for the area of the wellhead to represent important fishing grounds into the future. There are no additional risks to commercial trawl fishers from previous activities associated with the wells. Therefore, there is no benefit to be gained from further monitoring or remediation of the seabed surrounding the wellheads.	Cost of the control is disproportionate to the benefit that may be gained from it given risks to commercial trawl fishers have been assessed as low.	No

Demonstration of ALARP				
Control Considered	***Control Feasibility (F) and Cost/Sacrifice (CS)[6]***	***Benefit in Impact/Risk Reduction***	***Proportionality***	***Control Adopted***
Professional Judgement – Eliminate				
Removal of wellheads	See **Section 3** Decommissioning Options Assessment.			No
Rock dumping over wellheads	F: Yes. CS: Substantial cost.	Additional benefits are low, as there is a low risk of snagging for commercial fisheries. Rock dumping over the wellheads adds additional risks to the activity, associated with vessel use and seabed disturbance from rock placement.	Cost/sacrifice outweigh potential benefits. This option would be a high cost due to the requirement of a specialised vessel.	No
Installing an over-trawlable structure	F: Yes. CS: Substantial cost.	Additional benefits are low as there is a low risk of snagging for commercial fisheries. Installing an over-trawlable structure over the wellheads adds additional risks to the activity, associated with vessel use and seabed disturbance from installation.	Cost/sacrifice outweigh potential benefits. There is considered little benefit from installing an over-trawlable structure.	No
Professional Judgement – Substitute				
No additional controls identified.				
Professional Judgement – Engineered Solution				
No additional controls identified.				
Risk Based Analysis				
No additional controls identified.				
Company Values				
Corporate values require all personnel at Woodside to comply with appropriate policies, standards, procedures and processes while being accountable for their actions and holding others to account in line with the Woodside Compass. This EP has been internally reviewed and approved in line with the Woodside Manual of Authorities.				
Societal Values				
Extensive consultation was performed when preparing the Browse Commonwealth Wellhead Decommissioning EP to identify the views and concerns of relevant stakeholders, as described in **Section 6**.				
ALARP Statement: On the basis of the environmental risk assessment outcomes and use of the relevant tools appropriate to the decision type, Woodside considers the adopted controls appropriate to manage the risk of future unplanned disruption to commercial fisheries from the physical presence of the wellheads left *in situ*. As no reasonable additional or alternative controls were identified that would further reduce the risk without grossly disproportionate sacrifice, the impacts are considered ALARP. Furthermore, no additional controls are required to make good any damage to the seabed or subsoil, as per Section 270(3)(f) of the OPGGS Act.				

Demonstration of Acceptability
Acceptability Criteria and Assessment
Principles of ESD **Table 7-3** specifically assesses the risks to third-party users against the relevant principles of ESD. For a full assessment of the Petroleum Activities Program against all principles of ESD, see **Section 3.8.2**.

Demonstration of Acceptability

Table 7-3: How risks to third-party users have been assessed against the principles of ecologically sustainable development

Principles of ESD	Consideration
Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations (the 'integration principle').	The impact assessment presented in this section assessed the long-term and short-term impacts to third-party marine users of leaving the wellheads *in situ*.
If there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (the 'precautionary principle').	The impact assessment presented in this section assessed the risk to future commercial fisheries as low.
The principle of intergenerational equity is that the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations (the 'intergenerational principle').	Leaving the wellheads *in situ* does not compromise the health, diversity and productivity of the environment and does not prevent third-party marine users from continuing to use the marine environment in the future.

Internal Context

The Petroleum Activities Program is consistent with Woodside's corporate policies, culture, processes, standards, structure and systems as outlined in the Demonstration of ALARP and EPOs, including:

- Woodside Health, Safety and Environment Policy (**Appendix A**)
- Woodside Risk Management Policy (**Appendix A**).

External Context

During stakeholder consultation (**Section 6**), WAFIC requested that snagging of fishing equipment on wellheads left *in situ* is addressed within the EP as well as an assessment of cumulative impacts to the fishery. This has been considered in **Section 3.3**, **3.6** and **7.7.1**. All licence holders of fisheries with potential to interact with any of the EMBAs were consulted; however, no concerns were raised (**Section 6**).

Other Requirements

Leaving the wellheads *in situ* is consistent with relevant legislation, as assessed in **Section 3.4**, including the OPGGS Act 2018, the *Environment Protection (Sea Dumping) Act 1981* and the IMO Resolution A.672(16).

In the context of Section 270(3)(e) and (f) of the OPGGS Act, impacts to current and future commercial trawl fisheries are of an acceptable level given:

- principles of ESD have been considered during the assessment of decommissioning options (**Section 3.8.2**), as well as above for specific risks to current and future commercial trawl fishers, and no significant adverse impacts will occur to any natural resource
- impacts and risks from damage to the seabed or subsoil are demonstrated to be reduced to ALARP
- international and domestic requirements that apply to the activity will be complied with.

Acceptability Statement

The risk assessment has determined that in the highly unlikely event of a trawl fishing net snagging on the wellheads, the impacts to commercial fishers are expected to be slight and short term. The physical presence of the wellheads left *in situ* represents a low risk to any current and future commercial trawling activities.

This residual risk is considered acceptable. This is on the basis that the area of the NWSTF that is cumulatively occupied by the EMBAs is very small (3.16 km^2 of the 394,507 km^2 fishery), the location of the wellheads will continue to be made available to all marine users through continued marking on navigation charts, and improved GPS technology on commercially fishing vessels has been found to be sufficient for reducing the number of snag incidents that have occurred over time (Rouse *et al.*, 2020). Therefore, Woodside considers the adopted controls appropriate to manage the risk of unplanned disruption to commercial trawling from the physical presence of the wellheads left *in situ* to a level that is acceptable.

Environmental Performance Outcomes, Standards and Measurement Criteria

Outcomes	*Controls*	*Standards*	*Measurement Criteria*
EPO 1	**C 1.1** Refer **Section 7.6.1**.	**PS 1.1** Refer **Section 7.6.1**.	**MC 1.1.1** Refer **Section 7.6.1**.

Environmental Performance Outcomes, Standards and Measurement Criteria			
Outcomes	***Controls***	***Standards***	***Measurement Criteria***
Prevent adverse interactions with other marine users from infrastructure	**C 1.2** Refer **Section 7.6.1**.	**PS 1.2** Refer **Section 7.6.1**.	**MC 1.2.1** Refer **Section 7.6.1**.
	C 1.3 Refer **Section 7.6.1**.	**PS 1.3** Refer **Section 7.6.1**.	**MC 1.3.1** Refer **Section 7.6.1**.

7.8 Recovery Plan and Threat Abatement Assessment

As described in **Section 1.8.1.3**, NOPSEMA will not accept an EP that is inconsistent with a recovery plan or threat abatement plan for a listed threatened species or ecological community. This section describes the assessment Woodside has performed to demonstrate the Petroleum Activities Program is not inconsistent with any relevant recovery plans or threat abatement plans. For the purposes of this assessment, the relevant Part 13 statutory instruments (recovery plans and threat abatement plans) are:

- Recovery Plan for Marine Turtles in Australia 2017–2027 (Commonwealth of Australia, 2017)
- Conservation Management Plan for the Blue Whale 2015–2025 (Commonwealth of Australia, 2015a)
- Sawfishes and River Sharks Multispecies Recovery Plan (Commonwealth of Australia, 2015b)
- Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans 2018 (Commonwealth of Australia, 2018).

Table 7-4 lists the objective and (where relevant) the action areas of these plans, and also describes whether these objectives and action areas are applicable to government, the Titleholder or the Petroleum Activities Program. For those objectives and action areas applicable to the Petroleum Activities Program, the relevant actions of each plan have been identified, and an evaluation has been conducted as to whether impacts and risks resulting from the activity are not inconsistent with that action. The results of this assessment against relevant actions are presented in **Table 7-5**, **Table 7-6**, **Table 7-7** and **Table 7-8**.

Table 7-4: Identification of applicability of recovery plan and threat abatement plan objectives and action areas

EPBC Act Part 13 Statutory Instrument	Applicable to		
	Government	***Titleholder***	***Petroleum Activities Program***
Marine Turtle Recovery Plan			
Long-term Recovery Objective: Minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so they can be removed from the EPBC Act threatened species list	Y	Y	Y
Interim Recovery Objectives			
Current levels of legal and management protection for marine turtle species are maintained or improved, both domestically and throughout the migratory range of Australia's marine turtles	Y		
The management of marine turtles is supported	Y		
Anthropogenic threats are demonstrably minimised	Y	Y	Y
Trends in nesting numbers at index beaches and population demographics at important foraging grounds are described	Y	Y	
Action Areas			
A. Assessing and addressing threats			
A1. Maintain and improve efficacy of legal and management protection	Y		
A2. Adaptatively manage turtle stocks to reduce risk and build resilience to climate change and variability	Y		
A3. Reduce the impacts of marine debris	Y	Y	Y
A4. Minimise chemical and terrestrial discharge	Y	Y	
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	
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		

EPBC Act Part 13 Statutory Instrument	Applicable to		
	Government	***Titleholder***	***Petroleum Activities Program***
B. Enabling and measuring recovery			
B1. Determine trends in index beaches	Y	Y	
B2. Understand population demographics at key foraging grounds	Y		
B3. Address information gaps to better facilitate the recovery of marine turtle stocks	Y	Y	
Blue Whale Conservation Management Plan			
Long-term Recovery Objective: Minimise anthropogenic threats to allow for their conservation status to improve so they can be removed from the EPBC Act threatened species list	Y	Y	Y
Interim Recovery Objectives			
The conservation status of blue whale populations is assessed using efficient and robust methodology	Y		
The spatial and temporal distribution, identification of BIAs, and population structure of blue whales in Australian waters is described	Y	Y	Y
Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place	Y		
Anthropogenic threats are demonstrably minimised	Y	Y	Y
Action Areas			
A. Assessing and addressing threats			
A.1: Maintain and improve existing legal and management protection	Y		
A.2: Assess and address anthropogenic noise	Y	Y	
A.3: Understand impacts of climate variability and change	Y		
A.4: Minimise vessel collisions	Y	Y	
B. Enabling and Measuring Recovery			
B.1: Measure and monitor population recovery	Y		
B.2: Investigate population structure	Y		

EPBC Act Part 13 Statutory Instrument	Applicable to		
	Government	***Titleholder***	***Petroleum Activities Program***
B.3: Describe spatial and temporal distribution and define biologically important habitat	Y	Y	Y
Sawfish and River Sharks Recovery Plan			
Primary Objective			
Assist the recovery of sawfish and river sharks in Australian waters, with a view to: • improve the population status leading to the removal of the sawfish and river shark species from the threatened species list of the EPBC Act • ensure anthropogenic activities do not hinder recovery in the near future, or impact on the conservation status of the species in the future	Y	Y	Y
Specific Objectives			
Reduce and, where possible, eliminate adverse impacts of commercial fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate adverse impacts of recreational fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate adverse impacts of Indigenous fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate the impact of illegal, unregulated and unreported fishing on sawfish and river shark species	Y		
Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species	Y	Y	Y
Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species, noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life	Y	Y	Y
Reduce and, where possible, eliminate any adverse impacts of collection for public aquaria on sawfish and river shark species	Y		
Improve the information base to allow development of a quantitative framework to assess the recovery of, and inform management options for, sawfish and river shark species	Y		
Develop research programs to assist conservation of sawfish and river shark species	Y	Y	
Improve community understanding and awareness in relation to sawfish and river shark conservation and management	Y		

EPBC Act Part 13 Statutory Instrument	Applicable to		
	Government	***Titleholder***	***Petroleum Activities Program***
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 harmful marine debris	Y	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 7-5: Assessment against actions of the Marine Turtle Recovery Plan relevant to the Petroleum Activities Program

Part 13 Statutory Instrument	Relevant Action/Objective	Relevant Actions	Evaluation	EPO, Controls and EPS
Marine Turtle Recovery Plan	**Action Area A3**. Reduce the impacts of marine debris.	**Action:** Support the implementation of the Marine Debris Threat Abatement Plan. Priority actions at stock level: Green turtle – Manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to the survival. Hawksbill turtle – Unknown stock.	Refer to **Section 7.6.3**. **Not inconsistent assessment:** The assessment of the discharges to the marine environment considered the potential risks to marine turtles. Given the quantity of material released (iron and negligible quantities of Viton), the contribution of material from the wellheads as a threat to marine turtles is considered to be insignificant. Iron will settle in the vicinity of the wellheads and up to around 750 g of plastics will be released per wellhead, which will contribute to the overall microplastics in the ocean. The contribution of microplastics from the wellheads as a threat is considered insignificant in the context of other sources of microplastics in the ocean. Furthermore, plastics are expected to enter the marine environment over a long period of time (hundreds to thousands of years), reducing the concentration of plastics in the EMBA at any particular time. Leaving the wellheads *in situ* is not inconsistent with the recovery plan.	NA
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 7-6: Assessment against relevant actions of the Blue Whale Conservation Management Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and EPS
Blue Whale Conservation Management Plan	**Action Area B.3:** Describe spatial and temporal distribution and define biologically important habitat.	**Action 2:** Identify migratory pathways between breeding and feeding grounds. **Action 3:** Assess timing and residency within BIAs.	**Not inconsistent assessment:** Woodside contributes to Action Area B3 via its support of targeted research initiatives (for example, satellite tracking of pygmy blue whale migratory movements[7]).	NA
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.				

[7] 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

Table 7-7: Assessment against relevant actions of the Sawfish and River Shark Recovery Plan

Part 13 Statutory Instrument	Relevant Action Areas/Objectives	Relevant Actions	Evaluation	EPO, Controls and EPS
Sawfish and River Shark Recovery Plan	**Objective 5:** Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species.	**Action 5c:** Identify risks to important sawfish and river shark habitat and measures needed to reduce those risks.	Refer to **Section 7.6.3**. **Not inconsistent assessment:** The assessment of the discharges to the marine environment considered the potential risks to marine turtles. Given the quantity of material released (iron and negligible quantities of Teflon and Viton), the contribution of material from the wellheads as a threat to marine turtles is considered to be insignificant. Iron will settle in the vicinity of the wellheads and up to around 750 g of plastics will be released per wellhead, which will contribute to the overall microplastics in the ocean. The contribution of microplastics from the wellheads as a threat is considered insignificant in the context of other sources of microplastics in the ocean. Furthermore, plastics are expected to enter the marine environment over a long period of time (hundreds to thousands of years), reducing the concentration of plastics in the EMBA at any particular time. Leaving the wellheads *in situ* is not inconsistent with the recovery plan.	NA
	Objective 6: Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species.	**Action 6a:** Assess the impacts of marine debris, including ghost nets, fishing gear and plastics, on sawfish and river shark species.		NA
Assessment Summary The Sawfish and River Shark Recovery Plan has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

Table 7-8: Assessment against relevant actions of the Marine Debris Threat Abatement Plan

Part 13 Statutory Instrument	Relevant Action/Objective	Relevant Actions	Evaluation	EPO, Controls and EPS
Marine Debris Threat Abatement Plan	**Objective 2:** Understand the scale of marine plastic and microplastic impact on key species, ecological communities and locations.	**Action 2.04**: Build understanding related to plastic and microplastic pollution.	Refer to **Section 7.6.3**. **Not inconsistent assessment:** Given the quantity of material released (iron and negligible quantities of Viton or Teflon), the contribution of material from the wellheads as a threat to the marine environment is considered to be insignificant. Iron will settle in the vicinity of the wellheads and around 750 g of plastics will be released per wellhead, which will contribute to the overall microplastics in the ocean. The contribution of microplastics from the wellheads as a threat is considered to be insignificant in the context of other sources of microplastics in the ocean. Furthermore, plastics are expected to enter the marine environment over a very long period of time (hundreds to thousands of years), reducing the concentration of plastics in the EMBAs at any particular time. Leaving the wellheads *in situ* is not inconsistent with the threat abatement plan.	NA
Assessment Summary The Marine Debris Threat Abatement Plan has been considered during the assessment of impacts and risks, and the Petroleum Activities Program is not considered to be inconsistent with the relevant actions of this plan.				

8. IMPLEMENTATION STRATEGY

8.1 Overview

Regulation 14 of the OPGGS 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 EPSs outlined in this EP are achieved.

Woodside, as Operator, is responsible for ensuring the Petroleum Activities Program is managed in accordance with this Implementation Strategy and the WMS (see **Section 1.8**).

8.2 Systems, Practices and Procedures

All operational activities are planned and performed in accordance with relevant legislation and standards, management measures identified in this EP and internal environment standards and procedures (**Section 7**).

The systems, practices and procedures that will be implemented are listed in the EPSs contained in this EP. Document names and reference numbers may change during the statutory duration of this EP and is managed through a change register and update process.

8.3 Roles and Responsibilities

Key roles and responsibilities for Woodside and Contractor personnel relating to implementing, managing and reviewing this EP are described in **Table 8-1**.

Table 8-1: Roles and responsibilities

Title (role)	Responsibilities related to EP
Office-based Personnel	
Woodside Development Lead Decommissioning	Ensure activity performed as per this EP. Provide sufficient resources to implement the management measures (in other words, controls, EPOs, EPSs and MC) in this EP.
Woodside Environment Adviser Decommissioning	Track compliance with performance outcomes and performance standards as per the requirements of this EP. Assist with the review, investigation and reporting of environmental incidents. 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.
Woodside Corporate Affairs Adviser	Prepare and implement the Stakeholder Consultation Plan. Report on stakeholder consultation. Perform liaison as required by **Section 1.7** and controls C 1.1 and C 1.2.

8.4 Training and Competency

No field-based personnel will be involved in the Petroleum Activities Program; no training requirements specific to the Petroleum Activities Program are required.

8.4.1 Inductions

No field-based personnel will be involved in the Petroleum Activities Program; no inductions specific to the Petroleum Activities Program are required.

8.5 Monitoring, Auditing, Management of Nonconformance and Review

8.5.1 Monitoring

There are no field activities proposed within this EP. Once the EP has been accepted, Woodside will undertake post acceptance activities which includes collecting the relevant data, as outlined in the EPOs, EPSs and MCs in this EP. 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 the EPOs and EPSs are met, which will be summarised in the Environmental Performance Report (**Section 8.8.1.1**) and be used to support the End of Environment Plan notification (**Section 8.9**).

8.5.2 Auditing

Environmental performance auditing will be conducted to confirm compliance with the Performance Outcomes, Controls and Standards detailed in this EP. Non-conformances identified will be reported and/or tracked in accordance with **Section 8.5.3.**

8.5.3 Management of Non-conformance

An internal computerised database called First Priority is used to record and report incidents. First Priority allows for details of an event, action taken to control the situation, investigation outcomes and corrective actions to be recorded. The system also allows for corrective actions to be monitored and closed out in a timely manner.

Woodside uses a consequence matrix for classification of environmental incidents, with the significant event categories being A, B and C (as detailed in Section **2.7**). Detailed investigations are completed for all categories A, B, C and high potential environmental incidents.

8.6 Environment Plan Management of Change and Revision

Changes are managed in accordance with Woodside's Environmental Approval Requirements Australia Commonwealth Guideline. There are no field activities proposed within this EP. The activity will end upon completion of post acceptance requirements described in **Sections 7** and **8** of this EP. Given there are no field activities, management of change may relate to potential new advice from external stakeholders (**Section 5**).

The provisions set out in Regulation 17 of the Regulations will be followed for revision of this Environment Plan.

8.7 Record Keeping

Compliance records (outlined in MC in **Section 7**) will be maintained.

8.8 Reporting

To meet the EPOs and EPSs outlined in this EP, Woodside reports at a number of levels, as outlined in the next subsections.

8.8.1 Routine Reporting

8.8.1.1 Environmental Performance Review and Reporting

In accordance with applicable environmental legislation for the activity, Woodside is required to report information on environmental performance to the appropriate regulator during the life of the EP. Regulatory reporting requirements are summarised in **Table 8-2**.

Table 8-2: Routine external reporting requirements

Report	Recipient	Frequency	Content
Environmental Performance Report	NOPSEMA	The report will be submitted within four months of acceptance of the EP (as per the requirements of Regulation 14(2)). One report will be submitted to close the EP, in accordance with Regulation 25A.	In accordance with the Environment Regulations, the report will address compliance with EPOs, EPSs and controls outlined in this EP.

8.9 End of the Environment Plan

The EP will end when Woodside notifies NOPSEMA that the obligations identified in this EP have been completed, and NOPSEMA has accepted the notification, in accordance with Regulation 25A of the Environment Regulations. The End of Environment Plan notification will occur following the submission of the Environmental Performance Report (**Section 8.8.1.1**). The timing of this End of Environment Plan notification is outlined in **Section 4.5**.

8.9.1 Incident Reporting (Internal)

It is the Woodside Decommissioning Environment Adviser's responsibility to ensure reporting of environmental incidents meets Woodside's and regulatory reporting requirements, as detailed in the Woodside Health, Safety and Environment Event Reporting and Investigation Procedure and this section of this EP.

8.9.2 Incident Reporting (External) – Reportable and Recordable

8.9.2.1 Reportable Incidents

Definition

A reportable incident is defined under Regulation 4 of the OPGGS 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 **Table 2-3**]).
- 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 **Table 2-3**]).

There are no field activities proposed within this EP. The environmental risk assessment (**Section 7**) for the Petroleum Activities Program does not identify any risks with a potential consequence level of C+ for environment. Additionally, there is no credible hydrocarbon spill for this activity. Should an unexpected event occur during the life of the EP that is classified as a reportable incident, it would be reported as below.

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 that occur during the life of the EP, according to the requirements of Regulations 26, 26A and 26AA of the Environment Regulations. Woodside will:

- report all reportable incidents to the regulator (orally) as soon as practicable, but within two hours of the incident or of its detection by Woodside
- provide a written record of the reported incident to NOPSEMA, National Offshore Petroleum Titles Administrator and the Department of the Responsible State Minister (Department of Mines, Industry Regulation and Safety) as soon as practicable after the oral reporting of the incident
- complete a written report for all reportable incidents using a format consistent with the NOPSEMA Form FM0929 – Reportable Environment Incident (**Appendix F**), which must be submitted to NOPSEMA as soon as practicable but within three days of the incident or of its detection by Woodside
- provide a copy of the written report to National Offshore Petroleum Titles Administrator and Department of Mines, Industry Regulation and Safety, within seven days of the written report being provided to NOPSEMA.

8.9.2.2 Recordable Incidents

Definition

A recordable incident as defined under Regulation 4 of the OPGGS Environment Regulations as 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 Regulations 26, 26B and 26AA of the Environment Regulations. Woodside will document:

- 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.

8.10 Emergency Preparedness and Response

Under Regulation 14(8), the Implementation Strategy must contain an oil pollution emergency plan 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.

As there is no credible hydrocarbon spill risk for this Petroleum Activities Program (**Section 7.5.4**), no OPEP has been developed for inclusion in the Implementation Strategy.

9. REFERENCE LIST

Australian Maritime College [AMC], 2022. Wellhead Snagging Risk Assessment, Browse Wellheads. AMC Search, Launceston, Tasmania.

Brewer, DT, Lyne, V, Skewes, TD & Rothlisberg P, 2007. Trophic systems of the North West Marine Region., Report to the Australian Government Department of the Environment and Water Resources, CSIRO, Cleveland.

Caddy, 2014. Why do assessments of demersal stocks largely ignore habitat?, *ICES Journal of Marine Science*, Volume 71, Issue 8, Pages 2114–2126.

Chevron Australia Pty Ltd, 2015. Gorgon gas development and Jansz feed gas pipeline: Long-term marine turtle management plan (No. G1- NT-PLNX0000296). Chevron Australia Pty Ltd, Perth.

Commonwealth of Australia, 2006. A Guide to the Integrated Marine and Coastal Regionalisation of Australia Version 4.0. Department of the Environment and Heritage, Canberra, Australia.

Commonwealth of Australia, 2017. Recovery Plan for Marine Turtles in Australia 2017–2027.

Commonwealth of Australia, 2014. Strategic Assessment of the environmental management authorisation process for petroleum and greenhouse gas storage activities administered by the National Offshore Petroleum Safety and Environmental Management Authority under the Offshore Petroleum and Greenhouse Gas Storage Act 2006. Program Report.

Commonwealth of Australia, 2017. Recovery Plan for Marine Turtles in Australia 2017–2027. Department of the Environment and Energy, Canberra.

Commonwealth of Australia, 2018. Threat Abatement Plan for the Impacts of Marine Debris on the Vertebrate Wildlife of Australia's Coasts and Oceans

Cummings, D.O., Lee, R.W., Simpson, S.J., Booth, D.J., Pile, A.J. and Holmes, S.P., 2011. Resource partitioning amongst co-occurring decapods on wellheads from Australia's North-West shelf. An analysis of carbon and nitrogen stable isotopes. J. Exp. Mar. Biol. Ecol. 409, 186–193.

Currie, D.R. and Wards, T.M., 2009. South Australian Giant Crab (*Pseudocarcinus gigas*) Fishery. Fishery Assessment Report for PIRSA. South Australian Research and Development Institute (Aquatic Sciences), Adelaide. SARDI Publication No. F2007/000698-2.

DAWE, 2020. Assessment of the Northern West Slope Trawl and Western Deepwater Trawl Fisheries. Retrieved from Assessment of the North West Slope Trawl and Western Deepwater Trawl Fisheries (environment.gov.au) on 11 June 2021.

[DISER] Department of Industry, Science, Energy and Resources, 2018. Offshore Petroleum Decommissioning Guidelines. DISER, Australia.

DPIRD, 2021. Data provided by the Department of Primary Industries and Regional Development, 20 April 2021.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC), 2012a. The North-West Marine Bioregional Plan: Bioregional Profile. Available at https://parksaustralia.gov.au/marine/management/resources/scientific-publications/north-west-marine-bioregional-plan-bioregional-profile-description-ecosystems-conservation/. Accessed 04 Dec 2019.

Environment Australia, 2002. Ningaloo marine park (Commonwealth waters) management plan. Environment Australia, Canberra.

Fowler, A. and Booth, D.J., (2012). 'Evidence of sustained populations of a small reef fish on artificial structures. Does depth affect production on artificial reefs?' Journal of Fish Biology, vol. 80, no. 3, pp. 613–629.

Fowler, A.M, Macreadie, P.I, Bishop, P.D, and Booth, D.J., 2015. 'Using otolith microchemistry and shape to assess the habitat value of oil structures for reef fish' Marine Environmental Research, Volume 106, pp. 102–113.

Fugro Survey Pty Ltd., 2006. Browse Basin Survey Results. Offshore Geophysical Surveys, Volume 2A.

Froese R, Pauly D, 2000. FishBase. (www.fishbase.org). Accessed 01 March 2022).

Gardline Marine Services Pty Ltd, 2009. Browse LNG Development Environmental Survey June to July 2009 Environmental Baseline Report.

Grimwood, M.J. and Dixon, E., 1997. Assessment of risks posed by List II metals to Sensitive Marine Areas (SMAs) and adequacy of existing environmental quality standards (EQSs) for SMA protection. Report to English Nature.

Heyward, A. and Rees, M., 2001. Enfield/Laverda ROV-based deepwater benthos survey. Australian Institute of Marine Science, Townsville.

Jenner, K., Jenner, M. and McCabe, K., 2001. Geographical and temporal movements of humpback whales in Western Australian waters. APPEA Journal 41, 692–707.

Lewis and Pagano, 2015. Monitoring of the southwest artificial reef trial in 2013 and 2014. In: Status Reports of the Fisheries and Aquatic Resources of Western Australia 2014–15.

McCauley, R. and Jenner, C., 2001. The underwater acoustic environment in the vicinity of Vincent and Enfield petroleum leases, North West Cape, Exmouth WA (Report No. R2001-22). Centre for Marine Science and Technology, Curtin University of Technology, Perth.

McCauley, R. and Jenner, C., 2010. Migratory patterns and estimated population size of pygmy blue whales (*Balaenoptera musculus brevicauda*) traversing the Western Australian coast based on passive acoustics (International Whaling Commission Report No. SC/62/SH26). International Whaling Commission.

McCauley, R. and Duncan, A., 2011. Sea noise logger deployment, Wheatstone and Onslow, April 2009 to November 2010 (Technical Report No. R2011-23). Centre for Marine Science and Technology, Curtin University of Technology, Perth.

McLean *et al*., 2018a. Fish and habitats on wellhead infrastructure on the north west shelf of Western Australia Continental Shelf Research 164: 10–27.

McLean *et al*., 2018b. *Fish-habitat associations on exploration and production wellheads, North-west Shelf*. June 2018, Version 3, 46 pages.

Melchers, R.E., 2005. Effect of Immersion Depth on Marine Corrosion of Mild Steele. Corrosion Science Section NACE International.

[NOPSEMA] National Offshore Petroleum Safety and Environmental Management Authority, 2014. Notification and reporting of environmental incidents (Guidance Note No. N-03000-GN0926 Rev 4). National Offshore Petroleum Safety and Environmental Management Authority, Perth.

Oil and Gas UK, 2014. Guidance on risk-related decision making (Issue No. 2). United Kingdom Offshore Operators Association, London.

Oil and Gas UK, 2018. Well Decommissioning Guidelines (Issue No.6). United Kingdom Offshore Operators Association, London.

Patterson, H., Larcombe, J., Woodhams, J. and Curtotti, R., 2020. Fishery status reports 2020, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra. CC BY 4.0.

Pradella, N., Fowler, A.M., Booth, D.J., Macreadie, P.I., 2014. Fish assemblages associated with oil industry structures on the continental shelf of north-western Australia: FISH ASSEMBLAGES ON OIL INDUSTRY STRUCTURES. Journal of Fish Biology 84, 247–255. doi:10.1111/jfb.12274.

Rouse *et al*., 2020. Commercial fisheries losses arising from interactions with offshore pipelines and other oil and gas infrastructure and activities. *ICES Journal of Marine Science*, Volume 77, Issue 3, May–June 2020, pp. 1148–1156.

Smiley, B.D., 2006. The intentional scuttling of surplus and derelict vessels: Some effects on marine biota and their habitats in British Columbia waters, 2002. Canadian Science Advisory Secretariat Research Document 2006/059.

Smith, K.D., Hall, N.G., de Lestang, S. and Potter, I.C., 2004. Potential bias in estimates of the size of maturity of crabs derived from trap samples. ICES. Journal of Marine Science 61: 906-912.

Thums, M., Ferreira, L.C., Jenner, C., Jenner, M., Harris, D., Davenport, A., Andrews-Goff, V., Double, M., Möller, L., Attard, C.R.M, Bilgmann, K., Thomson, P.G. and McCauley, R., 2022. Pygmy blue whale movement, distribution and important areas in the Eastern Indian Ocean. Global Ecology and Conservation. Volume 35.

Waayers, D., Smith, L. and Malseed, B., 2011. Inter-nesting distribution of green turtles (*Chelonia mydas*) and flatback turtles (*Natator depressus*) at the Lacepede Islands, Western Australia. Journal of the Royal Society of Western Australia 94, 359–364.

Wallner, B. G. and Phillips, B.F., 1995. Development of a trawl fishery for deepwater metanephropid lobsters off the northwest continental slope of Australia: designing a management strategy compatible with species life history. ICES Journal of Marine Science. 199: 379–390.

10. GLOSSARY AND ABBREVIATIONS

10.1 Glossary

Term	Meaning
(the) Regulator	The Government Agency (State or Commonwealth) that is the decision-maker for approvals and undertakes ongoing regulation of the approval once granted.
3D seismic data	A set of numerous closely spaced seismic lines that provide a high spatially sampled measure of subsurface reflectivity and 3D image.
Acceptability	The EP must demonstrate that the environmental impacts and risks of an activity will be of an acceptable level as per Regulation 10A(c).
ALARP	A legal term in Australian safety legislation, it is taken here to mean that all contributory elements and stakeholders have been considered by assessment of costs and benefits, and which identifies a preferred course of action.
API (gravity)	A measure of how heavy or light a petroleum liquid is compared to water.
Australian Standard	An Australian Standard that provides criteria and guidance on design, materials, fabrication, installation, testing, commissioning, operation, maintenance, re-qualification and abandonment.
Ballast	Extra weight taken on to increase a ship's stability to prevent rolling and pitching. Most ships use seawater as ballast. Empty tank space is filled with inert (non-combustible) gas to prevent the possibility of fire or explosion.
Bathymetry	Related to water depth, a bathymetry map shows the depth of water at a given location on the map.
Benthos/Benthic	Relating to the seabed, and includes organisms living in or on sediments/rocks on the seabed.
Biodiversity	Relates to the level of biological diversity of the environment. The EPBC Act defines biodiversity as: 'the variability among living organisms from all sources (including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part) and includes: (a) diversity within species and between species; and (b) diversity of ecosystems'.
Biota	The animal and plant life of a particular region, habitat or geological period.
Cetacean	Whale and dolphin species.
Consequence	The worst-case credible outcome associated with the selected event, assuming some controls (prevention and mitigation) have failed. Where more than one impact applies (such as environmental and legal/compliance), the consequence level for the highest severity impact is selected.
Corals	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 which have a hard external skeleton (shell), segmented bodies, with a pair of often very modified appendages on each segment, and two pairs of antennae (such as 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 – this is 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 1μPa^2.s	Normal unit for sound exposure level.
Demersal	Living close to the floor of the sea (typically of fish).
Drill casing	Tubing that is set inside the drilled well to protect and support the well stream.
Drilling fluids	The main functions of drilling fluids include providing hydrostatic pressure to prevent formation fluids from entering into the well bore, keeping the drill bit cool and clean during drilling, carrying out drilled cement, and suspending the drilled cement while drilling is paused and when the drilling assembly is brought in and out of the hole. The drilling fluid used for a particular job is selected to avoid formation damage and to limit corrosion. The three main categories of drilling fluids are water-based muds (which can be dispersed and non-dispersed), non-aqueous muds, usually called oil-based mud, and gaseous drilling fluid, in which a wide range of gases can be used.
DRIMS	Woodside's internal document management system.
Dynamic positioning	Refers 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 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 Plan	Prepared in accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009, which must be assessed and accepted by the Designated Authority (NOPSEMA) before any petroleum-related activity can be performed.
Environment Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Commonwealth).
Environmental approval	The action of approving something that 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*).
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.

Term	Meaning
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.
Habitat Critical	Species or habitats identified as habitat critical to the survival of the species.
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 Environmental Management System) for controlling and improving a company's environmental performance. An Environmental Management System 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 which 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.
S-BRUVS	Stereo-baited remote underwater video systems.
Sessile	Organism that is fixed in one place; immobile.
Syngnathids	Family of fish that 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.
The Program	Streamlining Offshore Petroleum Environmental Approvals Program.
Thermocline	A temperature gradient in a thermally stratified body of water.

Term	Meaning
Zooplankton	Plankton consisting of small animals and the immature stages of larger animals.

10.2 Abbreviations

Abbreviation	Meaning
µm	micrometre
AHO	Australian Hydrographic Office
ALARP	as low as reasonably practicable
AMP	Australian Marine Park
API	American Petroleum Institute
APPEA	Australian Petroleum Production and Exploration Association
AS (NZS)	Australian Standard (New Zealand Standard)
bbl	oil barrel
BIA	biologically important area
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CV	company values
DAWE	Department of Agriculture, Water and Environment
dB	decibel
DISER	Department of Industry Science, Energy and Resources
DP	dynamic positioning
DPIRD	Department of Primary Industries and Regional Development
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
EC_{50}	half maximal effective concentration
EMBA	environment that may be affected
ENVID	environmental hazard identification
EP	Environment Plan
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPO	environmental performance outcome
EPS	environmental performance standard
ESD	ecologically sustainable development
g/m^2	grams per square metre
GP	good practice
GPS	global positioning system
HS	health and safety
HSE	health, safety and environment
HZ	hertz
IC_{50}	half maximal inhibitory concentration
IMO	International Marine Organization
IMS	invasive marine species

Abbreviation	Meaning
KEF	key ecological feature
kHz	kilohertz
km	kilometre
kPa	kilopascal
KPI	key performance indicator
L	litre
LC_{50}	lethal concentration, 50%
LCS	legislation, codes and standards
LNG	liquefied natural gas
MC	measurement criteria
MMscf	million standard cubic feet
MNES	matters of national environmental significance
ms^{-1}	metres per second
NCDSF	North Coast Demersal Scalefish Fishery
NDSMF	Northern Demersal Scalefish Managed Fishery
nm	nautical mile (1,852 m) a unit of distance on the sea
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
NWMR	North-west Marine Region
NWP	Northwest Province
NWS	North West Shelf
NWSTF	North West Slope Trawl Fishery
OCNS	Offshore Chemical Notification Scheme
OPEP	Oil Pollution Emergency Plan
OPGGS Act	*Offshore Petroleum and Greenhouse Gas Storage Act*
OSPAR	Oslo and Paris Commission for the Convention for the Protection of the Marine Environment of the North-East Atlantic
Permit Area	petroleum activities area
PJ	professional judgement
PLONOR	OSPAR definition of a substance that poses little or no risk to the environment
PMST	Protected Matters Search Tool
ppb	parts per billion
ppm	parts per million
psi	pounds per square inch
RBA	risk-based analysis
ROV	remotely operated vehicle
SV	societal values
UK	United Kingdom
WA	Western Australia
WAFIC	Western Australian Fishing Industry Council
WBM	water-based mud

Abbreviation	Meaning
WHA	World Heritage Area
WMS	Woodside Management System
Woodside	Woodside Energy Ltd
WCDSCMF	West Coast Deep Sea Crustacean Managed Fishery

APPENDIX A: ENVIRONMENT AND RISK MANAGEMENT POLICIES

WOODSIDE POLICY

Woodside

Health, Safety and Environment Policy

OBJECTIVES

Strong health, safety and environment (HSE) performance is essential for the success and growth of our business. Our aim is to be recognised as an industry leader in HSE through managing our activities in a sustainable manner with respect to our workforce, our communities and the environment.

At Woodside we believe that process and personal safety related incidents, and occupational illnesses, are preventable. We are committed to managing our activities to minimise adverse health, safety or environmental impacts.

PRINCIPLES

Woodside will achieve this by:

- implementing a systematic approach to HSE risk management
- complying with relevant laws and regulations and applying responsible standards where laws do not exist
- setting, measuring and reviewing objectives and targets that will drive continuous improvement in HSE performance
- embedding HSE considerations in our business planning and decision-making processes
- integrating HSE requirements when designing, purchasing, constructing and modifying equipment and facilities
- maintaining a culture in which everybody is aware of their HSE obligations and feels empowered to speak up and intervene on HSE issues
- undertaking and supporting research to improve our understanding of HSE and using science to support impact assessments and evidence-based decision making
- taking a collaborative and pro-active approach with our stakeholders
- requiring contractors to comply with our HSE expectations in a mutually beneficial manner
- publicly reporting on HSE performance

APPLICATION

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.

Updated by the Board in April 2021

APPROVED

WOODSIDE POLICY

Woodside

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.

APPLICATION

The Managing Director of Woodside is accountable to the Board of Directors for ensuring this policy is effectively implemented.

Managers are responsible for promoting and applying the Risk Management Policy. Responsibility for the effective application of this policy rests with all Woodside employees, contractors and joint venturers engaged in activities under Woodside operational control.

This policy will be reviewed regularly and updated as required.

Revised by the Woodside Petroleum Ltd Board on 4 December 2020.

APPENDIX B: RELEVANT REQUIREMENTS

This appendix refers to Commonwealth Legislation related to the project. Western Australian State Legislation relevant to an accidental release of hydrocarbons in WA State waters is outlined in the Julimar Phase 2 Drilling and Subsea Installation Oil Pollution Emergency Plan.

Commonwealth Legislation	Legislation Summary
Air Navigation Act 1920 • *Air Navigation Regulations 1947* • *Air Navigation (Aerodrome Flight* • *Corridors) Regulations 1994* • *Air Navigation (Aircraft Engine* • *Emissions) Regulations 1995* • *Air Navigation (Aircraft Noise)* • *Regulations 1984* • *Air Navigation (Fuel Spillage) Regulations 1999*	This Act relates to the management of air navigation.
Australian Maritime Safety Authority Act 1990	This Act establishes a legal framework for the Australian Maritime Safety Authority (AMSA), which represents the Australian Government and international forums in the development, implementation and enforcement of international standards including those governing ship safety and marine environment protection. AMSA is responsible for administering the Marine Orders in Commonwealth waters.
Australian Radiation Protection and Nuclear Safety Act 1998	This Act relates to the protection of the health and safety of people, and the protection of the environment from the harmful effects of radiation.
Biosecurity Act 2015 • *Quarantine Regulations 2000* • *Biosecurity Regulation 2016* • *Australian Ballast Water Management Requirements 2017*	This Act provides the Commonwealth with powers to take measures of quarantine, and implement related programs as are necessary, to prevent the introduction of any plant, animal, organism or matter that could contain anything that could threaten Australia's native flora and fauna or natural environment. The Commonwealth's powers include powers of entry, seizure, detention and disposal. This Act includes mandatory controls on the use of seawater as ballast in ships and the declaration of sea vessels voyaging out of and into Commonwealth waters. The Regulations stipulate that all information regarding the voyage of the vessel and the ballast water is declared correctly to the quarantine officers.
Environment Protection and Biodiversity Conservation Act 1999 • *Environment Protection and Biodiversity Conservation Regulations 2000*	This Act protects matters of national environmental significance (NES). It streamlines the national environmental assessment and approvals process, protects Australian biodiversity and integrates management of important natural and culturally significant places. Under this Act, actions that may be likely to have a significant impact on matters of NES must be referred to the Commonwealth Environment Minister.
Environment Protection (Sea Dumping) Act 1981 • *Environment Protection (Sea Dumping) Regulations 1983*	This Act provides for the protection of the environment by regulating dumping matter into the sea, incineration of waste at sea and placement of artificial reefs.
Industrial Chemicals (Notification and Assessment Act) 1989 • *Industrial Chemicals (Notification and Assessment) Regulations 1990*	This Act creates a national register of industrial chemicals. The Act also provides for restrictions on the use of certain chemicals which could have harmful effects on the environment or health.

Commonwealth Legislation	Legislation Summary
National Environment Protection Measures (Implementation) Act 1998 • *National Environment Protection Measures (Implementation) Regulations 1999*	This Act and Regulations provide for the implementation of National Environment Protection Measures (NEPMs) to protect, restore and enhance the quality of the environment in Australia and ensure that the community has access to relevant and meaningful information about pollution. The National Environment Protection Council has made NEPMs relating to ambient air quality, the movement of controlled waste between states and territories, the national pollutant inventory, and used packaging materials.
National Greenhouse and Energy Reporting Act 2007 • *National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015*	This Act and associated Rule establishes the legislative framework for the NGER scheme for reporting greenhouse gas emissions and energy consumption and production by corporations in Australia.
Navigation Act 2012 • *Marine order 12 – Construction – subdivision and stability, machinery and electrical installations* • *Marine order 30 - Prevention of collisions* • *Marine order 47 - Mobile offshore drilling units* • *Marine order 57 - Helicopter operations* • *Marine order 60 - Floating offshore facilities* • *Marine order 91 - Marine pollution prevention—oil* • *Marine order 93 - Marine pollution prevention—noxious liquid substances* • *Marine order 94 - Marine pollution prevention—packaged harmful substances* • *Marine order 96 - Marine pollution prevention—sewage* • *Marine order 97 - Marine pollution prevention—air pollution*	This Act regulates navigation and shipping including Safety of Life at Sea (SOLAS). The Act will apply to some activities of the MODU and project vessels. This Act is the primary legislation that regulates ship and seafarer safety, shipboard aspects of marine environment protection and pollution prevention.
Offshore Petroleum and Greenhouse Gas Storage Act 2006 • *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* • *Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011* • *Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009*	This Act is the principal Act governing offshore petroleum exploration and production in Commonwealth waters. Specific environmental, resource management and safety obligations are set out in the Regulations listed.
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 • *Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995*	This Act provides for measures to protect ozone in the atmosphere by controlling and ultimately reducing the manufacture, import and export of ozone depleting substances (ODS) and synthetic greenhouse gases, and replacing them with suitable alternatives. The Act will only apply to Woodside if it manufactures, imports or exports ozone depleting substances.

Commonwealth Legislation	Legislation Summary
Protection of the Sea (Powers of Intervention) Act 1981	This Act authorises the Commonwealth to take measures for the purpose of protecting the sea from pollution by oil and other noxious substances discharged from ships and provides legal immunity for persons acting under an AMSA direction.
Protection of the Sea (Prevention of Pollution from Ships) Act 1983 *Protection of the Sea (Prevention of Pollution from Ships) (Orders) Regulations 1994* • *Marine order 91 - Marine pollution prevention—oil* • *Marine order 93 - Marine pollution prevention—noxious liquid substances* • *Marine order 94 - Marine pollution prevention—packaged harmful substances* • *Marine order 95 - Marine pollution prevention—garbage* • *Marine order 96 - Marine pollution prevention—sewage* *Maritime Legislation Amendment (Prevention of Air Pollution from Ships) Act 2007* MARPOL Convention	This Act relates to the protection of the sea from pollution by oil and other harmful substances discharged from ships. Under this Act, discharge of oil or other harmful substances from ships into the sea is an offence. There is also a requirement to keep records of the ships dealing with such substances. The Act applies to all Australian ships, regardless of their location. It applies to foreign ships operating between 3 nautical miles (nm) off the coast out to the end of the Australian Exclusive Economic Zone (200 nm). It also applies within the 3 nm of the coast where the State/Northern Territory does not have complementary legislation. All the Marine Orders listed, except for Marine Order 95, are enacted under both the *Navigation Act 2012* and the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. This Act is an amendment to the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983*. This amended Act provides the protection of the sea from pollution by oil and other harmful substances discharged from ships.
Protection of the Sea (Harmful Antifouling Systems) Act 2006 • *Marine order 98—(Marine pollution prevention—anti-fouling systems)*	This Act relates to the protection of the sea from the effects of harmful anti-fouling systems. It prohibits the application or reapplication of harmful anti-fouling compounds on Australian ships or foreign ships that are in an Australian shipping facility.

APPENDIX C: PROTECTED MATTERS SEARCH

Australian Government

Department of Agriculture, Water and the Environment

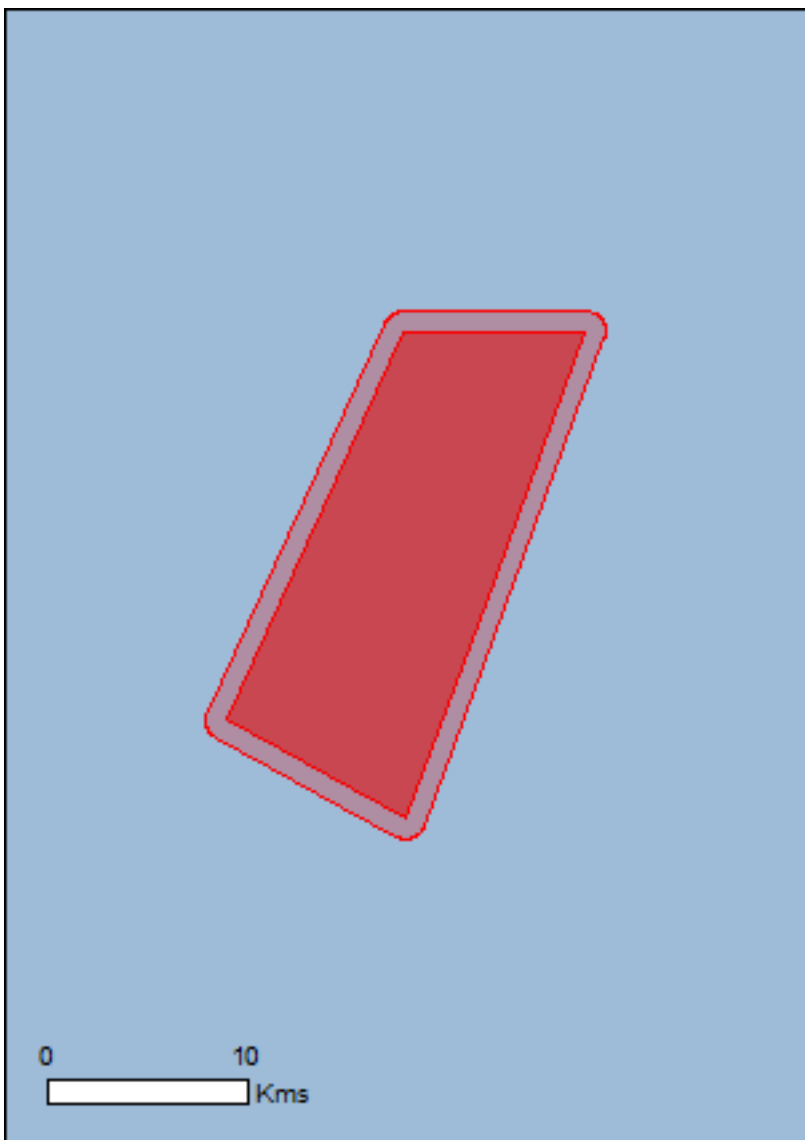
EPBC Act Protected Matters Report

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: 01/02/22 11:52:48



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:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	17
Listed Migratory Species:	31

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:	57
Whales and Other Cetaceans:	22
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	None
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	1

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

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 Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	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
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
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
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur

Name	Status	Type of Presence within area
Reptiles		
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 known 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 known to occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat likely to occur within area
Sharks		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may 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 may 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 likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	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

Name	Threatened	Type of Presence
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely 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 likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat 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	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 may occur within area
Megaptera novaeangliae Humpback Whale [38]	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
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
Rhincodon typus Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
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

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		
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
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	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
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 likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
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
Fish		
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 intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
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

Name	Threatened	Type of Presence
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 histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
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 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

Name	Threatened	Type of Presence
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 known 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
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	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]
Name	Status	Type of Presence
Mammals		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species

Name	Status	Type of Presence
		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
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
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 (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Extra Information

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
Continental Slope Demersal Fish Communities	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

-14.36275 121.6594,-14.57396 121.57888,-14.53107 121.49816,-14.36275 121.57773,-14.36275 121.6594

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:

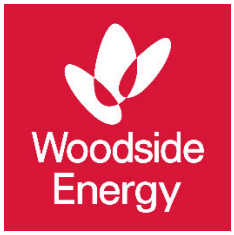
-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, 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.

Department of Agriculture Water and the Environment
GPO Box 858
Canberra City ACT 2601 Australia
+61 2 6274 1111

APPENDIX D: STAKEHOLDER CONSULTATION



Browse Commonwealth Wellhead Decommissioning Environment Plan

Date: June 2022

Revision: 0

TABLE OF CONTENTS

1. Consultation

1.1 Email sent to the following relevant persons (22 February 2022)

- *DISER*
- *DBCA*
- *DMIRS*
- *APPEA*
- *Recfishwest*
- *Marine Tourism WA*
- *WA Game Fishing Association*
- *Kimberley Development Commission*
- *Broome Chamber of Commerce and Industry*
- *Shire of Broome*
- *Kimberley Marine Tourism Association*
- *Regional Development Australia – Kimberley*
- *Environs Kimberley*

Dear Stakeholder

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our website.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth

Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	
Summary	Wellhead to be left *in situ*			
Location	~430 km north of Broome			
Approximate water depth (m)	~442 m	~481 m	~50 m	
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			

Feedback:

If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.2 Letter sent to Broome Charter Boat, Tourism and Dive Operators (22 February 2022)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Ltd.
ACN 005 482 986
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T +61 8 9348 4000
F +61 8 9214 2777
www.woodside.com.au

22 February 2022

Dear Stakeholder

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our website.

Please also see attached Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	

Summary	Wellhead to be left *in situ*		
Location	~430 km north of Broome		
Approximate water depth (m)	~442 m	~481 m	~50 m
Schedule	No field activities - wellhead to be left *in situ*		
Duration	No field activities - wellhead to be left *in situ*		
Exclusionary/Cautionary Zone	None		
Vessels	Not required		

Feedback:
If you have any feedback on these activities, please respond to Woodside at:
Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

Woodside Feedback

Woodside Energy Ltd.
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com.au

Attached: Consultation Information Sheet, Historical Exploration Wellhead Decommissioning Information Sheet

1.3 Email sent to Australian Fisheries Management Association (AFMA) (22 February 2022)

Dear AFMA

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our website), and a map of Commonwealth fisheries is attached.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			

Exploration wellhead activities - State			
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**
Summary	Wellhead to be left *in situ*		
Location	~430 km north of Broome		
Approximate water depth (m)	~442 m	~481 m	~50 m
Schedule	No field activities - wellhead to be left *in situ*		
Duration	No field activities - wellhead to be left *in situ*		
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery		
Exclusionary/Cautionary Zone	None		
Vessels	Not required		

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5
Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Commercial fishing implications:

Woodside has assessed potential impacts for commercial fisheries based on Fishcube, ABARES data, fishing methods and water depth. We note there are four overlapping Commonwealth managed fisheries, three of which, listed below, have not been active in the area in recent years and are not considered relevant given fishing methods and species targeted.

- Southern Bluefin Tuna Fishery
- Western Tuna and Billfish Fishery
- Western Skipjack Fishery

Woodside has provided information to the fishery's representative organisation 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.

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk	Risk Description	Mitigation And / Or Management Measures
Planned		
Physical presence of infrastructure	Physical presence of infrastructure on seafloor causing interference or displacement	Wellhead location marked on marine charts

Feedback:
If you have any feedback on these activities, please respond to Woodside at:
Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.4 Email sent to Australian Hydrographic Office and Australian Maritime Safety Office – Marine Safety (22 February 2022)

Dear AHO / AMSA

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

An information sheet (also on our website), and shipping lane map is attached.
Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	
Summary	Wellhead to be left *in situ*			
Location	~430 km north of Broome			
Approximate water depth (m)	~442 m	~481 m	~50 m	
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R

Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5
Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Feedback:
If you have any feedback on these activities, please respond to Woodside at:
Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.5 Email sent to Department of Agriculture, Water and the Environment (DAWE) – Fisheries (22 February 2022)

Dear DAWE

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our website), and a map of Commonwealth fisheries is attached.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			

Exploration wellhead activities - State			
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**
Summary	Wellhead to be left *in situ*		
Location	~430 km north of Broome		
Approximate water depth (m)	~442 m	~481 m	~50 m
Schedule	No field activities - wellhead to be left *in situ*		
Duration	No field activities - wellhead to be left *in situ*		
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery		
Exclusionary/Cautionary Zone	None		
Vessels	Not required		

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5
Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Commercial fishing implications:

Woodside has assessed potential impacts for commercial fisheries based on Fishcube, ABARES data, fishing methods and water depth. We note there are four overlapping Commonwealth managed fisheries, three of which, listed below, have not been active in the area in recent years and are not considered relevant given fishing methods and species targeted.

- Southern Bluefin Tuna Fishery
- Western Tuna and Billfish Fishery
- Western Skipjack Fishery

Woodside has provided information to the fishery's representative organisation 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.

Biosecurity:

With respect to the biosecurity matters, please note the following information below:

Environment description:

The four Commonwealth wells are located around 22 km south-west of the Scott Reef Nature Reserve (State) from the closest wellhead (Brecknock-4) and around 47 km north of the Kimberly Australian Marine Park – Multiple Use Zone (Clth) from the closest wellhead (Calliance-2) and around 125 km east of the Argo-Rowley Terrace Australian Marine Park – Multiple Use Zone (Clth) from the closest wellhead (Calliance-3). The wells are located in a water depth of approximately 501 m – 677 m.

The three State wells are located approximately 4 km east of the Scott Reef Nature Reserve (State) from the closest wellhead (Scott Reef-1), approximately 102 km north of the Kimberly Australian Marine Park – Multiple Use Zone (Clth) from the closest wellhead (Scott Reef-1) and approximately 160 km east of the Argo-Rowley Terrace Australian Marine Park – Multiple Use Zone (Clth) from Scott Reef-1. The wells are located in a water depth of approximately 50 m –

483 m.

The seven wells (total) are proposed to be left *in situ*. Seabed in the immediate vicinity of the wells is comprised of soft sediments. However, the wells overlap habitats which are considered key values to AMPs, including the Seringapatam Reef and Commonwealth Waters in the Scott Reef Complex KEF. The wellheads are also adjacent to Continental Slope Demersal Fish Communities KEF.

Potential IMS risk

No credible IMS risk given the wellheads are proposed to be left *in situ*.

Feedback:

If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.6 Email sent to Director of National Parks (22 February 2022)

Dear Director of National Parks

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

We note Australian Government Guidance on consultation activities and confirm that:

- The proposed activities are outside the boundaries of a proclaimed Australian Marine Parks, with the Commonwealth wellheads located approximately 22 km south-west of the Scott Reef Nature Reserve (State) from the closest wellhead (Brecknock-4), approximately 47 km north of the Kimberly Australian Marine Park – Multiple Use Zone (Clth) from the closest wellhead (Calliance-2) and approximately 125 km east of the Argo-Rowley Terrace Australian Marine Park – Multiple Use Zone (Clth) from the closest wellhead (Calliance-3).
  The State wellheads are located approximately 4 km east of the Scott Reef Nature Reserve (State) from the closest wellhead (Scott Reef-1), approximately 102 km north of the Kimberly Australian Marine Park – Multiple Use Zone (Clth) from the closest wellhead (Scott Reef-1) and approximately 160 km east of the Argo-Rowley Terrace Australian Marine Park – Multiple Use Zone (Clth) from Scott Reef-1.

- We have assessed potential impacts and risks to Australian Marine Parks (AMPs) in the development of the proposed Environment Plans and believe that there are no credible impacts to any AMP or to any value of an AMP that overlaps the wellheads as the wellheads are planned to be left *in situ*.
- As the wells have been previously permanently plugged and abandoned and are proposed to be left *in situ*, there are no credible oil spill risks or associated spill response plans or monitoring programs for the EPs. There are also no planned or unplanned impacts associated with any vessel operations, such as light, air emissions, noise, discharges etc.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our website.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	
Summary	Wellhead to be left *in situ*			
Location	~3430 km north of Broome			
Approximate water depth (m)	~442 m	~481 m	~50 m	
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			

Exclusionary/Cautionary Zone	None
Vessels	Not required

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5
Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Feedback:

If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.7 Email sent to North West Slope and Trawl Fishery (22 February 2022)

Dear North West Slope and Trawl Fishery

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our website), and a map of Commonwealth fisheries is attached.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	
Summary	Wellhead to be left *in situ*			
Location	~430 km north of Broome			

Approximate water depth (m)	~442 m	~481 m	~50 m
Schedule	No field activities - wellhead to be left *in situ*		
Duration	No field activities - wellhead to be left *in situ*		
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery		
Exclusionary/Cautionary Zone	None		
Vessels	Not required		

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5
Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Commercial fishing implications:

Woodside has assessed potential impacts for commercial fisheries based on Fishcube, ABARES data, fishing methods and water depth. We note there are four overlapping Commonwealth managed fisheries, three of which, listed below, have not been active in the area in recent years and are not considered relevant given fishing methods and species targeted.

- Southern Bluefin Tuna Fishery
- Western Tuna and Billfish Fishery
- Western Skipjack Fishery

Woodside has provided information to the fishery's representative organisation 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.

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk	Risk Description	Mitigation And / Or Management Measures
Planned		
Physical presence of infrastructure	Physical presence of infrastructure on seafloor causing interference or displacement	Wellhead location marked on marine charts

Feedback:
If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.8 Email sent to Commonwealth Fisheries Association (CFA), Australian Southern Bluefin Tuna Industry Association (ASBTIA), Tuna Australia (22 February 2022)

Dear Fisheries Stakeholder

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our website), and a map of Commonwealth fisheries is attached.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	
Summary	Wellhead to be left *in situ*			
Location	~430 km north of Broome			
Approximate water depth (m)	~442 m	~481 m	~50 m	
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5
Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Commercial fishing implications:

Woodside has assessed potential impacts for commercial fisheries based on Fishcube, ABARES data, fishing methods and water depth. We note there are four overlapping Commonwealth managed fisheries, three of which, listed below, have not been active in the area in recent years and are not considered relevant given fishing methods and species targeted.

- Southern Bluefin Tuna Fishery
- Western Tuna and Billfish Fishery
- Western Skipjack Fishery

Woodside has provided information to the fishery's representative organisation 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.

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk	Risk Description	Mitigation And / Or Management Measures
Planned		
Physical presence of infrastructure	Physical presence of infrastructure on seafloor causing interference or displacement	Wellhead location marked on marine charts

Feedback:

If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management

Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.9 Email sent to Department of Primary Industries and Regional Development (DPIRD) (22 February 2022)

Dear [redacted]

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our website), and a map of Commonwealth fisheries is attached.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			

Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	
Summary	Wellhead to be left *in situ*			
Location	~430 km north of Broome			
Approximate water depth (m)	~442 m	~481 m	~50 m	
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5

Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk	Risk Description	Mitigation And / Or Management Measures
Planned		
Physical presence of infrastructure	Physical presence of infrastructure on seafloor causing interference or displacement	Wellhead location marked on marine charts

Feedback:

If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.10 Email sent to the Western Australian Fishing Industry Council (WAFIC) (22 February 2022)

Dear [redacted]

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our website), and a map of Commonwealth fisheries is attached.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	
Summary	Wellhead to be left *in situ*			
Location	~430 km north of Broome			
Approximate water depth (m)	~442 m	~481 m	~50 m	
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5
Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Commercial fishing implications:

Woodside has assessed potential impacts for commercial fisheries based on Fishcube, ABARES data, fishing methods and water depth. We note there are four overlapping Commonwealth managed fisheries, three of which, listed below, have not been active in the area in recent years and are not considered relevant given fishing methods and species targeted.

- Southern Bluefin Tuna Fishery
- Western Tuna and Billfish Fishery
- Western Skipjack Fishery

Woodside has provided information to the fishery's representative organisation 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.

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk	Risk Description	Mitigation And / Or Management Measures
Planned		
Physical presence of infrastructure	Physical presence of infrastructure on seafloor causing interference or displacement	Wellhead location marked on marine charts

Feedback:

If you have any feedback on these activities, please respond to Woodside at:
Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.11 Email sent to Pearl Producers Association (PPA) (22 February 2022)

Dear [redacted]

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our website), and a map of Commonwealth fisheries is attached.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			

Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	
Summary	Wellhead to be left *in situ*			
Location	~430 km north of Broome			
Approximate water depth (m)	~442 m	~481 m	~50 m	
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5

Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk	Risk Description	Mitigation And / Or Management Measures
Planned		
Physical presence of infrastructure	Physical presence of infrastructure on seafloor causing interference or displacement	Wellhead location marked on marine charts

Feedback:

If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.12 Letter sent to Northern Demersal Scalefish Fishery (22 February 2022)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Ltd.
ACN 005 482 986
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T +61 8 9348 4000
F +61 8 9214 2777
www.woodside.com.au

22 February 2022

Dear Northern Demersal Scalefish Fishery

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our website), and a map of Commonwealth fisheries is attached.

Please also see attached Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			

Exclusionary/Cautionary Zone	None		
Vessels	Not required		
Exploration wellhead activities - State			
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**
Summary	Wellhead to be left *in situ*		
Location	~430 km north of Broome		
Approximate water depth (m)	~442 m	~481 m	~50 m
Schedule	No field activities - wellhead to be left *in situ*		
Duration	No field activities - wellhead to be left *in situ*		
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery		
Exclusionary/Cautionary Zone	None		
Vessels	Not required		

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5
Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk	Risk Description	Mitigation And / Or Management Measures
Planned		

Physical presence of infrastructure	Physical presence of infrastructure on seafloor causing interference or displacement	Wellhead location marked on marine charts

Feedback:

If you have any feedback on these activities, please respond to Woodside at:
Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

Woodside Feedback

Woodside Energy Ltd.
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com.au

Attached: Consultation Information Sheet, Historical Exploration Wellhead Decommissioning Information Sheet, Fisheries map

1.13 Letter sent to West Coast Deep Sea Crustacean Managed Fishery (22 February 2022)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside Energy Ltd.
ACN 005 482 986
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T +61 8 9348 4000
F +61 8 9214 2777
www.woodside.com.au

22 February 2022

Dear West Coast Deep Sea Crustacean Managed Fishery

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

We have identified potential impacts to active commercial fishers and the environment, which are summarised below. We have endeavoured to reduce these risks to an as low as reasonably practicable level.

An information sheet (also on our website), and a map of Commonwealth fisheries is attached.

Please also see attached Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Fisheries have been identified as being relevant based on fishing licence overlap with the activity area, assessment of government fishing effort data (including Fishcube and AFMA) from recent years, fishing methods and water depth.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery			

Exclusionary/Cautionary Zone	None		
Vessels	Not required		
Exploration wellhead activities - State			
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**
Summary	Wellhead to be left *in situ*		
Location	~430 km north of Broome		
Approximate water depth (m)	~442 m	~481 m	~50 m
Schedule	No field activities - wellhead to be left *in situ*		
Duration	No field activities - wellhead to be left *in situ*		
Relevant fisheries	**Commonwealth:** North West Slope and Trawl Fishery **State:** Northern Demersal Scalefish Fishery, West Coast Deep Sea Crustacean Managed Fishery		
Exclusionary/Cautionary Zone	None		
Vessels	Not required		

Wellhead locations:

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	~651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	~575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	~501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	~677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R
Wellheads (State)	**Water Depth (m)**	**Latitude**	**Longitude**	**Exclusion Zones**	**Permit Area**
North Scott Reef-1	~442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	~481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5
Scott Reef-1	~50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Potential risks to commercial fishing and proposed mitigation measures:

Potential Risk	Risk Description	Mitigation And / Or Management Measures
Planned		

Physical presence of infrastructure	Physical presence of infrastructure on seafloor causing interference or displacement	Wellhead location marked on marine charts

Feedback:

If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

Woodside Feedback

Woodside

Woodside Energy Ltd.
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com.au

Attached: Consultation Information Sheet, Historical Exploration Wellhead Decommissioning Information Sheet, Fisheries map

1.14 Email sent to Kimberley Land Council (22 February 2022)

Dear [redacted]

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our website.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	
Summary	Wellhead to be left *in situ*			
Location	~430 km north of Broome			
Approximate water depth (m)	~442 m	~481 m	~50 m	
Schedule	No field activities - wellhead to be left *in situ*			

Duration	No field activities - wellhead to be left *in situ*
Exclusionary/Cautionary Zone	None
Vessels	Not required

Feedback:
If you have any feedback on these activities, please respond to Woodside at: Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.14.1 Email sent to Kimberley Land Council (22 February 2022)

Hi [redacted],

Apologies now with the relevant attachment.

Kind Regards,

1.15 Email sent to Murujuga Aboriginal Corporation (22 February 2022)

Dear [redacted],

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four (4) wellheads are located in Commonwealth waters around 380 km north of Broome and three (3) wellheads are located in Western Australian State waters around 430 km north of Broome.

There are no planned field activities. The 7 wellheads are planned to be left *in situ* and will be managed under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our website.

Please also see link here to an Information Sheet outlining Woodside's approach to decommissioning our historical exploration wellhead portfolio, including frequently asked questions.

Please provide your views by **8 April 2022**.

Activity:

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Summary	Wellhead to be left *in situ*			
Location	~380 km north of Broome			
Approximate water depth (m)	~651 m	~575 m	~501 m	~677 m
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			
Exploration wellhead activities - State				
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**	
Summary	Wellhead to be left *in situ*			
Location	~430 km north of Broome			
Approximate water depth (m)	~442 m	~481 m	~50 m	
Schedule	No field activities - wellhead to be left *in situ*			
Duration	No field activities - wellhead to be left *in situ*			
Exclusionary/Cautionary Zone	None			
Vessels	Not required			

Feedback:

If you have any feedback on these activities, please respond to Woodside at:
Feedback@woodside.com.au or +61 438 173 562

Your feedback and our response will be included in our Environment Plan which will be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (DMIRS) for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009* (Cth) or the *Petroleum (Submerged Lands) (Environment) Regulations 2012*.

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

Please provide your views by **8 April 2022**.

1.16 Woodside Consultation Information Sheet (sent to all relevant persons)

Woodside

STAKEHOLDER CONSULTATION

INFORMATION SHEET

February 2022

BROWSE COMMONWEALTH AND BROWSE STATE WELLHEADS DECOMMISSIONING ENVIRONMENT PLANS

BROWSE BASIN, NORTH-WEST AUSTRALIA

Woodside is planning to decommission seven (7) historical exploration wellheads *in situ*. Four wellheads are located in permit areas WA-32-R and WA-28-R, in Commonwealth waters approximately 380 km north of Broome and three wellheads are located in permit area TR/5, in Western Australian State waters approximately 430 km north of Broome.

There are no planned field activities. The seven wellheads (listed in **Table 1**) are planned to be left *in situ* in accordance with the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP. The wellheads will continue to be marked on navigational charts.

The wells were permanently plugged and abandoned between 1971 and 2009. The permanent plugs prevent hydrocarbon release to the environment.

Woodside has undertaken a comprehensive assessment of decommissioning options for these wellheads considering water depth, interaction with other marine users, previous removal attempts, relevant international and Australian legislation and standards and a comparison of the impacts and risks associated with executing feasible decommissioning options including removal.

In preparing the Environment Plans, 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 relevant to the activity.

Woodside Energy Ltd (Woodside) is Operator for and on behalf of the Browse Joint Venture. The participants in the Browse Joint Venture are:

- Woodside Browse Pty Ltd,
- BP Developments Australia
- Japan Australia LNG (MIMI Browse) Pty Ltd
- Petrochina International Investment (Australia) Pty Ltd and
- Shell Australia Pty Ltd.

We welcome your feedback by 8 April 2022.

Table 1. Activity Summary

Exploration wellhead activities - Commonwealth				
Wellhead	**Brecknock-4**	**Calliance-1**	**Calliance-2**	**Calliance-3**
Commencement date	No activites - wellhead to be left *in situ*			
Approximate estimated duration	No activites - wellhead to be left *in situ*			
Infrastructure	• Exploration wellhead (3.3 m above seabed)	• Exploration wellhead (2.5 m above seabed)	• Exploration wellhead (2.5 m above seabed)	• Exploration wellhead with Temporary Guide Base, Permanent Guide Base with guide posts (3.5 m above seabed)
Vessels	Not required			
Distance to nearest town	- 380 km north of Broome			
Distance to nearest marine park/nature reserve	• - 22 km south-west of the Scott Reef Nature Reserve (State) from the closest wellhead (Brecknock-4) • - 47 km north of the Kimberly Australian Marine Park - Multiple Use Zone (CIth) from the closest wellhead (Calliance-2) • - 125 km east of the Argo-Rowley Terrace Australian Marine Park - Multiple Use Zone (CIth) from the closest wellhead (Calliance-3)			

Exploration wellhead activities - State			
Wellhead	**North Scott Reef-1**	**Torosa-3**	**Scott Reef-1**
Commencement date	No activites - wellhead to be left *in situ*		
Approximate estimated duration	No activites - wellhead to be left *in situ*		
Infrastructure	• Exploration wellhead with Temporary Guide Base, Permanent Guide Base with guide posts (up to 4 m above seabed) • 72 m of 5 inch drill pipe horizontal on the seabed	• Exploration wellhead with permanent guide base and guide posts (3.5 m above seabed)	• Exploration wellhead with permanent guide base and guide posts (up to 4 m above seabed)
Vessels	Not required		
Distance to nearest town	- 430 km north of Broome		
Distance to nearest marine park/nature reserve	• - 4 km east of the Scott Reef Nature Reserve (State) from the closest wellhead (Scott Reef-1) • - 102 km north of the Kimberly Australian Marine Park - Multiple Use Zone (CIth) from the closest wellhead (Scott Reef-1) • - 160 km east of the Argo-Rowley Terrace Australian Marine Park - Multiple Use Zone (CIth) from Scott Reef-1		

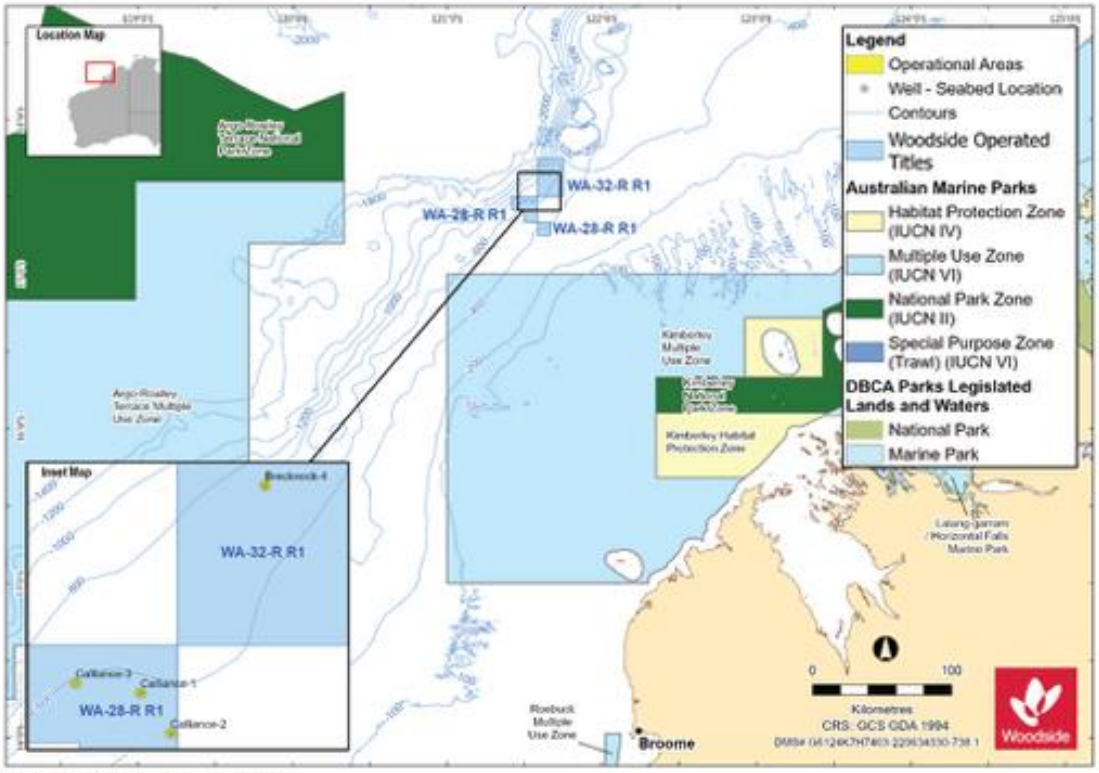


Figure 1. Wellhead locations in Commonwealth waters

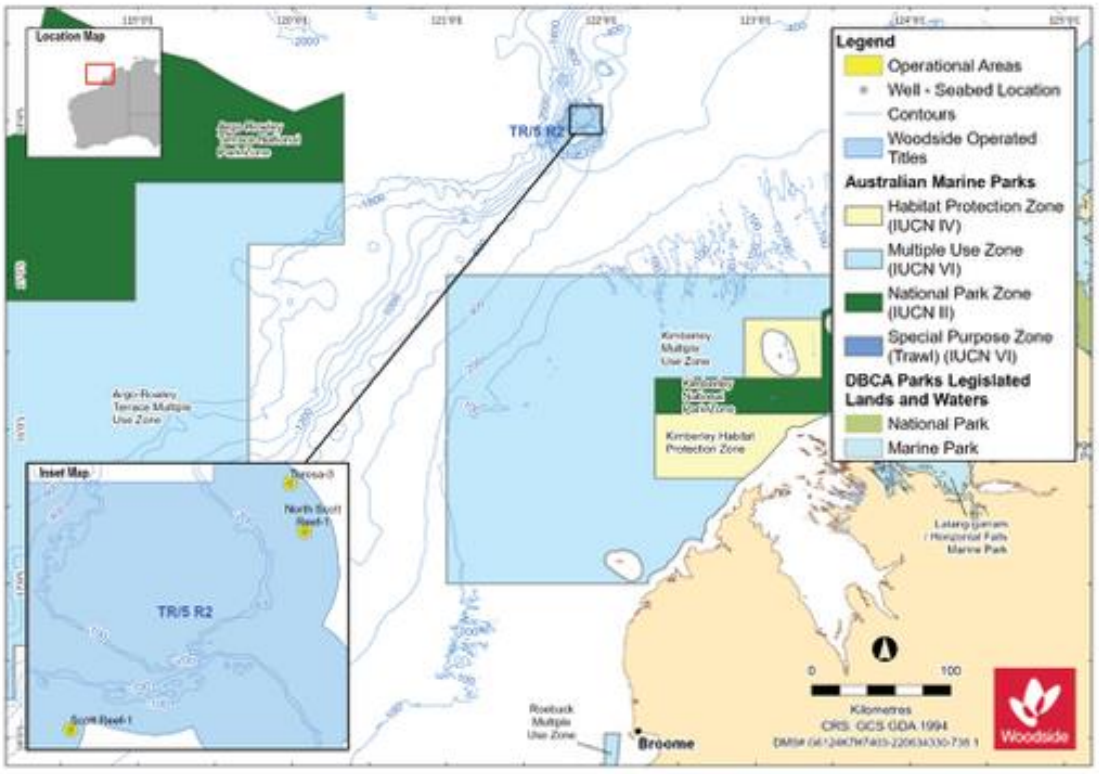


Figure 2. Wellhead locations in State waters

Table 2. Approximate Locations

Wellheads (Commonwealth)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
Brecknock-4	- 651	-14° 21'45.912996"	121°39'33.854004"	None	WA-32-R
Calliance-1	- 575	-14° 32'21.869988"	121°33'11.909988"	None	WA-28-R
Calliance-2	- 501	-14° 34'26.269998"	121°34'43.960002"	None	WA-28-R
Calliance-3	- 677	-14° 31'51.840000"	121°29'53.380002"	None	WA-28-R

Wellheads (State)	Water Depth (m)	Latitude	Longitude	Exclusion Zones	Permit Area
North Scott Reef-1	- 442	-13° 56'49.175016"	121°58'35.603004"	None	TR/5
Torosa-3	- 481	-13° 54'57.999996"	121°58'1.909992"	None	TR/5
Scott Reef-1	- 50	-14° 4'28.998012"	121°49'33.306996"	None	TR/5

Mitigation and Management Measures

Woodside has undertaken an assessment to identify potential impacts and risks to the marine environment arising from the decommissioning activities considering timing, duration, location.

A number of mitigation and management measures for the Browse wellheads (Commonwealth and State) remaining *in situ* are outlined in **Table 3**. Further details will be provided in the EPs.

Table 3. Summary of key risks and/or impacts and management measures for wellheads remaining in situ

Potential Risk and/or Impact	Mitigation and/or Management Measure
Planned	
Physical presence of infrastructure on seafloor causing interference or displacement	• Wellhead location marked on marine charts. • Consultation with relevant persons. For example, commercial fishers and their representative organisations, petroleum titleholders and, government departments and agencies to inform decision making for the proposed activity and development of the EP.

Feedback

Woodside consults relevant persons in the course of preparing Environment Plans to ensure relevant feedback informs its planning for proposed petroleum activities and builds upon Woodside's relevant person consultation for its offshore petroleum activities in the region.

If you would like to comment on the proposed activities outlined in this information sheet, or would like additional information, please contact Woodside before **8 April 2022** via:

E: Feedback@woodside.com.au

Toll free: 1800 442 977

You can subscribe on our website to receive Consultation Information Sheets for proposed activities: **www.woodside.com.au.**

Please note that stakeholder feedback will be communicated to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) or the Department of Mines, Industry Regulation and Safety (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 the NOPSEMA or the DMIRS for acceptance in accordance with the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth) or the Petroleum (Submerged Lands) (Environment) Regulations 2012.*

Please let us know if your feedback for this activity is sensitive and we will make this known to NOPSEMA or DMIRS upon submission of the Environment Plan in order for this information to remain confidential to NOPSEMA or DMIRS.

1.17 Woodside Historical Exploration Wellhead Decommissioning Information Sheet (sent to all relevant persons)

Woodside

STAKEHOLDER CONSULTATION

INFORMATION SHEET

February 2022

HISTORICAL EXPLORATION WELLHEAD DECOMMISSIONING

Woodside is progressively decommissioning 46 of its historical exploration wellheads – 43 located in Commonwealth waters and three located in State waters.

A decision-making framework has been developed to identify which wellheads Woodside proposes to remove and those to leave *in situ*. Consistent with international standards, this framework uses water depth (and corresponding impacts to other marine users) as a key criterion in determining the approach for wellhead decommissioning.

To comply with obligations under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Commonwealth), *Petroleum (Submerged Lands) Act 1982* (State) and associated regulations, Woodside will submit Environment Plans (EP) for the decommissioning of the wellheads.

Six Environment Plans will be developed for the decommissioning of the 46 wellheads, with Woodside planning to **remove 37 of the 46 wellheads** as outlined in the below table.

Environment Plan	Number of Wellheads	Proposed End State	Consultation Periods	Relevant Regulator
Completed and under assessment with NOPSEMA				
Calthorpe-1 Wellhead Decommissioning EP	1	Leave *in situ*	Completed	NOPSEMA
Thebe-1 Wellhead Decommissioning EP	1	Leave *in situ*	Completed	NOPSEMA
Eaglehawk-1 Wellhead Decommissioning EP	1	Removal	Completed	NOPSEMA
Due for submission Q2 2022				
Browse Commonwealth Wellhead Decommissioning EP	4	Leave *in situ*	Q1 2022	NOPSEMA
Browse State Wellhead Decommissioning EP	3	Leave *in situ*	Q1 2022	DMIRS
Due for submission Q3 2022				
North West Shelf and Julimar Wellhead Decommissioning EP	36	Removal	Anticipated consultation period to commence Q2 2022	NOPSEMA

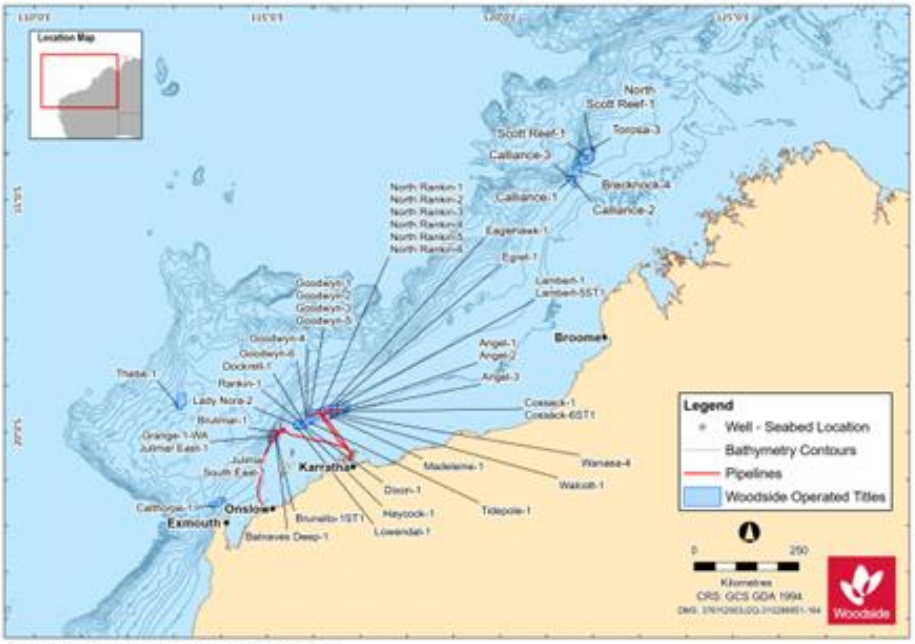


Figure 1: Woodside Historical Exploration Wellheads.

Frequently asked questions

What is an exploration wellhead?

Exploration wellheads are used on exploratory wells to locate reserves of oil and gas and gather valuable data such as detailed geological information, initial reservoir pressure measurements and potential for productivity.

Generally, exploration wellheads are comprised of mild steel, with potential for elastomeric materials within seal components similar to those found in a household tap (<250g). The total weight of the steel is estimated to be 7500kg. Wellheads can be up to 4 m above the seabed.

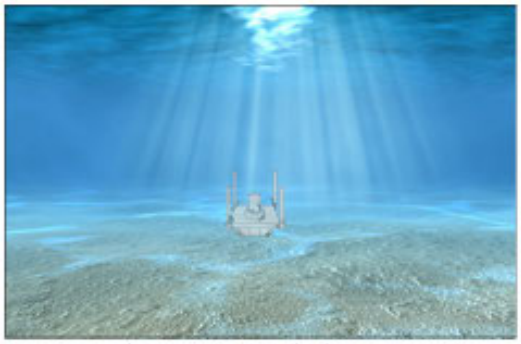


Figure 2: Example historical exploration wellhead.

How does Woodside determine whether an exploration wellhead is proposed to be removed or left *in situ*?

Woodside undertakes options assessments for all decommissioning projects. Our aim is to complete decommissioning in a timely, safe and environmentally responsible manner.

Key steps in evaluating decommissioning options include:

- Identifying the potentially feasible decommissioning options for the wellhead
- Evaluating options based on compliance with relevant legislation and guidelines
- Review of engineering and scientific studies to understand the existing environment and how decommissioning activities may interact with the marine environment
- Assessing the practicability of each option from a technical and health and safety perspective
- Assessing the environmental impacts and risks associated with the decommissioning options including risks and impacts to other marine users

What are the potential impacts to the environment from leaving a wellhead *in situ*?

Potential impacts relate to continued physical presence on the seafloor and degradation overtime. As aligned with the Australian Government's Offshore Petroleum Decommissioning Guideline, for *in situ* decommissioning to be proposed, Woodside's framework states the option must have equal or better environmental outcomes when compared to removal.

Are there any contaminants in the exploration wellheads?

No. Mercury and Naturally occurring radioactive materials (NORMs) are not considered to be present within Exploration wellheads.

Does corrosion and breakdown of the wellhead create a toxicity issue for the marine environment?

No. Given the low toxicity of iron (the main constitute of the wellhead – approximately 98%), the slow release rate and rapid dilution of the open ocean environment, impacts to marine sediments, benthic habitats and water quality will be largely temporary and negligible.

Is there a credible risk of hydrocarbon release after a wellhead has been decommissioned?

All wells are required to be permanently plugged and abandoned. Plugging and abandonment (P&A) procedures differ between wells. However, the process generally involves the setting of cement plugs at specified depths in the wellbore to act as a permanent barrier preventing hydrocarbon release to the environment.

All wells must be accepted by the relevant regulator before they are considered permanently plugged.

There are no credible hydrocarbon release risks once a well has been permanently plugged.

How is an exploration wellhead removed and what technology is used?

Wellheads are planned to be cut at or below the mudline leaving a clear seabed following wellhead recovery. An internal cutting tool such as an abrasive water jet or a mechanical internal cutting tool is the primary method of removal. If an internal cut is not possible (i.e. due to access restrictions) then an external cutting tool, like a diamond wire saw, will be used.

A brief description of each cutting method is provided in the following table.

Method	Description
Abrasive water jet	A system of high-pressure water entrained with grit and flocculant is pumped via an umbilical from a vessel to a subsea cutting tool that is inserted inside the well. This method is currently only suitable in water depths shallower than 300 - 350m due to requirements for high pressure jetting but may become suitable in greater water depths in the future.
Mechanical interani cutting tool	Mechanical cutting knives are inserted into the inner well casing and rotated.
Diamond wire saw	A hydraulically driven motor and pulley system is used to operate an industrial diamond cutting wire via a vessel or remotely operated vehicle (ROV).

Will wellheads that remain *in situ* be marked on navigation charts?

Yes. All wellheads are marked on navigation charts and will continue to be if they are left *in situ*.

How does Woodside consider overlap with 'currently closed' areas of trawl zones?

When determining our decommissioning approach, Woodside considers the potential for future interaction with marine users, including fisheries.

Active and currently closed trawl zones are treated as active with potential for future interaction.

Does Woodside plan to install over trawlable structures on wellheads that are proposed to be left *in situ*?

No. Woodside has considered the installation of over trawlable structures. The design life of these structures (~100 years) limits the potential for protective value and may increase the potential for the structures to become a snag hazard in the long term.

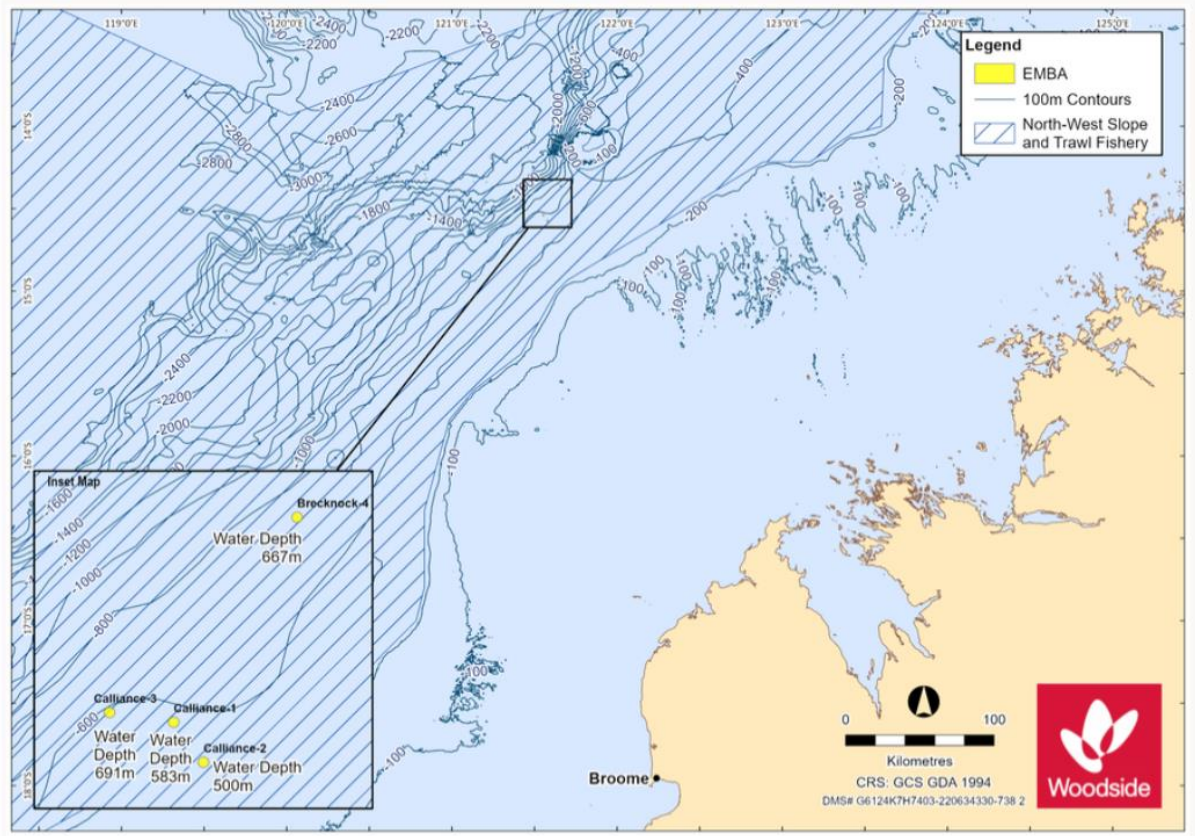
How does Woodside assess the risks to trawl fishers from leaving wellheads *in situ*?

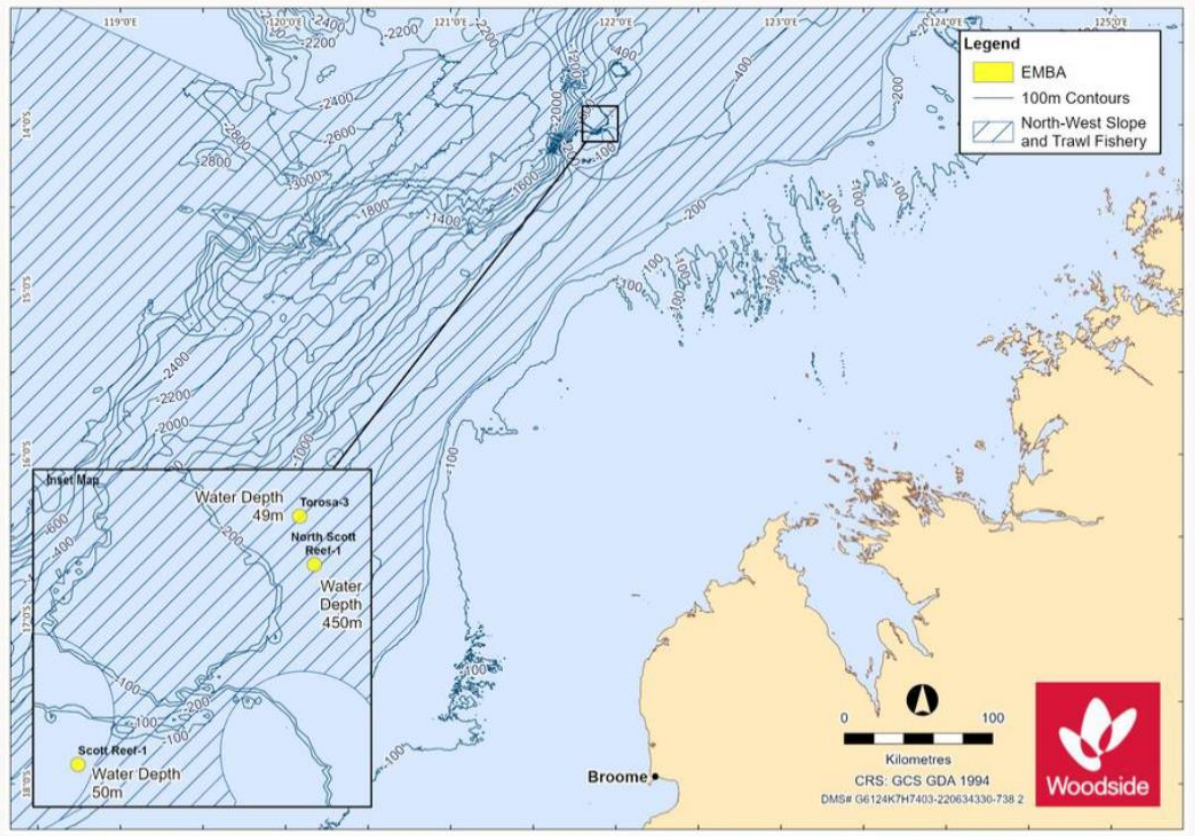
Woodside undertakes a comprehensive assessment on a case-by-case basis, considering for example the type of infrastructure, location, water depth and consultation with relevant fisheries.

What do you do with the wellheads that are removed? Can they be re-used or recycled?

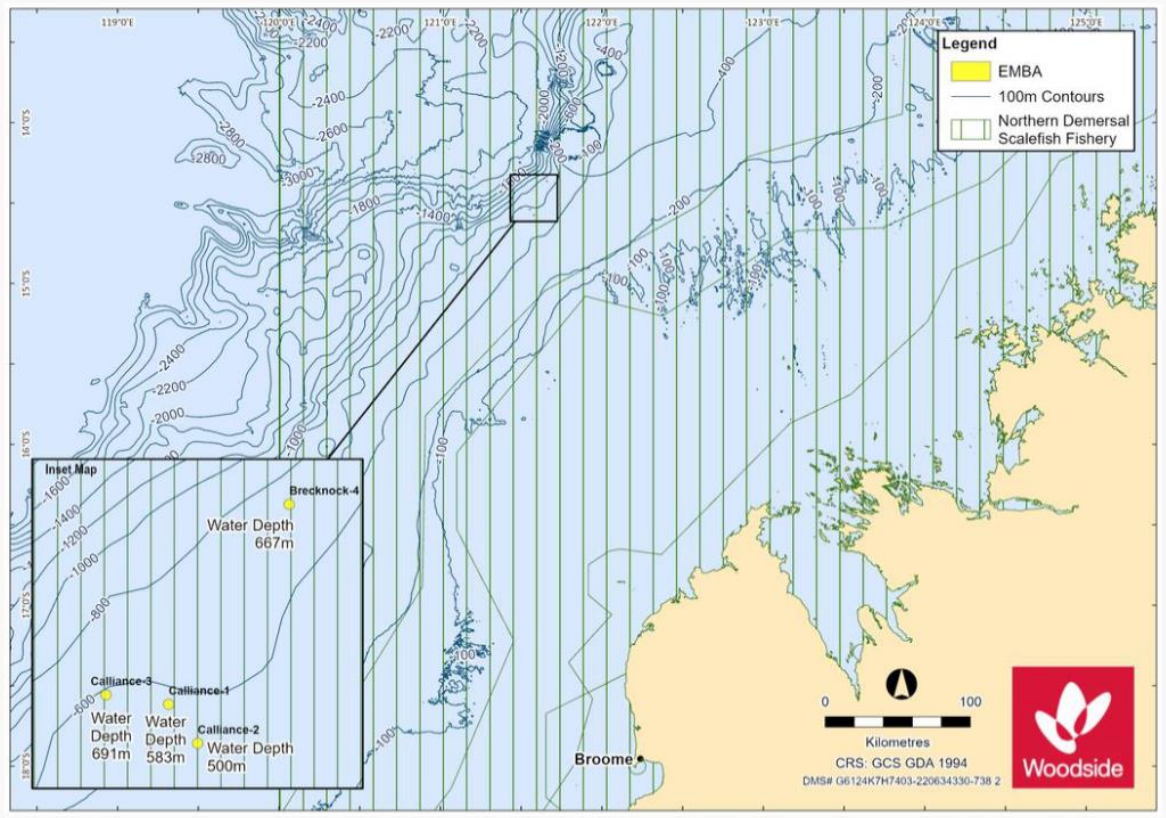
Our approach is to recycle decommissioned infrastructure or reuse or repurpose where possible and appropriate. Waste management contractors have been engaged to provide information about options for management of the decommissioned infrastructure.

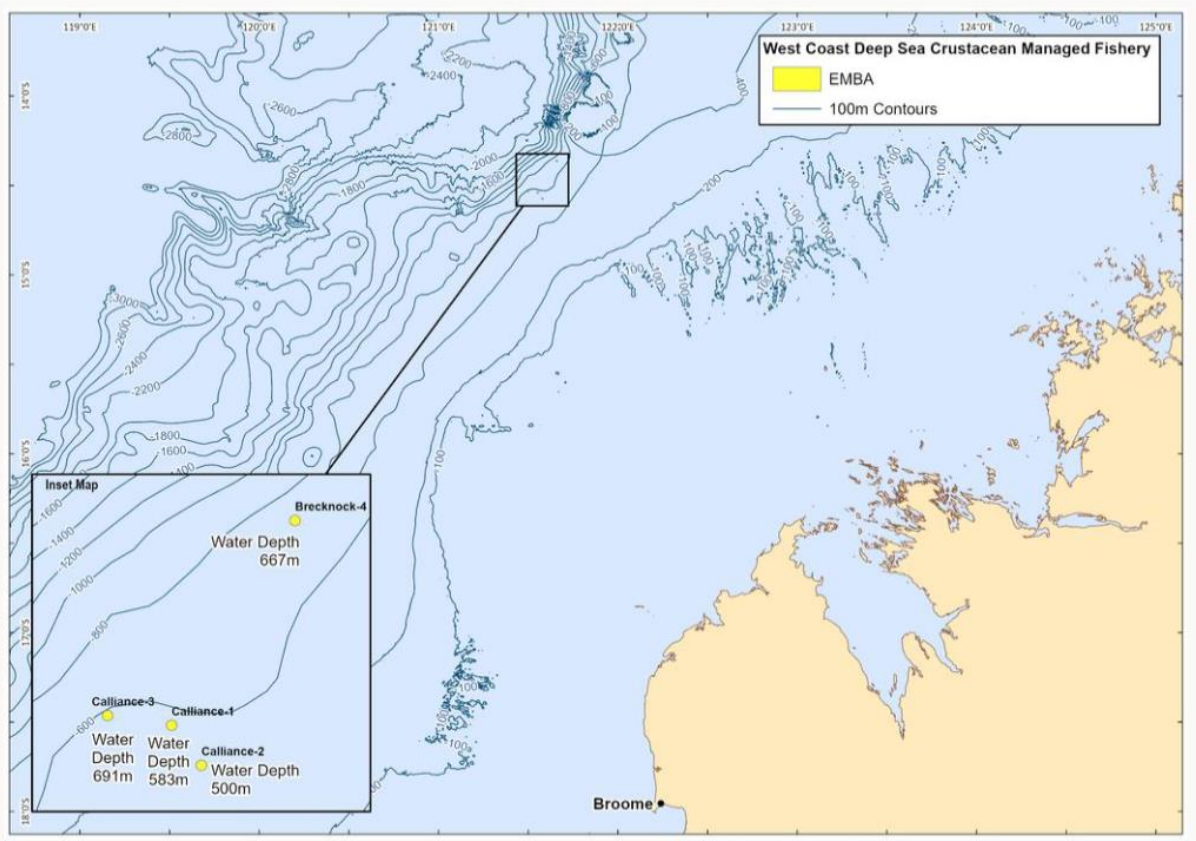
1.18 Commonwealth Fisheries map sent to AFMA, DAWE, North West Slope and Trawl Fishery licence holders, CFA, ASBTIA, Tuna Australia, PPA (22 February 2022)

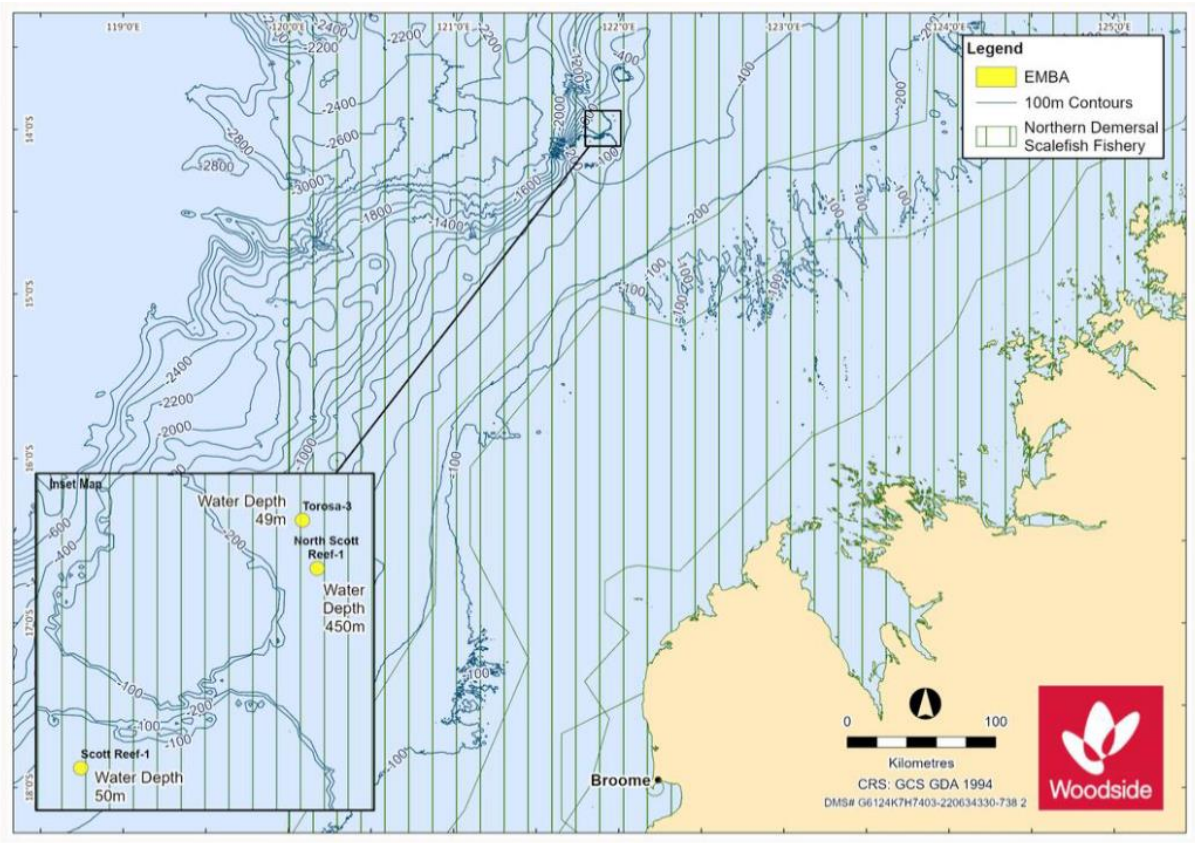


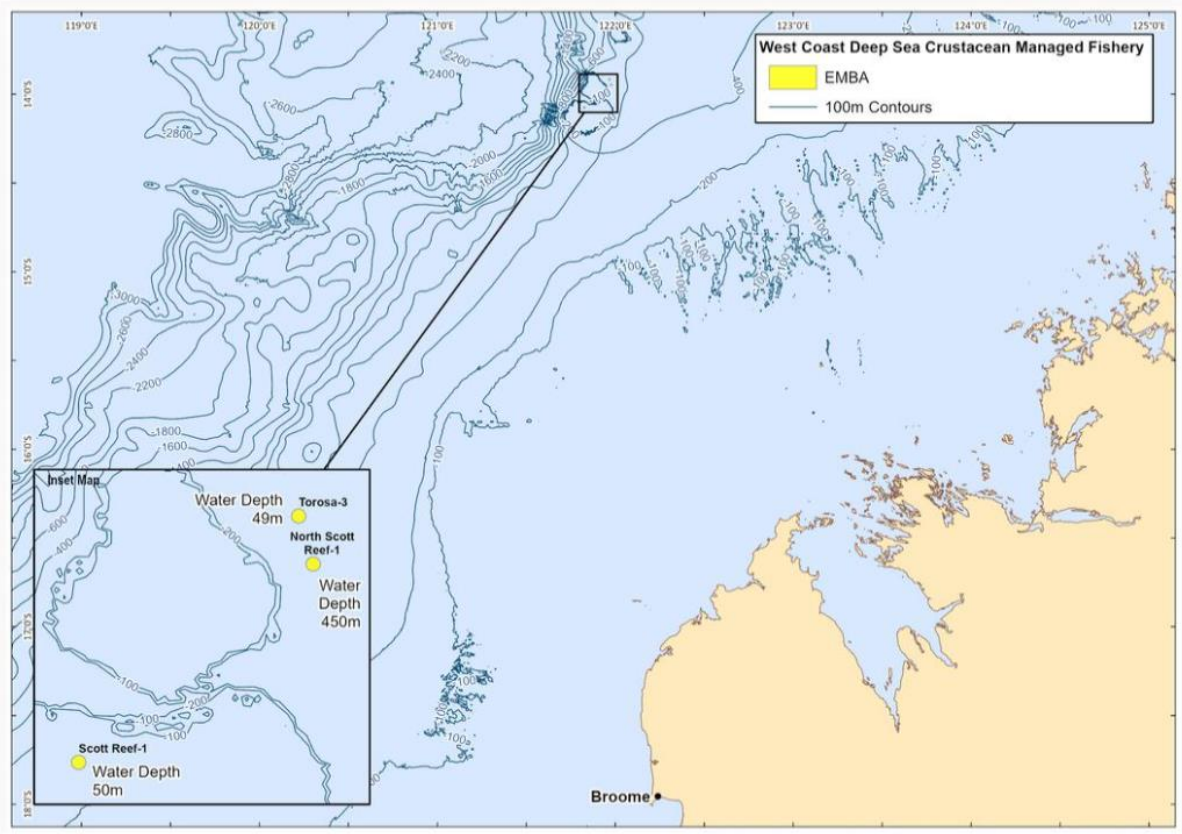


1.19 State Fisheries map sent to Northern Demersal Scalefish Fishery licence holders, West Coast Deep Sea Crustacean Managed Fishery licence holders, DPIRD, WAFIC, PPA (22 February 2022)

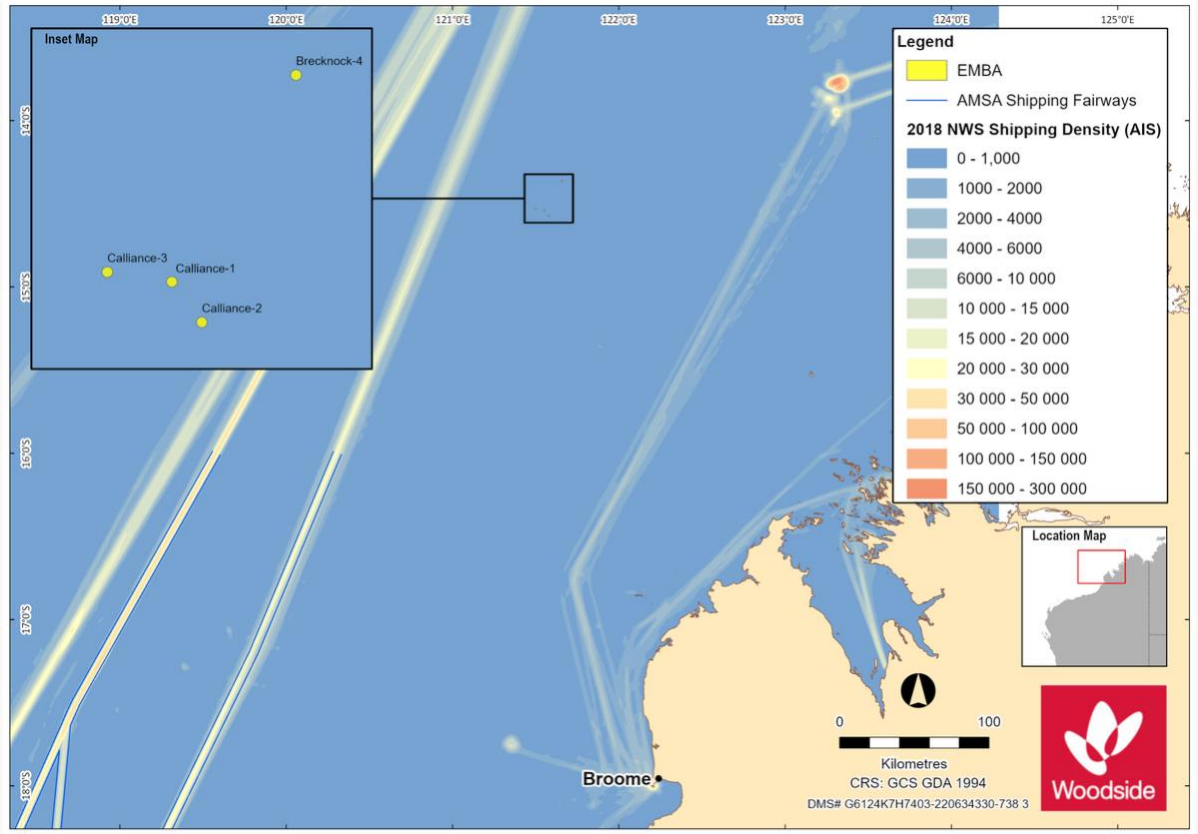


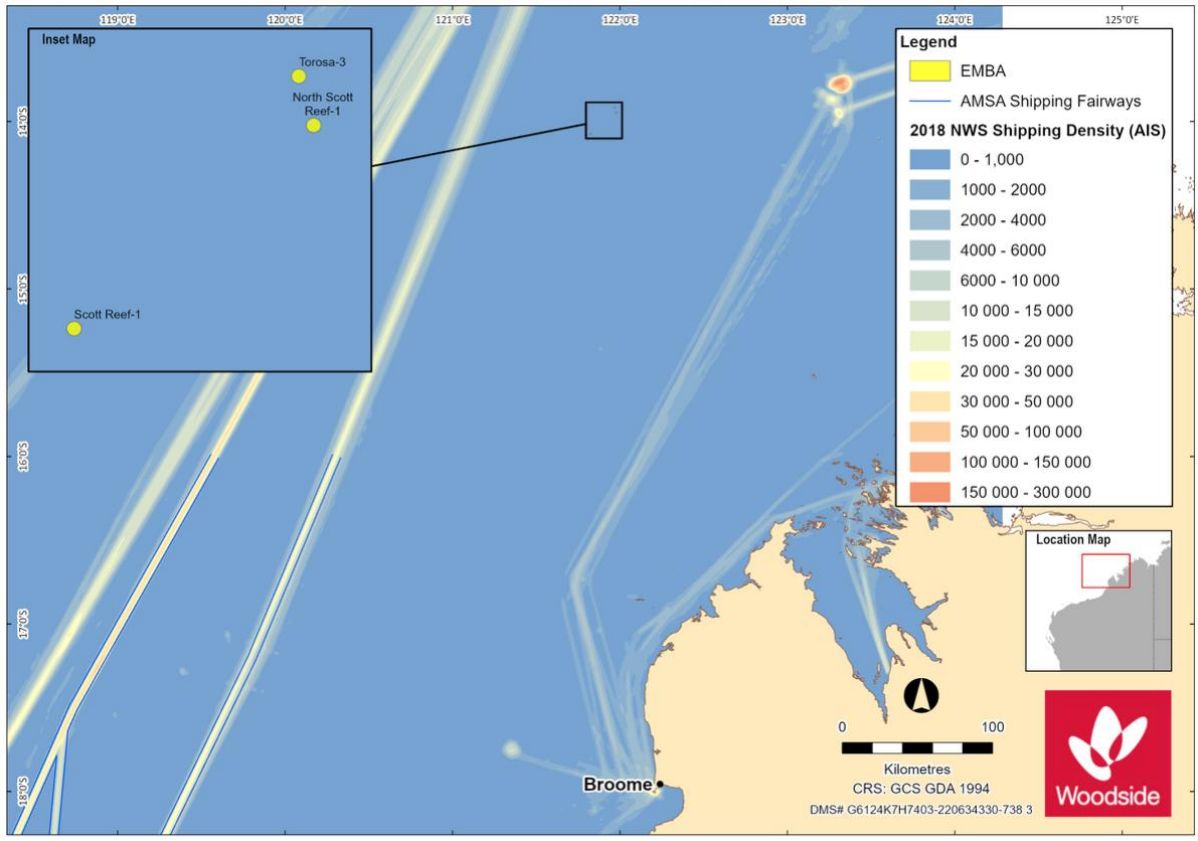



Legend
EMBA
100m Contours
Northern Demersal Scalefish Fishery
Inset Map
Water Depth 49m
Torosa-3
North Scott Reef-1
Water Depth 450m
Scott Reef-1
Water Depth 50m
Broome
0
100
Kilometres
CRS: GCS GDA 1994
DMS# G6124K7H7403-220634330-738 2
Woodside


West Coast Deep Sea Crustacean Managed Fishery
EMBA
100m Contours
Inset Map
Water Depth 49m
Torosa-3
North Scott Reef-1
Water Depth 450m
Scott Reef-1
Water Depth 50m
Broome

1.20 Shipping lane figures to Australian Maritime Safety Authority and Australian Hydrographic Office (22 February 2022)





2. Additional Consultation

2.1 Email sent to DNP (23 March 2022)

Dear Director of National Parks

Woodside previously consulted you (email below) on its plans to decommission seven (7) historical exploration wellheads *in situ* under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP.

The *in situ* decommissioning of these wellheads means there will be no field activity over these sites and the wellheads will continue to be marked on navigational charts.

We re-confirm that:

- we have assessed potential impacts and risks to Australian Marine Parks (AMPs) in the development of the proposed Environment Plans and believe that there are no credible impacts to any AMP or to any value of an AMP that overlaps the wellheads as the wellheads are planned to be left *in situ*.
- as the wells have been previously permanently plugged and abandoned and are proposed to be left *in situ*, there are no credible oil spill risks or associated spill response plans or monitoring programs for the EPs. There are also no planned or unplanned impacts associated with any vessel operations, such as light, air emissions, noise, discharges etc.

A Consultation Information Sheet is attached, which provides background on the proposed activity, including a summary of potential key risks and associated management measures. The Information Sheet is also available on our website.
Should you require additional information or have a comment to make about the proposed activity, please provide your feedback by **8 April 2022**.

Regards,

2.2 Email sent to AFMA (23 March 2022)

Dear AFMA

Woodside previously consulted you (email below) on its plans to decommission seven (7) historical exploration wellheads *in situ* under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP.

The *in situ* decommissioning of these wellheads means there will be no field activity over these sites, there will not be an exclusion zone around the wellheads, the area will still be accessible to commercial fishers and the wellheads will continue to be marked on navigational charts.

An information sheet (also on our website), and a map of relevant fisheries is attached for your reference.

Should you require additional information or have a comment to make about the proposed activity, please provide your feedback by **8 April 2022**.

Regards,

2.3 Email sent to DAWE (Fisheries) (23 March 2022)

Dear DAWE

Woodside previously consulted you (email below) on its plans to decommission seven (7) historical exploration wellheads *in situ* under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP.

The *in situ* decommissioning of these wellheads means there will be no field activity over these sites, there will not be an exclusion zone around the wellheads, the area will still be accessible to commercial fishers and the wellheads will continue to be marked on navigational charts.

An information sheet (also on our website), and a map of relevant fisheries is attached for your reference.

Should you require additional information or have a comment to make about the proposed activity, please provide your feedback by **8 April 2022**.

Regards,

2.4 Email sent to North West Slope and Trawl Fishery (23 March 2022)

Dear North West Slope and Trawl Fishery

Woodside previously consulted you (email below) on its plans to decommission seven (7) historical exploration wellheads *in situ* under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP.

The *in situ* decommissioning of these wellheads means there will be no field activity over these sites, there will not be an exclusion zone around the wellheads, the area will still be accessible to commercial fishers and the wellheads will continue to be marked on navigational charts.

An information sheet (also on our website), and a map of relevant fisheries is attached for your reference.

Should you require additional information or have a comment to make about the proposed activity, please provide your feedback by **8 April 2022**.

Regards,

2.5 Email sent to CFA, ASBTIA and Tuna Australia (23 March 2022)

Dear Fisheries Stakeholder

Woodside previously consulted you (email below) on its plans to decommission seven (7) historical exploration wellheads *in situ* under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP.

The *in situ* decommissioning of these wellheads means there will be no field activity over these sites, there will not be an exclusion zone around the wellheads, the area will still be

accessible to commercial fishers and the wellheads will continue to be marked on navigational charts.

An information sheet (also on our website), and a map of relevant fisheries is attached for your reference.

Should you require additional information or have a comment to make about the proposed activity, please provide your feedback by **8 April 2022**.

Regards,

2.6 Email sent to DPIRD (23 March 2022)

Dear [redacted]

Woodside previously consulted you (email below) on its plans to decommission seven (7) historical exploration wellheads *in situ* under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP.

The *in situ* decommissioning of these wellheads means there will be no field activity over these sites, there will not be an exclusion zone around the wellheads, the area will still be accessible to commercial fishers and the wellheads will continue to be marked on navigational charts.

An information sheet (also on our website), and a map of relevant fisheries is attached for your reference.

Should you require additional information or have a comment to make about the proposed activity, please provide your feedback by **8 April 2022**.

Regards,

2.6.1 Email sent to DPIRD (27 May 2022)

Good afternoon [redacted],

Thank you for your time on the phone just now.

As discussed, Woodside is following up on the below consultation regarding its plans to decommission seven (7) historical exploration wellheads in situ under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP.

Should you require additional information or have a comment to make about the proposed activity, we would welcome DPIRD's feedback.

Kind regards,
Shannen

2.7 Email sent to WAFIC (23 March 2022)

Dear [redacted]

Woodside previously consulted you (email below) on its plans to decommission seven (7) historical exploration wellheads *in situ* under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP.

The *in situ* decommissioning of these wellheads means there will be no field activity over these sites, there will not be an exclusion zone around the wellheads, the area will still be accessible to commercial fishers and the wellheads will continue to be marked on navigational charts.

An information sheet (also on our website), and a map of relevant fisheries is attached for your reference.

Should you require additional information or have a comment to make about the proposed activity, please provide your feedback by **8 April 2022**.

Regards,

2.8 Letter sent to Northern Demersal Scalefish Fishery (23 March 2022)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside

Woodside Energy Ltd.
ACN 005 482 986
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T +61 8 9348 4000
F +61 8 9214 2777
www.woodside.com.au

23 March 2022

Dear Northern Demersal Scalefish Fishery

Woodside previously consulted you (attached) on its plans to decommission seven (7) historical exploration wellheads *in situ* under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP.

The *in situ* decommissioning of these wellheads means there will be no field activity over these sites, there will not be an exclusion zone around the wellheads, the area will still be accessible to commercial fishers and the wellheads will continue to be marked on navigational charts.

An information sheet (also on our website), and a map of relevant fisheries is attached for your reference.

Should you require additional information or have a comment to make about the proposed activity, please provide your feedback by **8 April 2022**.

Regards,

Woodside Feedback

Woodside Energy Ltd.
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com.au

Attached: Consultation letter, Consultation Information Sheet, Historical Exploration Wellhead Decommissioning Information Sheet, Fisheries map

2.9 Letter sent to West Coast Deep Sea Crustacean Fishery (23 March 2022)

Please direct all responses/queries to:
Woodside Feedback
T: 1800 442 977
E: Feedback@woodside.com.au

Woodside

Woodside Energy Ltd.
ACN 005 482 986
Mia Yellagonga
11 Mount Street
Perth WA 6000
Australia
T +61 8 9348 4000
F +61 8 9214 2777
www.woodside.com.au

23 March 2022

Dear West Coast Deep Sea Crustacean Managed Fishery

Woodside previously consulted you (attached) on its plans to decommission seven (7) historical exploration wellheads *in situ* under the Browse Commonwealth Wellhead Decommissioning Environment Plan (EP) and Browse State Wellhead Decommissioning EP.

The *in situ* decommissioning of these wellheads means there will be no field activity over these sites, there will not be an exclusion zone around the wellheads, the area will still be accessible to commercial fishers and the wellheads will continue to be marked on navigational charts.

An information sheet (also on our website), and a map of relevant fisheries is attached for your reference.

Should you require additional information or have a comment to make about the proposed activity, please provide your feedback by **8 April 2022**.

Regards,

Woodside Feedback

Woodside

Woodside Energy Ltd.
Mia Yellagonga
Karlak, 11 Mount Street
Perth WA 6000
Australia

T: 1800 442 977
E: feedback@woodside.com.au
www.woodside.com.au

Attached: Consultation letter, Consultation Information Sheet, Historical Exploration Wellhead Decommissioning Information Sheet, Fisheries map

APPENDIX E: HERITAGE INQUIRY SYSTEM SEARCH RESULTS

Aboriginal Heritage Inquiry System

List of Registered Aboriginal Sites

Search Criteria

No Registered Aboriginal Sites in Shapefile - Browse_Cmnwlth_Ops_Area_20220127

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.

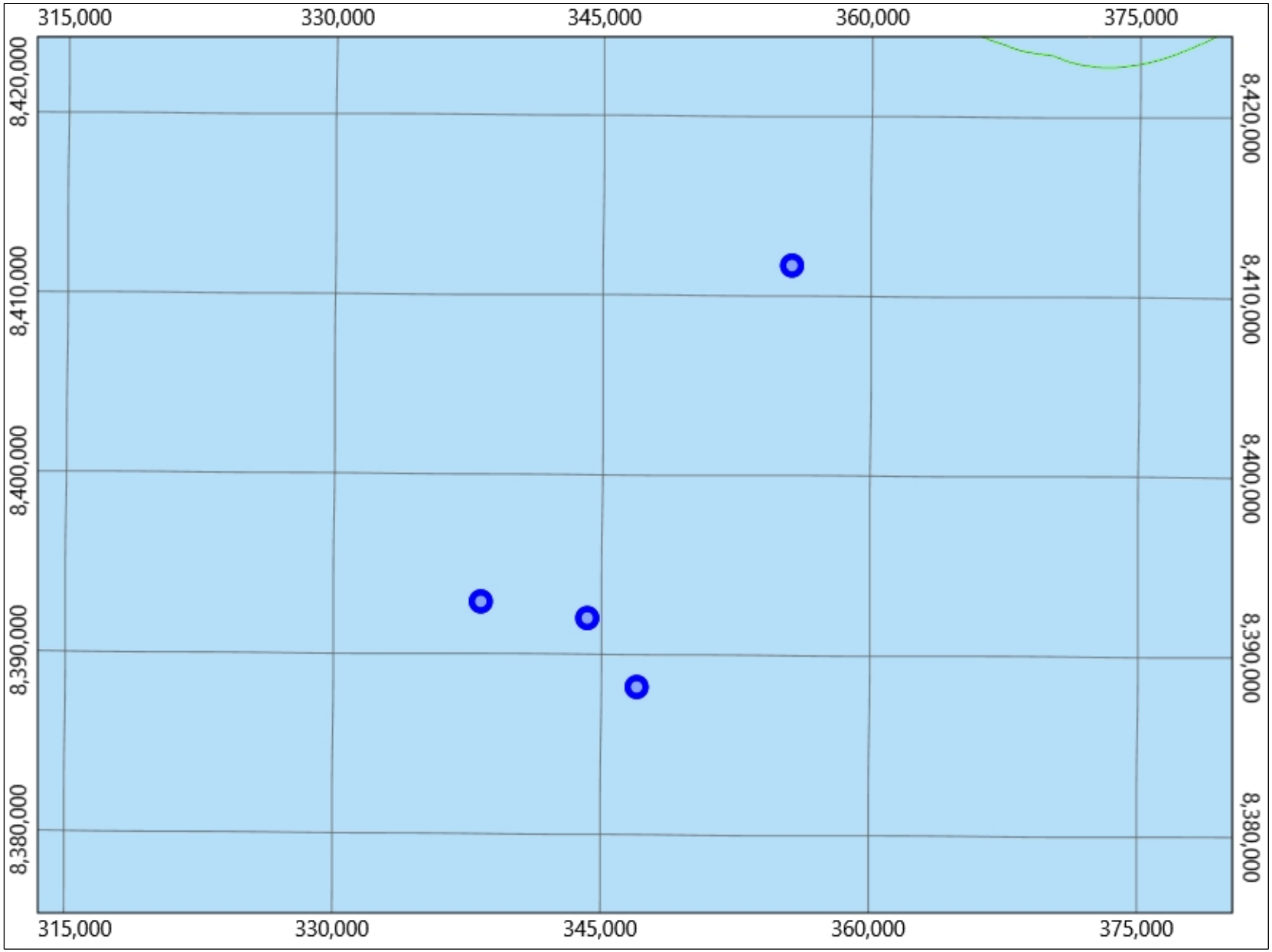
Basemap Copyright

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

11.02 kilometres

Map Scale 1 : 334,000

MGA Zone 51 (GDA94)

Aboriginal Heritage Inquiry System

List of Other Heritage Places

Search Criteria

No Other Heritage Places in Shapefile - Browse_Cmnwlth_Ops_Area_20220127

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

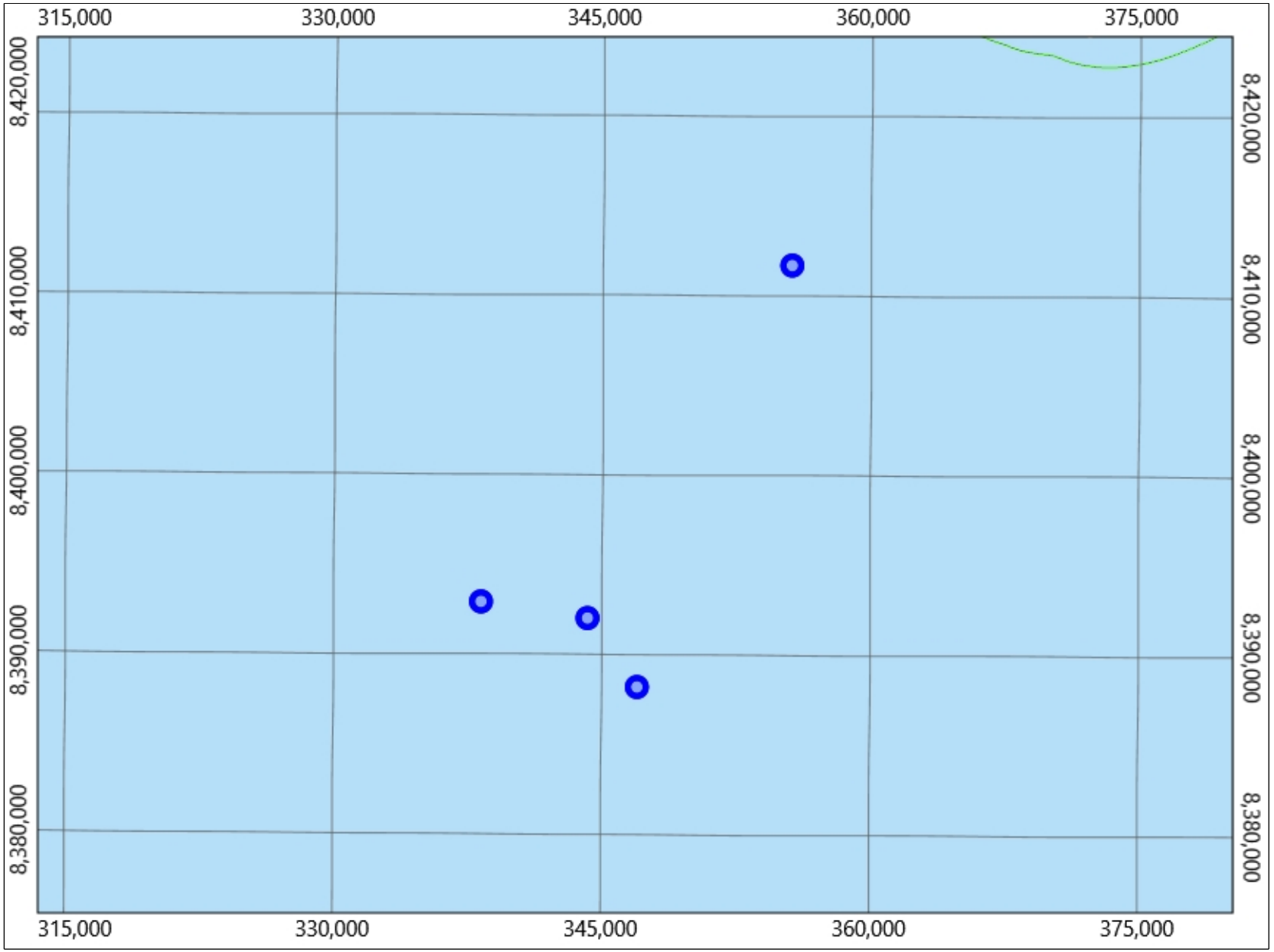
Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

Department of Planning, Lands and Heritage

Aboriginal Heritage Inquiry System

Map of Other Heritage Places

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

- Other Heritage Place
- Search Area
- Town
- Road
- River
- Local Government Authority

11.02 kilometres

Map Scale 1 : 334,000

MGA Zone 51 (GDA94)

APPENDIX F: 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