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Environment Plan
West Tryal Rocks 2 Well Abandonment EP

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Environment Plan

West Tryal Rocks 2 Well Abandonment EP

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1 Environment Plan Summary

This summary table was prepared from material provided in this Environment Plan (EP), and, as required by Regulation 11(4) of the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS(E)R), comprises:

EP Summary Material Requirement	Relevant section of EP containing EP Summary material
The location of the activity	Section 4
A description of the receiving environment	Section 5
A description of the activity	Section 4
Details of the environmental impacts and risks	Section 7
The control measures for the activity	Section 7
The arrangements for ongoing monitoring of the titleholders environmental performance	Section 8
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Details of the titleholders nominated liaison person for the activity	Section 2.4

2 Introduction

2.1 Overview

West Australian Petroleum (WAPET) discovered the first of the Greater Gorgon gas fields, West Tryal Rocks, northwest of Barrow Island in 1973. The West Tryal Rocks 2 (WTR-2) well was drilled and abandoned by WAPET within exploration permit WA-25-P in 1974. Following abandonment, the wellhead was left in situ. In 1991, the relevant graticular blocks were excised from WA-25-P and became the current retention lease WA-5-R.

In 2000, Chevron Australia Pty Ltd (CAPL) became the operator of the oil and gas exploration and production assets previously managed by WAPET, including retention lease WA-5-R.

Given the WTR-2 wellhead is to remain in situ, CAPL is submitting this Environment Plan (EP) to demonstrate that the obligations under section 572 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act) will be met. Titleholders may deviate from the OPGGS Act requirement to remove property that is neither used, nor to be used via an accepted EP.

2.2 Location

The West Tryal Rocks gas field is located within retention lease WA-5-R, located approximately 145 km north of Onslow and 55 km north west of Barrow Island (Figure 2-1).

2.3 Scope

This EP only covers the impacts and risks associated with the WTR-2 wellhead remaining in situ.

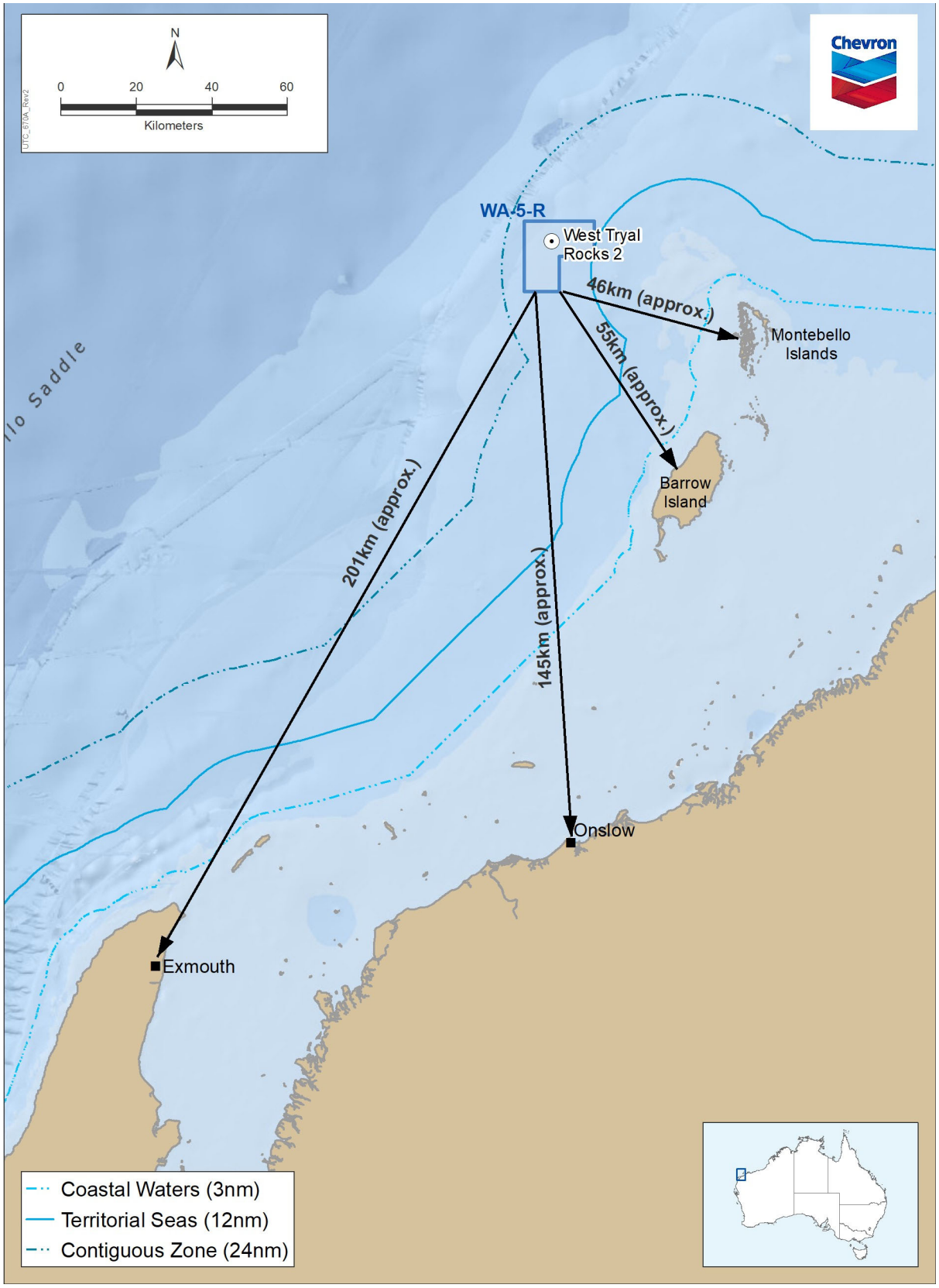


Figure 2-1: Location of WTR-2

2.4 Titleholder Details

CAPL is the appointed titleholder taking action for the completed drilling program within the retention lease on behalf of the companies listed in Table 2-1.

Table 2-1: Titleholder Details

Title	Details	Titleholders	Licence Holder	Address
WA-5-R	WTR-2	• Chevron (TAPL) Pty Ltd • Chevron Australia Pty Ltd • JERA Gorgon Pty Ltd • Mobil Australia Resources Company Pty Limited • Osaka Gas Gorgon Pty Ltd • Shell Australia Pty Ltd • Tokyo Gas Gorgon Pty Ltd	Chevron Australia Pty Ltd	QV1, 250 St Georges Tce Perth, WA, 6000

In accordance with Regulation 15(2) of the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS(E)R), details of the titleholder's nominated liaison person are listed in Table 2-2.

Table 2-2: Titleholder Liaison Person Contact Details

Company Name	Chevron Australia Pty Ltd
Nominated Liaison Person	Ian Nott
Position	Wells Manager
Business Address	QV1, 250 St Georges Terrace, Perth, WA, 6000
Telephone Number	+61 8 9216 4000
Email Address	austdrillingops@chevron.com

If the titleholder's nominated liaison person or contact details for the nominated liaison person changes, CAPL will notify the Regulator in accordance with Regulation 15(3) of the OPGGS(E)R. Specifically, a written notification including any changes to Table 2-2 will be provided to NOPSEMA as soon as is practicable after the change occurs.

In the unlikely event that the Titleholder changes, an evaluation will be conducted (in accordance with Section 8.1.1). If it is found that the change in titleholder has changed the manner in which the environmental impacts and risks of an activity are managed, the new titleholder will submit a proposed revision of the environment plan for the activity as soon as practicable.

2.5 Legislative Requirements

The proposed activities are located within Commonwealth waters and thus are subject to Commonwealth legislation. In accordance with Regulation 13(4)(a) of the OPGGS(E)R, a description of the Commonwealth legislative requirements relevant to the environmental management of the proposed activity is included in Table 2-3.

Table 2-3: Commonwealth Legislative Requirements

Legislation	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met within this Plan
Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act) and OPGGS(E)R 2009	The OPGGS(E)R under the OPGGS Act require a titleholder to have an accepted EP in place for a petroleum activity. The regulations ensure petroleum activities are undertaken in an ecologically sustainable manner and in accordance with an EP.	An EP for a petroleum activity must be accepted by NOPSEMA before activities commence	This EP
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Provides for the protection and management of nationally and internationally important flora, fauna, ecological communities, and heritage places. Under the EPBC Act, an action requires approval from the Commonwealth Minister for the Environment if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance (NES)	On 28 February 2014, NOPSEMA became the sole designated assessor of petroleum and greenhouse gas activities in Commonwealth Waters (in accordance with the Minister for the Environment's endorsement of NOPSEMA's environmental authorisation process under Part 10, section 146 of the EPBC Act)	This EP
Environment Protection (Sea Dumping) Act 1981	This act addresses Australia's obligations under the London Protocol. The act requires that permits are required for the dumping of controlled material. The definition of controlled material within the act includes platforms, therefore the abandonment of platforms in Australian waters requires a sea dumping permit.	CAPL will fulfil all obligations under the *Environment Protection (Sea Dumping) Act 1981*.	Section 2.6.4

2.6 Stakeholder Engagement

CAPL applied the following methodology to undertake consultation for this activity:

- identify relevant stakeholders
- provide sufficient information to enable stakeholders to understand how this activity may affect their functions, interests, or activities

- assess the merit of any objections or claims raised by the stakeholders
- provide a response to the objection or claim, and ensure this is captured in the EP.

This methodology is based on:

- NOPSEMA Decision-Making Guideline – Criterion-10A(g) Consultation Requirements (Ref. 1)
- NOPSEMA's Bulletin – Number 2 Clarifying statutory requirements and good practice (Ref. 2)
- Australian Petroleum Production and Exploration Association (APPEA) Stakeholder Consultation and Engagement Principles and Methodology – Draft (Ref. 3).

2.6.1 Identification of Relevant Stakeholders

CAPL first engaged with Stakeholders regarding this activity in November 2020. Further consultation was undertaken between August to November 2021.

For this Environment Plan, CAPL elected to use the Western Australian Fishing Industry Council's (WAFIC) Oil and Gas Consultation Service to help determine relevant commercial fisheries and fishers as well as review and distribute fishery-specific consultation material.

Establishing relevance under the OPGGS(E)R depends on the nature and scale of the activity and its associated risks. In accordance with Regulation 11A of the OPGGS(E)R, a 'relevant person' is defined as:

- each department or agency of the Commonwealth to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant
- each department or agency of a State or the Northern Territory to which the activities to be carried out under the environment plan, or the revision of the environment plan, may be relevant
- the department of the responsible State Minister, or the responsible Northern Territory Minister
- a person or organisation whose functions, interests, or activities may be affected by the activities to be carried out under the environment plan, or the revision of the environment plan
- any other person or organisation that the titleholder considers relevant.

Based on the risk assessment undertaken in this EP, CAPL understands that the impacts of the planned activities are limited to the vicinity of the OA, thus persons or organisations directly connected with functions, interests, or activities in this area are taken to be relevant.

Given the nature of the activity is limited to the physical presence of the wellhead on the sea floor, relevant persons are limited to other marine users that could interact with the wellhead.

Table 2-4 summarises these stakeholders. A Stakeholder Engagement Log and consultation records are provided in Appendix B.

Table 2-4: List of Relevant Stakeholders Consulted

Stakeholder Type	Functions, interests/activities, and stakeholders consulted
Commonwealth and State Fisheries (and peak body associations)	This activity has the potential to interact with fisheries that trawl the seabed. Based upon the location of the wellhead and fishing licenses that were identified to overlap these locations, the following stakeholders were considered relevant: • Western Australian Fishing Industry Council (WAFIC) • Australian Southern Bluefin Tuna Industry Association • Commonwealth Fisheries Association • Pearl Producers Association (PPA) • Individual fishery licence holders within these fisheries: • Developmental Octopus • Exmouth Gulf Prawn Managed Fishery • Onslow Prawn • Nickol Bay Prawn Managed Fishery • Mackerel Fishery • Pilbara Crab Managed Fishery • Pilbara Trap Managed Fishery (State) • Pilbara Fish Trawl Interim Managed Fishery (State) • Pilbara Line (State) • Western Skipjack Fishery
Recreational fishers (and peak body associations)	• Marine Tourism WA • Ashburton Anglers • Apache Charters • Blue Juice Charters • Blue Lightning Fishing Charters • Mahi Mahi Charters (formerly Coral Bay Discoveries) • Exmouth Deep Sea Fishing • Western Boat Charters (formerly Heron Charters) • Surf Dive n Fish • Bluesun2 Boat Charters • Montebello Island Safaris • Pelican Charters • Point Samson Charters • Top Gun Charters (Exmouth) • RecFishWest • Exmouth Game Fishing Club • Nickol Bay Sport Fishing Club • Onslow Visitor Centre • Port Hedland Game Fishing Club
Other petroleum operators in the area	Given no hydrocarbon spills were identified as being credible, and as Chevron is the titleholder of the titles, no other petroleum operators were considered relevant.
Government agencies	Government agencies responsible for managing commercial fisheries that may be affected, along with those agencies responsible for recording subsea benthic hazards were also considered relevant including: • WA Department of Primary Industries and Regional Development (DPIRD) • Australian Maritime Safety Authority (AMSA)

Stakeholder Type	Functions, interests/activities, and stakeholders consulted
	• Australasian Hydrographic Service (AHS) • Australian Fisheries Management Authority • Department of Agriculture, Water and the Environment (DAWE)

2.6.2 Provision of Sufficient Information to Stakeholders

Under the NOPSEMA Decision-Making Guideline – Criterion-10A(g) Consultation Requirements (Ref. 1), sufficient information must be provided to enable stakeholders to understand how an activity may affect their functions, interests, or activities.

Detailed correspondence specific to the activities covered under this EP was sent out on 04 November 2020 to relevant stakeholders, which summarised the activity, impacts, and risks, and the proposed control measures to manage the impacts and risks. Further consultation with AMSA and AHS in relation to cautionary zones was undertaken in August and September 2021.

In addition, CAPL engaged WAFIC to advise on relevant fisheries and fishers and its service to identity and address specific interests for this group. WAFIC was also used to convey an additional factsheet – tailored for the commercial fishing sector – on 04 November 2020. WAFIC undertook a further round of consultation to relevant fisheries on 6 Oct 2021. Further consultation specific to the Pilbara Trawl Fishery was undertaken by CAPL on 16 November 2021.

A copy of the consultation materials, including supporting emails are included as Appendix B.

All records and responses from relevant persons were included in a sensitive information report provided separately to NOPSEMA to preserve the privacy of those persons or organisations consulted. Specifically, these records and responses were considered to contain personal information (as defined by the Commonwealth *Privacy Act 1988*) or information that at the request of the relevant persons are not to be published as per Regulation 11(A) of the OPGGS€R.

2.6.3 Assessment of Merit of any Objections or Claims

Table 2-5 summarises the responses, objections and claims made during consultation with relevant stakeholders, assesses their merits, and describes how CAPL will manage the objection or claim has been managed in this EP.

A record of all consultation undertaken specifically for this activity is included in the Stakeholder Engagement Log, which was provided in the sensitive information report sent separately to NOPSEMA

Table 2-5: Summary of Stakeholder Response and Objections and Claims

Stakeholder	Date	Sensitive Information Ref.	Matter	Objection or Claim	Assessment of Merits	Titleholder Response
WAFIC	4 Nov 2020	Pg. 41	Response to WTR well abandonment factsheet.	No objection or claim. Stated that: • Noted the historic nature of the WAPET/Chevron site, and recognised the need to identify these sites, consult and if/where required remediate or finalise. • Noted there are no current nor any planned future exclusion or cautionary zones over the site. • Noted the status quo will remain the same (subject to stakeholder feedback) as an abandoned site with no more activities planned. • Acknowledged that Chevron has assessed any negative degradation of material impacts to the environment regarding any and that Chevron's conclusion of the assessment was that there were no impacts to any sensitivities due to the very slow process combined with dilution and sediment movement effects which would limit exposure and	N/A	N/A

Stakeholder	Date	Sensitive Information Ref.	Matter	Objection or Claim	Assessment of Merits	Titleholder Response
				therefore lead to no impacts to environmental sensitivities.		
WAFIC	Email: 22 July 2021 Meeting: 16 Sep 2021	p. 71	Request for further clarification in relation to: • PSZ requirements • Adequacy of consultation undertaken with fishers • Trawl risks to fishers	Stated that: • WAFIC is not in a position to determine PSZ requirements • WAFIC had not received responses from fishers engaged • WAFIC recommended that consultation was taken with Mackerel Fishers and Pilbara Trawl • Previous discussion with trawlers indicates that total wellhead removal would be base case preferred option. • There is not enough science about overtrawlable structure and this is therefore not a recommendation	As the industry representative body undertaking consultation of commercial fisheries on behalf of CAPL, it is within WAFIC's scope to raise these concerns.	6 Sep 2021 Advised that AMSA and AHO consider current marking of WTR on charts sufficient for safety purposes – no cautionary zone or PSZ required. 22 Sep 2021 Agreed that WAFIC should consult with Mackerel fishers and Pilbara Trawl as well as reconsult other fisheries. Provided clarification that while base case under section 572 of the Act is wellhead removal, this is not always practicable and this EP is being provided to meet the requirement for deviation.

Stakeholder	Date	Sensitive Information Ref.	Matter	Objection or Claim	Assessment of Merits	Titleholder Response
WAFIC	Email: 6 Oct 2021 Email: 6 Oct 2021 Email: 7 Oct/ 22 Oct 2021 Email: 8 Nov 2021	p. 77	Reconsultation of Fishers	• Confirmation that all potentially impacted fishers including Pilbara Trawl and Mackerel Fisher's have been consulted • Advice that a Pilbara Trawl Fisher requested that the wellhead be removed • WAFIC advised that the fisher has been advised to contact CAPL directly • WAFIC advised that they are unable to provide individual titleholder details but indicated that CAPL may want to contact all Pilbara Trawl licence holders.	As the industry representative body undertaking consultation of commercial fisheries on behalf of CAPL, it is within WAFIC's scope to raise these concerns.	Emails 7 Oct/ 21 Oct 2021: • Request for further information in relation to request for wellhead to be removed. Email 1 Nov 2021 • Request WAFIC provide the name of the licence holder requesting wellhead removal
Pilbara Trawl Fishery	Email/ Letter 16 Nov 2021	p. 77	Email/ letter and factsheet sent to all licence holders.	No response received No objection or claim identified	N/A	N/A
Australian Hydrographic Service (AHS)	5 Nov 2020	p. 48	Response to WTR well abandonment factsheet.	No objection or claim. Stated that: The data supplied will now be registered, assessed, prioritised and validated in preparation for updating Navigational Charting products. The AHS also advised that a cautionary zone is not likely to be required,	N/A	Email 23 Aug 2021 • Acknowledged advice from the AHS and confirmed CAPL will follow up with AMSA on whether

Stakeholder	Date	Sensitive Information Ref.	Matter	Objection or Claim	Assessment of Merits	Titleholder Response
				however CAPL should seek advice from AMSA on the matter.		or a cautionary zone is required.
AMSA	6 Nov 2020	p. 54	Response to WTR well abandonment factsheet and follow up question from CAPL on cautionary zones.	No objection or claim. Stated that: AMSA has no comments for inclusion in the plan and confirmed that the existing charted information of the wellhead is sufficient for alerting mariners to its location and a cautionary zone is not recommended.	N/A	Email 26 Aug 2021 • Acknowledged advice from AMSA confirming a cautionary zone is not recommended.
Department of Biodiversity Conservation and Attractions	11 Nov 2020	p. 63	Response to WTR well abandonment factsheet.	No objection or claim. Stated that: Based on the documentation provided and other readily available information, DBCA currently has no comments to provide in relation to its responsibilities under the Conservation and Land Management Act 1984 and Biodiversity Conservation Act 2016.	No objection or claim identified	N/A
DAWE	6 Aug 2021	p. 68		Claim. Letter stating that sea dumping permit is required for WTR	DAWE is responsible for permitting under the *Environment Protection (Sea Dumping) Act 1981* (Cwth)	CAPL is currently following up with DAWE with regard to requirements for sea dumping permits for wellheads.

Stakeholder	Date	Sensitive Information Ref.	Matter	Objection or Claim	Assessment of Merits	Titleholder Response
DMIRS	07 Dec 2020	p. 65	Response to WTR well abandonment factsheet.	No objection or claim: Acknowledged EP will be assessed by NOPSEMA. Consultation package has been reviewed and no further information is required.	No objection or claim identified	N/A
DPIRD	9 Nov 2021	p. 90		Advised that Zone 1 allocation for Pilbara Trawl Fishery was unlikely to change in the short to medium term but will be part of management review when resource plans are developed under the new Act.	No objection or claim.	Email: 12 Nov 2021 Phone calls: 12 Nov 2021, 18/11.2021, 25/11/2021 Request for further information in relation to Zone 1

2.6.4 Ongoing Consultation

Further to the stakeholder consultation undertaken, a single requirement to notify the AHS of the wellhead location was identified (captured in Section 7.1). CAPL will engage with the Department of Agriculture, Water and the Environment (DAWE) to understand CAPL's requirements under the *Environment Protection (Sea Dumping) Act 1981* and ensure that all obligations under the Act (as required) are met. No additional consultation is required. Any objections or claims arising from ongoing consultation that have merit and have the potential to result in changes to the description of environment or risk assessment (and control measures), will be subject to management of change in accordance with Section 8.1.2.

3 Assessment of Spill Scenarios

The proposed activity as described in Section 4 was evaluated to identify potential spill sources and subsequently determine credible spill scenarios for this EP.

As the drilling program has finished, and no further drilling or monitoring activities are planned, there will be no MODU or vessel on location. Consequently, the sole petroleum activity associated with this EP is leaving the WTR-2 wellhead permanently in situ, spills associated with vessel activities were ruled out for this activity. Accordingly, the categories of spill evaluated were:

- Loss of well control (LOWC)
- Accidental release of fluid contained in the wellbore.

These categories were then subject to an evaluation to determine if any credible spill scenarios were present for this activity.

The evaluation determined that the activity poses no credible spill risks with justification for this determination provided in Table 3-1.

Table 3-1: Spill Scenario Evaluation

Category	Spill Source	Consideration
Loss of well control	Wellbore	The well was abandoned following well completion as described in documentation which was submitted to the Bureau of Mineral Resources (the regulator at the time) in 1975 (Ref. 4). The well was assigned the status of abandoned based on this report as can be seen in the National Offshore Petroleum Information Management System. Figure 4-1 shows the final abandonment schematic (including the well barriers). This shows that there are two separate internal cement plugs in the wellbore exceeding 30m in length and two annular cement barriers exceeding 150m in length, isolating the reservoir sands. In addition to these barrier plugs there is a 64m surface cement plug set just below the wellhead. These barriers were designed and installed to prevent any LOWC associated with flow of hydrocarbons to the environment. The lateral force exerted by trawling activities is not expected to be enough to dis-lodge a wellhead and cause any well control issues. In addition, the well has been abandoned since 1974 with no incident to date. Therefore, regardless if trawl fishers operate in the area it is not considered credible that interaction with the wellhead from trawling would exert enough force to affect well integrity and thus a loss of containment now that the well has been abandoned.

Category	Spill Source	Consideration
Accidental release of fluid contained in the wellbore	Wellbore	The well was abandoned following well completion as described in documentation which was submitted to the Bureau of Mineral Resources (the regulator at the time) in 1975 (Ref. 4). The well was accepted as abandoned based on this report. Figure 4-1 shows the final abandonment schematic (including the well barriers). This shows that there are two separate internal cement plugs in the wellbore exceeding 30m in length and two annular cement barriers exceeding 150m in length, isolating the reservoir sands. In addition to these barrier plugs there is a 64m surface cement plug set just below the wellhead The wellbore fluids above the surface plug set at 176m were displaced to seawater. Below the sealing surface plug the well was left with a water-based drilling mud system. In the very unlikely event that the integrity of the surface plug is compromised, the mud within the wellbore is not expected to leach to the surrounding environment given its density greater than sea water and as such it will remain within the wellbore. Consequently, this scenario was not considered credible.

As there are no credible spill risks associated with this activity, it was determined that an Oil Pollution Emergency Plan (OPEP) was not required for this activity.

4 Description of the Activity

4.1 Overview

As described in Section 2.1, the drilling and the plug and abandonment program associated with WTR-2 was completed in 1974. At the completion of drilling, the well was abandoned with the wellhead remaining in situ on the seabed.

The petroleum activity associated with this revised EP is limited to permanently leaving the WTR-2 wellhead on the seabed.

4.1.1 Location

The location of the WTR-2 wellhead is described in Table 4-1 and displayed in Figure 2-1.

Table 4-1: Location of the Wellheads that Remain In Situ

Well Name	Title	Latitude	Longitude	Water Depth (m)	Wellhead height above the seabed (m)
WTR-2	WA-5-R	-20.21326	115.06637	126	2

4.1.2 Time Frame

As the abandonment program has been completed, no further activities are proposed, with the wellhead to remain permanently on the seafloor.

In the event that CAPL plan to relinquish the Title identified in Table 4-1 in the future, approval to leave the wellhead in situ for perpetuity will be sought from NOPTA.

4.1.3 Operational Area/ Environment that May be Affected

The Operational Area (OA) associated with this activity is limited to the footprint of the specific wellhead location. For the purposes of the risk assessment, the operational area is considered to be a circular area 500 m around the wellhead. For the purpose of this EP, the Operational Area is considered to coincide with the Environment that May Be Affected (EMBA) by the activity.

4.1.4 Options Assessment

Under Section 270(3)(c) of the OPGGS Act, before a title can be surrendered, all property brought into a title area must be removed or arrangements that are satisfactory to NOPSEMA must be made in relation to the property. Section 572(3) of the OPGGS Act states that “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 in which the titleholder is or will be engaged and that are authorised by the permit, lease, licence or authority.” Titleholders may deviate from the requirement to remove property that is neither used, nor to be used via an accepted EP.

The Offshore Petroleum Decommissioning Guideline (Ref. 5) clarifies that the Base Case is complete removal. It states that options other than complete removal may be considered if the titleholder can demonstrate that the alternative decommissioning approach delivers equal or better environmental and safety outcomes compared to complete removal, and that the approach complies with all other requirements (Ref. 5).

To define the petroleum activity for this EP, CAPL conducted an assessment of alternatives to evaluate wellhead decommissioning options, this was in the form of a cost and benefit analysis. Consistent with the Decommissioning Guidelines, the options assessment considered environmental, social and safety criteria to evaluate each decommissioning alternative. In accordance with the Section 572 Maintenance and Removal of Property Policy (Ref. 6), the EP must evaluate the feasibility of all options, therefore technical feasibility criteria are also considered in the options assessment. This assessment is presented within Section 7 as part of the cost and benefit analysis and whereby alternatives are assessed as additional controls.

The alternatives (or additional controls) assessed included the base case requirement of full removal of the wellhead. Further alternatives including installing an overtrawl structure on the wellhead or rock dumping over the wellhead were considered but not taken forward into the assessment. The benefit associated with these control measures is the reduction in snagging and navigational hazard risk. However, these measures would only reduce and not remove the navigational hazard posed by the wellhead. As the wellhead will remain marked on nautical charts and because commercial fishing effort in the OA is low and an increase in fishing effort is not projected in the near term, the measure was considered to provide only incidental benefit. Furthermore, WAFIC advised during stakeholder consultation that their position was that over trawl protection should not be installed over the well.

Stakeholders were consulted on the selected option as described in Section 2.

The assessment provides CAPL with an understanding of the preferred decommissioning option based on how it ranks against the assessment criteria. The preferred option is assessed against the acceptability criteria in Section 7. This is undertaken in accordance with Section 6.6.2.

As the alternative of leaving the wellhead in situ provides equal or better outcomes compared with full removal and is assessed as ALARP, CAPL are seeking a deviation to the s.572 (3) requirement via the submission of this EP to leave the wellhead in situ.

4.1.5 Activity Description

The activity comprises permanently leaving the wellhead identified in Table 4-1 on the seabed. No further onsite operations are proposed and the well, including wellhead, will be passively left in situ. A schematic of the wellhead is provided in Figure 4-1.

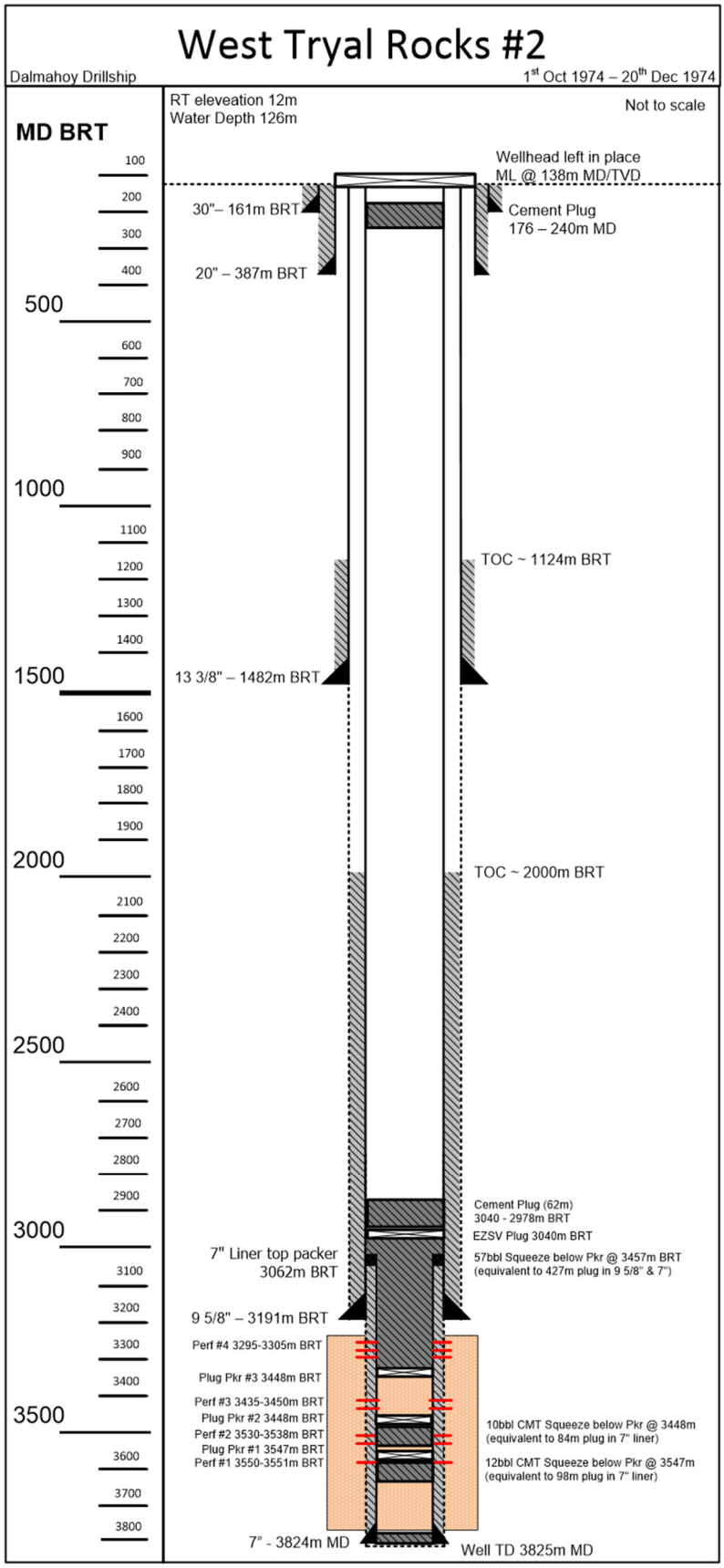


Figure 4-1: WTR-2 Wellhead Schematic

5 Description of the Environment

The Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPPGS(E)R) detail the information that must be included in the EP. Specifically, Regulation 13(2) states that the environment plan must:

(a) describe the existing environment that may be affected by the activity; and

(b) include details of the particular relevant values and sensitivities (if any) of that environment.

To meet the requirements of the OPGGS(E)R, Division 2.3, Regulation 13(2), Description of the Environment, this Section describes the environment that may be affected (EMBA) relevant to this EP for the petroleum activity associated with leaving the wellhead in-situ.

As described in Section 3, no credible spill scenarios were identified as being associated with this activity. As described in Section 4.1.3, the operational area/ EMBA is limited to the physical footprint of the wellhead, but for the purposes of the risk assessment is considered to be a 500 m area around the wellhead.

5.1 Regional Overview

The Integrated Marine and Coastal Regionalisation of Australia (IMCRA) is an ecosystem-based classification of Australia's marine and coastal environments that has been developed by the Commonwealth Government as a regional framework for planning resources development and biodiversity protection (Ref. 7). The IMCRA divides Australia's marine environment into 41 provincial bioregions; a 'bioregion' is a biogeographical area defined by similar ecological characteristics.

The wellhead is located within the Northwest Marine Region, which encompasses the Commonwealth waters from the WA/Northern Territory border in the north to the waters off Kalbarri in the south. A Marine Bioregional Plan for the North-west Marine Region (Ref. 8) was released in 2012; it aims to strengthen the operation of the EPBC Act in the region by improving the way the marine environment is managed and protected. The bioregional plan outlines the conservation values of the region, the associated pressures affecting those values, the priorities and strategies to address the pressures, and useful advice for industry planners looking to undertake activities in the region (Ref. 8). Information within the bioregional plan has been referenced in this Section where relevant.

The North-west Marine Region is further divided into eight provincial bioregions based on fish, benthic habitat, and oceanographic data at a scale that is useful for regional conservation planning and management (Ref. 8). The wellhead is located within Northwest Shelf Province (see Figure 5-1). Table 5-1 summarises this provincial bioregion.

Table 5-1: Description of Provincial Bioregions

Bioregion	Area Description
Northwest Shelf Province	Located almost entirely on the continental shelf between North West Cape and Cape Bougainville and includes water depths of 0–200 m, with more than 45 per cent of the bioregion having a depth of 50–100 m (Ref. 8).

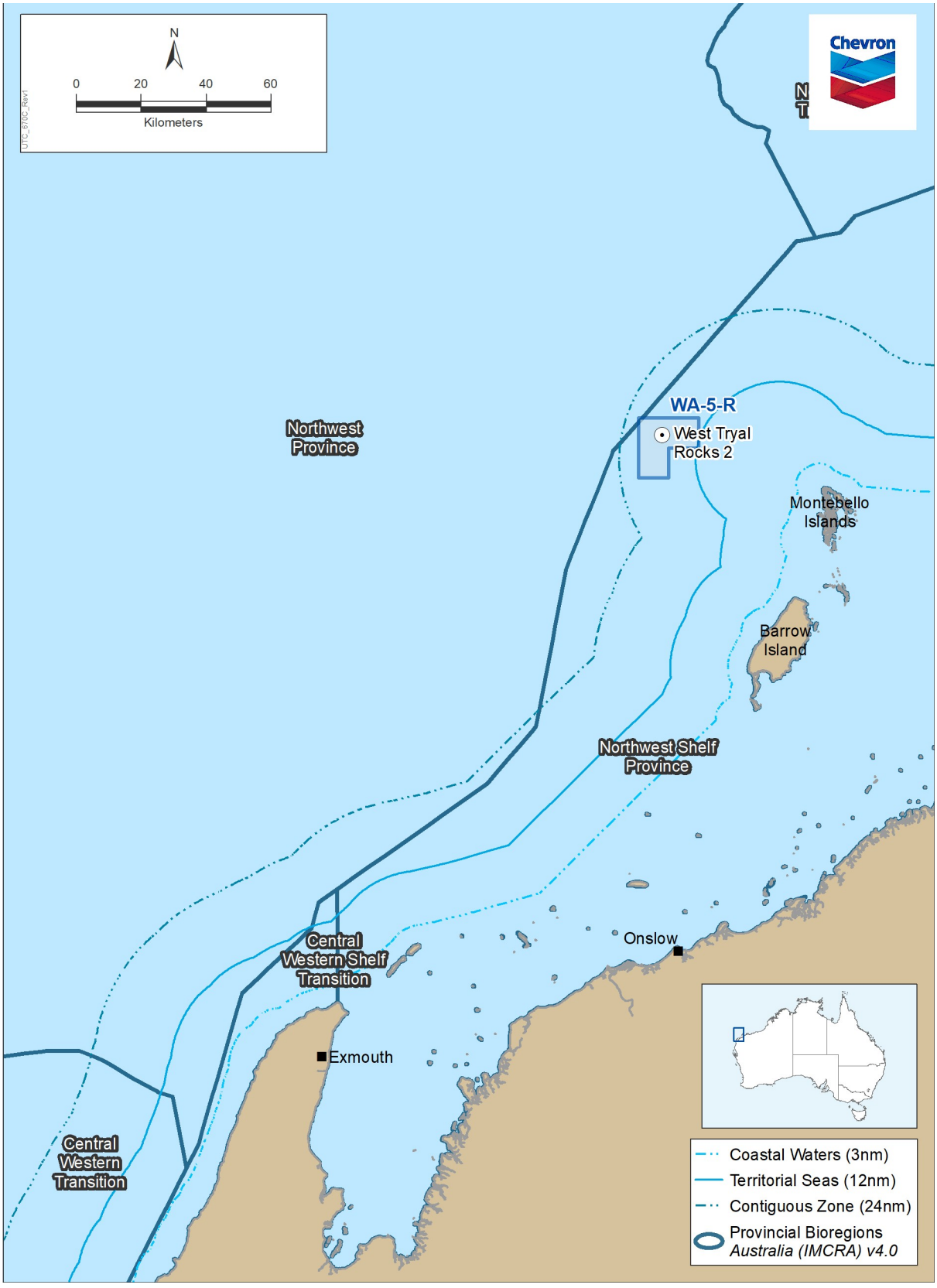


Figure 5-1: Wellhead Locations and Marine Regions

5.1.1 Marine Environment

5.1.1.1 Marine Habitats

The provincial bioregion has a complex seafloor topography with a diversity of features including submerged terraces, carbonate banks, pinnacles, reefs and sand banks. Seamap Australia spatial data were used to indicate that the benthic habitat present within the operational area is made up of calcareous gravel, sand and silt (Ref 9).

The sandy substrates on the shelf within this bioregion are thought to support low density communities of bryozoans, molluscs and echinoids (Ref. 10).

The benthic and pelagic fish communities of the Northwest Shelf Province are strongly depth related, indicative of a close association between fish communities and benthic habitats (Ref. 9).

The West Tryal Rocks wellhead is situated within a Key Ecological Feature (KEF); the Ancient Coastline (Figure 5-2). A description of this KEF is provided below.

5.1.1.2 Ancient Coastline

The shelf of the North-west Marine Region contains several terraces and steps which reflect the gradual increase in sea level across the shelf that occurred during the Holocene. The most prominent of these occurs episodically as an escarpment through the Northwest Shelf Province and Northwest Shelf Transition, at a depth of approximately 125 m (Ref. 10).

It has been suggested that humpback whales, whale sharks and other migratory pelagic species may use this escarpment as a guide as they move through the Region. The topographic variation of the ancient coastline may also facilitate small localised upwellings as a result of internal tide activity or regional mixing associated with seasonal changes in currents and winds. These areas of enhanced biological productivity could attract baitfish which may provide food for migrating species (Ref.10).

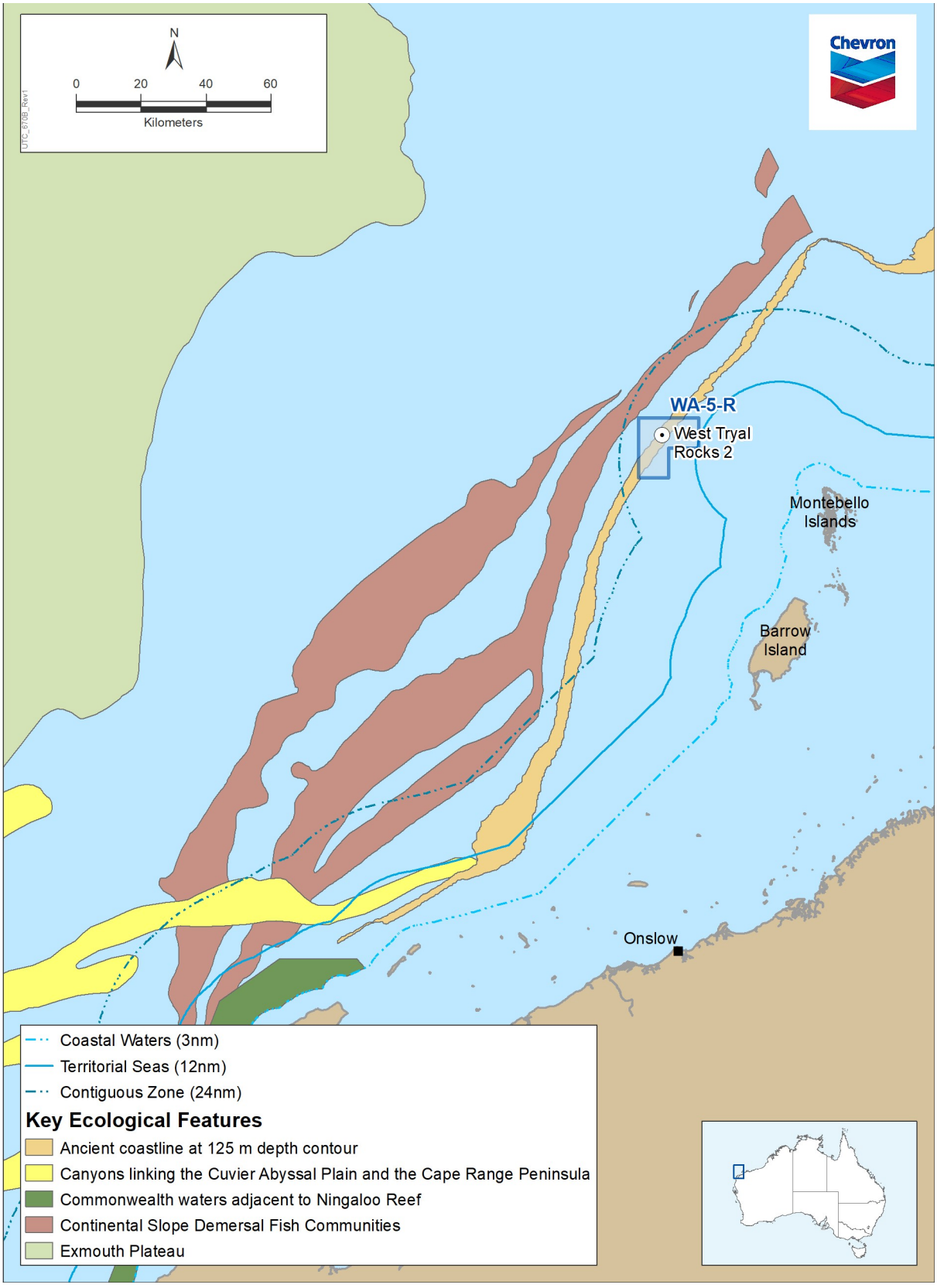


Figure 5-2: Operational Area and Proximity to Key Ecological Features

5.1.1.3 Marine Fauna

Based upon a search of the protected matters database (Ref. 11), several Threatened or Migratory species may be present within the operational area. These are described in the various subsections below.

5.1.1.3.1 Marine Mammals

Certain Threatened or Migratory marine mammals may be present within the operational area, including:

- Humpback Whale
- Blue Whale (including Pygmy Blue Whale)
- Sei Whale
- Fin Whale

As there are no known feeding, calving, and resting areas within the operational area, most of these species are expected to be transient. However, the operational area intersects the Blue Whale Presence Biologically Important Area (BIA) (Ref. 16).

The Pygmy Blue Whale uses the north-west WA as a key migratory route between summer foraging grounds off south-west WA and breeding grounds in equatorial regions. Blue Whales migrate north from April to August and south from September to November. Although the operational area does not overlap the defined migration BIA, presence in the area is expected to be seasonally high during migration periods. In addition to Threatened and Migratory marine mammals identified above, several other Whale and dolphin species have been identified by the protected matters database search as having the potential to be present within the operational area. However, no BIAs associated with these species has been identified.

5.1.1.3.2 Summary of Relevant Conservation Plans

Table 5-2 summarises the management actions identified within recovery plans or conservation advice associated with these species.

Table 5-2: Summary of Relevant Conservation Plans – Marine Mammals

Species	Relevant Plan / Advice	Relevant Management Advice	Section in this Plan
Humpback Whale	Conservation Advice for the Humpback Whale 2015–2020 (Ref. 12)	None identified	N/a
Blue Whale	Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 13)	None identified	N/a
Sei Whale	Conservation Advice *Balaenoptera borealis* Sei Whale (Ref. 14)	None identified	N/a
Fin Whale	Conservation Advice *Balaenoptera physalus* Fin Whale (Ref.15)	None identified	N/a

5.1.1.3.3 Reptiles

Five Threatened or Migratory species of marine turtles may be present within the operational area, including:

- Green Turtle
- Hawksbill Turtle
- Flatback Turtle
- Loggerhead Turtle
- Leatherback Turtle.

All five species are listed as Vulnerable, with Loggerhead and Leatherback Turtles also listed as Endangered, under the EPBC Act.

Barrow Island and the Montebello Islands (and 60 km radius buffer) provides critical habitat for the Flatback Turtle (Ref. 25). The operational area is within the outer limits of the critical habitat and intersects the BIA for Flatback Turtles (Ref. 16).

A number of sea snake species were identified via the EPBC search as having the potential to be present in the operational area. However, Cogger (Ref. 25; Ref. 26) state that most sea snakes have shallow benthic feeding patterns and are rarely observed in water depths >30 m. As such, sea snakes are not expected to be common within the operational area, which is in a water depth of >120 m.

5.1.1.3.4 Summary of Relevant Conservation Plans

Table 5-3 summarises the management actions associated with marine turtles.

Table 5-3: Summary of Relevant Conservation Plans – Marine Reptiles

Species	Relevant Plan / Advice	Relevant Management Advice	Section in this Plan
Caretta caretta (Loggerhead Turtle) *Chelonia mydas* (Green Turtle) *Dermochelys coriacea* (Leatherback Turtle, Leathery Turtle, Luth) *Eretmochelys imbricata* (Hawksbill Turtle) *Natator depressus* (Flatback Turtle)	Recovery Plan for Marine Turtles in Australia (Ref. 17)	None identified	N/a
Dermochelys coriacea (Leatherback Turtle, Leathery Turtle, Luth)	Approved Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle (Ref. 18)	None identified	N/a

5.1.1.3.5 Fishes, including Sharks and Rays

A number of Threatened or Migratory fish, shark, and ray species may be present within the operational area, including:

- Grey Nurse Shark
- Great White Shark
- Whale Shark
- Green Sawfish, Dindagubba, Narrowsnout Sawfish.

Based upon the BIA of Regionally Significant Marine Species (Ref. 16), the operational area intersects the BIA for whale sharks.

5.1.1.3.6 Summary of Relevant Conservation Plans

Table 5-4 summarises management actions associated with fish, sharks, and rays.

Table 5-4: Summary of Relevant Conservation Plans – Fish, Sharks, and Rays

Species	Relevant Plan / Advice	Relevant Management Advice	Section in this Plan
Carcharias taurus (west coast population) (Grey Nurse Shark [west coast population])	Recovery Plan for the Grey Nurse Shark (Carcharias taurus) (Ref. 19)	None identified	N/a
Carcharodon carcharias (Great White Shark)	Recovery Plan for the White Shark (*Carcharodon carcharias*) (Ref. 20)	None identified	N/a
Pristis zijsron (Green Sawfish, Dindagubba, Narrowsnout Sawfish)	Sawfish and River Sharks Multispecies Recovery Plan (Ref. 21)	None identified	N/a
	Approved Conservation Advice for Green Sawfish (Ref. 22)	None identified	N/a
Rhincodon typus (Whale Shark)	Conservation Advice for the Whale Shark 2015–2020 (Ref. 23)	None identified	N/a

5.1.1.3.7 Seabirds and Shorebirds

A number of Threatened or Migratory seabirds or shorebirds may be present within the operational area including:

- Red Knot
- Curlew Sandpiper
- Eastern Curlew
- Australia Fairy Tern
- Common Noddy
- Lesser Frigatebird
- Southern Giant Petrel
- Streaked Shearwater.

No BIAs were identified for these species.

5.1.1.3.8 Summary of Relevant Conservation Plans

Table 5-5 summarises management actions associated with Seabirds and Shorebirds.

Table 5-5: Summary of Relevant Conservation Plans – Seabirds and Shorebirds

Species	Relevant Plan / Advice	Relevant Management Advice	Section in this Plan
Macronectes giganteus (Southern Giant Petrel)	National recovery plan for threatened albatrosses and giant petrels 2011–2016 (Ref. 24)	None Identified	N/a

5.1.1.4 Shoreline Habitats

No shoreline habitats occur within the operational area.

5.2 Socioeconomic Environment

5.2.1 Commercial Shipping

The Australian Marine Safety Authority utilises a satellite automated identification system (AIS) service that provides AIS data across the Indo-Pacific and Indonesian region. Based upon the data provided by shipborne AIS's, a point density map has been built from filtered satellite AIS data collected in Feb 2021 to provide an indication as to the level of shipping activity across Australian waters. The shipping density map (Ref. 27), shows the OA is not located in a shipping fairway and the level of shipping activity surrounding the operational area is relatively low compared with the surrounding areas (Figure 5-3).

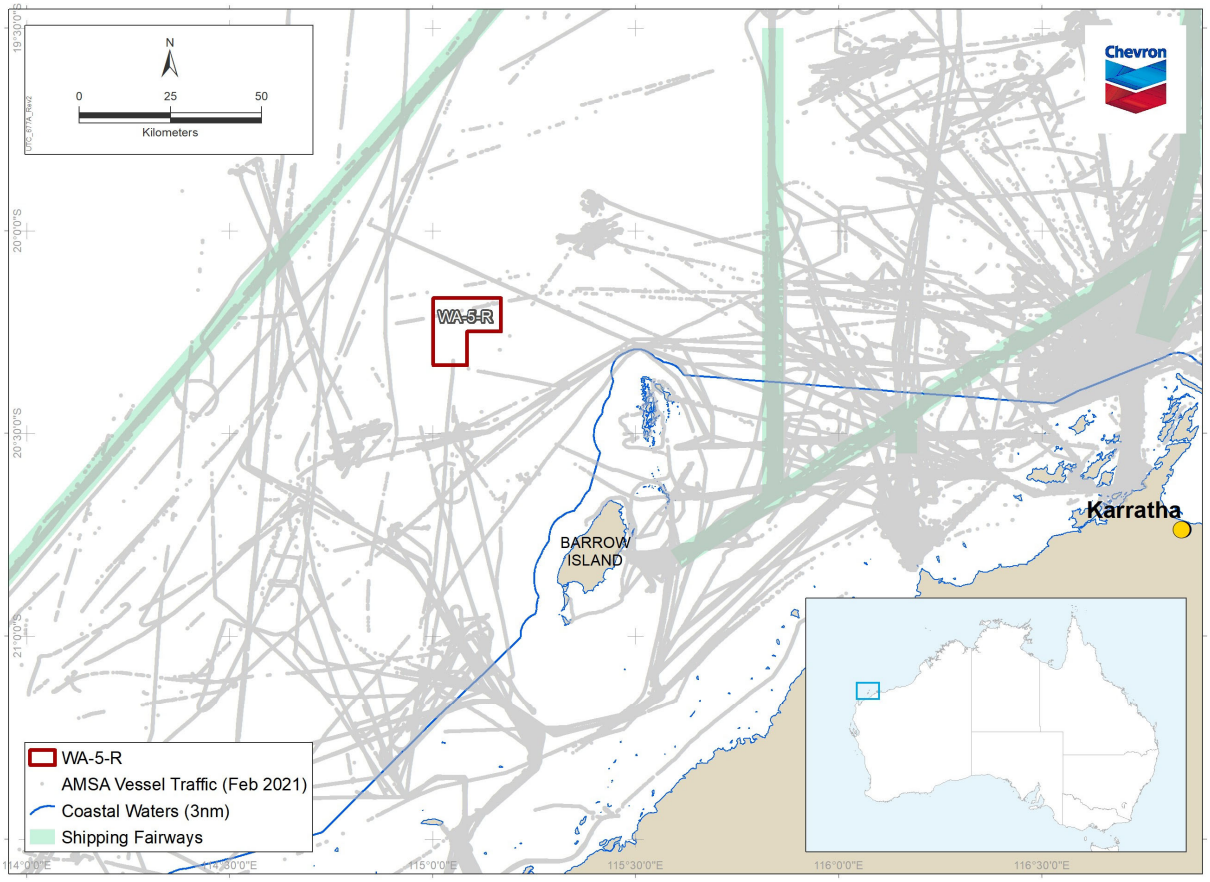


Figure 5-3 Commercial Shipping Density

Given the nature of this EP, commercial shipping operations are not expected to interact with the wellhead given its state of abandonment and water depth of >120 m.

5.2.2 Commercial Fishing and Aquaculture

The following fishing industry representative bodies are considered relevant to the

- Western Australian Fishing Industry Council (WAFIC)
- Australian Southern Bluefin Tuna Industry Association
- Commonwealth Fisheries Association

Based upon the location of the wellhead and fishing licenses that were identified to overlap the location, the following fisheries have the potential to occur within the operational area:

- Developmental Octopus
- Pearl Producers Association (PPA)
- Onslow Prawn
- Nickol Bay Prawn Managed Fishery
- Mackerel Fishery
- Western Tuna and Billfish Fishery
- Pilbara Crab Managed Fishery
- Pilbara Trap Managed Fishery (State)
- Pilbara Fish Trawl Interim Managed Fishery (State) (PFTIMF)
- Pilbara Line (State)

However commercial fishing effort in the OA is low and annual fishing records indicate that only one fishery, the Mackerel Managed Fishery, was active in the OA between 1999-2019 with no more than three vessels potentially operating within the OA each year (Ref.28). Consultation with WAFIC specific to this fishery indicated that they do not fish much deeper than 70m water depth. Importantly, even if operating in 70m water depth this is a pelagic fishery and they would be fishing in the upper 10% of the water column and activities would never occur near the seafloor i.e. wellhead. The limited commercial fishing activity in the OA was confirmed through engagement with WAFIC and engagement with licence holders has not indicated any projected increase in the near term.

As per Section 2.6.3, a single PFTIMF licence holder raised concerns to WAFIC regarding the physical presence of the wellhead and potential snag risk. The PFTIMF consists of two zones, Zone 1 in the south-west of the fishery which is effectively closed to trawling and Zone 2 in the North, which consists of six management areas (Figure 5-4). Areas 1 to 6 each cover 1,300, 1,800, 880, 1,500, 2,300 and 7,200 square nautical miles respectively with Areas 3 and 6 closed to fishing. The total area available for trawling is 14,980 square nautical miles, with around 40% of the available area fished (Ref. 29). The OA is located

within the closed zone (Zone 1) of the PFTIMF. Assessment of the PFTIMF as an approved Wildlife Trade Operation under the EPBC Act was undertaken by DAWE in 2021 (Ref. 30). An outcome of the assessment was that to address concerns regarding interactions with dolphins, sawfish and other protected species which are a bycatch of the PFTIMF, conditions set by DAWE are required to be implemented. These conditions include that the PFTIMF must be carried out in accordance with the management arrangements specified in the Pilbara Fish Trawl Interim Managed Fishery Management Plan 1997 and that DAWE are to be informed of any material changes to the management arrangements that may affect the assessment under the EPBC Act (Ref. 30). The Pilbara Fish Trawl Interim Managed Fishery Management Plan 1997 arrangements include maximum fish trawl units (as time allocations) that can be allocated for use in each zone, with Zone 1, being allocated 'nil' units (Ref. 31).

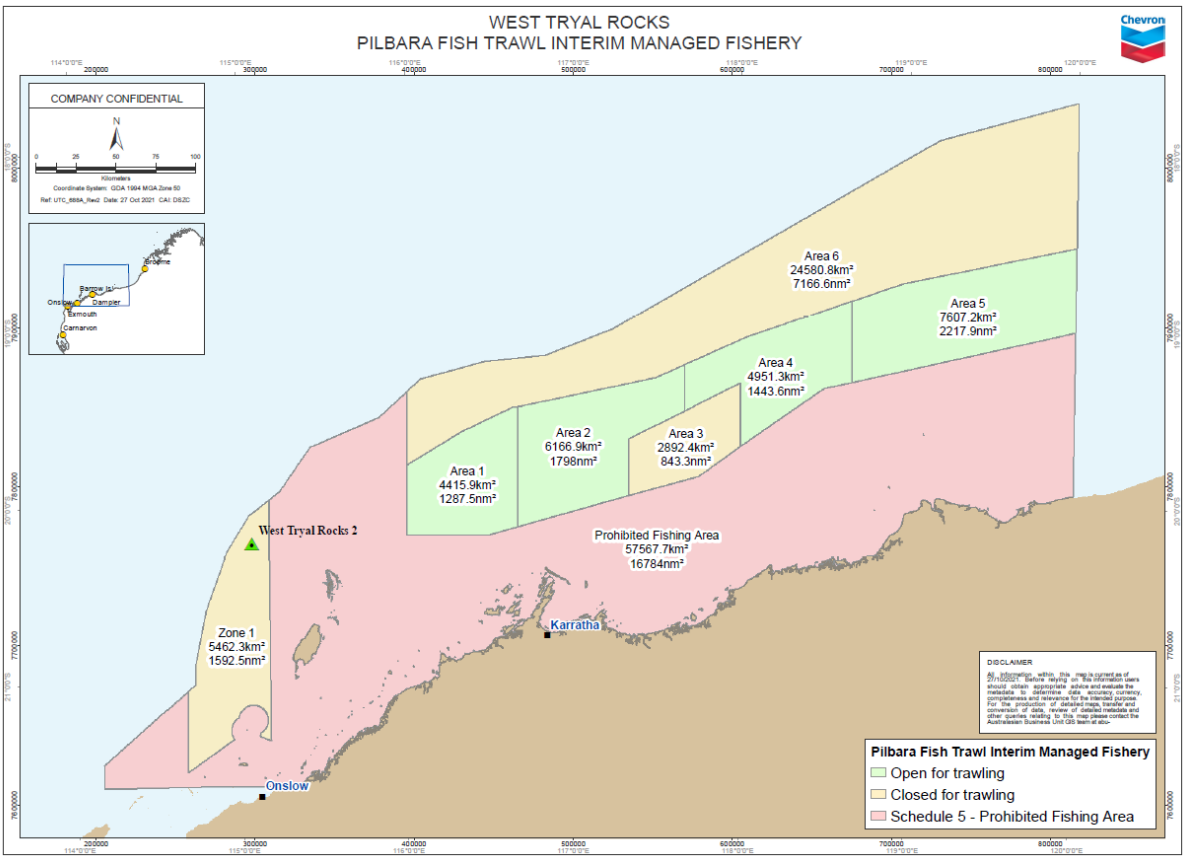


Figure 5-4: PFTIMF and location of the WTR 2 Wellhead

PFTIMF licence holdersare not expected to be impacted given that the WTR 2 wellhead is located within Zone 1 of the PFTIMF which is closed and because trawling undertaken as part of the PFTIMF occurs in water between 50 and 100 m deep, whereas the WTR 2 wellhead is located in deeper waters (126 m) (Ref. 29).

5.2.3 Marine-based Tourism and Recreation

Given the nature of this EP, marine based tourism and recreation are not expected to interact with the wellhead.

No specific values or sensitivities associated with marine based tourism have been identified as having the potential to interact with this activity / occurring within the operational area.

5.2.4 Other Socioeconomic Values and Sensitivities

The operational area does not overlap any:

- National heritage place
- World heritage property
- RAMSAR wetland
- Australian Marine Parks.

Given the nature of this EP, and the absence of activities occurring within the operational area, cultural heritage is not expected to interact with or be impacted by the wellheads.

In addition to this, there are no known wrecks within the operational area according to the Australian National Shipwreck Database (Ref. 32).

5.3 Particular Values and Sensitivities

The particular values and sensitivities identified for the operational area includes the presence of:

- Blue and Pygmy Blue Whales,
- Flatback Turtles, and
- Whale Sharks.

6 Environmental Risk Assessment Methodology

In accordance with Regulation 13(5) of the OPGGS(E)R, this Section summarises the methodology used to identify and assess the environmental impacts and risks associated with the activities described in Section 3.

The risk assessment for this EP was undertaken in accordance with CAPL's Operational Excellence (OE) Australian Business Unit's (ABU) Risk Management Procedure (Ref. 33) using the Chevron Corporation Integrated Risk Prioritization Matrix (Figure 6-1). This approach generally aligns with the processes outlined in ISO 31000:2009 Risk Management – Principles and Guidelines (Ref. 34) and Handbook 203:2012 Managing Environment-Related Risk (Ref. 35).

The risk assessment process and evaluation involved consultation with environmental, health, safety, commissioning, start-up, operations, maintenance, and engineering personnel. Risks considered and covered in this EP were identified and informed by:

- expertise and experience of CAPL personnel
- stakeholder engagement (Section 2.6).

RISK: The OE Risk Management Procedure (Ref. 33) defines risk as the combination of the potential consequences arising from a specified hazard, together with the likelihood of the hazard actually resulting in an unwanted event.

6.1 Identification and Description of the Petroleum Activity

All components of the petroleum activity and potential emergency conditions relevant to the scope of this EP were described and evaluated.

6.2 Identification of Particular Environmental Values

The environment for the operational area is described in Section 5 of this EP. The particular values and sensitivities were also identified. In accordance with Regulation 13(3) of the OPGGS(E)R, CAPL considers particular values and sensitivities to be:

- the world heritage values of a declared World Heritage property within the meaning of the EPBC Act
- the national heritage values of a National Heritage place within the meaning of that Act
- the ecological character of a declared Ramsar wetland within the meaning of that Act
- the presence of a listed Threatened species or listed Threatened Ecological Community within the meaning of that Act
- the presence of a listed migratory species within the meaning of that Act
- any values and sensitivities that exist in, or in relation to, part or all of:
  - a Commonwealth marine area within the meaning of that Act, or
  - Commonwealth land within the meaning of that Act

Because many protected, rare, or endangered fauna have the potential to transit through the operational area and wider EMBA, the habitat and/or temporal area

that supports protected and endangered fauna (including areas defined as BIAs for these species) is considered to be the particular value or sensitivity.

6.3 Identification of Relevant Environmental Aspects

ASPECT: CAPL defines an aspect as an element of CAPL's activities, products, or services related to an operation that has the potential to interact with the environment at present or later (e.g. wastewater discharges, greenhouse gas emissions, legacy environmental obligations).

After describing the petroleum activity, an assessment was carried out to identify potential interactions between the petroleum activity and the receiving environment. The outcomes of stakeholder consultation also contributed to this scoping process.

Note: Potential interactions with safety, health, and assets are outside the scope of this EP.

These potential interactions, or environmental aspects, were categorised for use in the risk assessment of this petroleum activity:

- Physical presence
- Seabed disturbance.

6.4 Identification of Relevant Environmental Hazards

Potential impacts and risks arising from the aspects were then identified during a scoping exercise and then evaluated in detail.

6.5 Evaluation of Impacts and Risk

6.5.1 Consequence

After identifying the potential aspects, the potential consequences were evaluated using the Integrated Risk Prioritization Matrix (Figure 6-1). The level of consequence is determined by considering:

- the spatial scale or extent of potential interactions within the receiving environment
- the nature of the receiving environment (from Section 5) (within the spatial extent), including proximity to sensitive receptors, relative importance, and sensitivity or resilience to change
- the impact mechanisms (cause and effect) of the environmental hazard within the receiving environment (e.g. persistence, toxicity, mobility, bioaccumulation potential)
- the duration and frequency of potential effects and time for recovery
- the potential degree of change relative to the existing environment or to criteria of acceptability.

For aspects that have the potential to cause both impacts and risks, the highest-level consequence of the impact or risk was carried through the remainder of the assessment to ensure the most conservative analysis is presented.

Likelihood Descriptions									
	Expected to occur	Likely	1	6	5	4	3	2	1
	Conditions may allow to occur	Occasional	2	7	6	5	4	3	2
	Exceptional conditions may allow to occur	Seldom	3	8	7	6	5	4	3
	Reasonable to expect will not occur	Unlikely	4	9	8	7	6	5	4
	Has occurred once or twice in the industry	Remote	5	10	9	8	7	6	5
	Rare or unheard of	Rare	6	10	10	9	8	7	6
Consequence Descriptions				A	B	C	D	E	F
				Incidental	Minor	Moderate	Major	Severe	Catastrophic
				Limited environmental impact	Localised, short-term environmental impact	Localised, long-term environmental impact	Short-term, widespread environmental impact	Long-term widespread environmental impact	Persistent landscape-scale environmental impact

Figure 6-1: Chevron Corporation Integrated Risk Prioritization Matrix

6.5.2 Control Measures and ALARP

The process for identifying control measures depends on the 'as low as reasonably practicable' (ALARP) decision context set for that particular aspect. Regardless of the process, control measures are assigned in accordance with the defined environmental performance outcomes, with the objective to eliminate, prevent, reduce, or mitigate consequences associated with each of the identified environmental impacts.

6.5.2.1 ALARP Decision Context

In alignment with NOPSEMA's ALARP Guidance Note (Ref. 36; GN0166), CAPL has adapted the approach developed by Oil and Gas UK (OGUK) (Ref. 37) for use in an environmental context to determine the assessment technique required to demonstrate that potential impacts and risks are ALARP (Figure 6-2). Specifically, the framework considers impact severity and several guiding factors:

- activity type
- risk and uncertainty
- stakeholder influence.

A Type A decision is made for lower-order impacts and risks (Table 6-2) where they are relatively well understood, activities are well-practised, and there is no significant stakeholder interest. However, if good practice is not sufficiently well defined, additional assessment may be required. In addition to this, where an aspect associated with the activity is listed as either a key threat to protected matters under an EPBC Act Statutory Instrument, or identified as an aspect of Concern to listed conservation values under an EPBC Act Marine Bioregional Plan, and can result in a credible impact or risk to these sensitivities, additional control consideration will be required.

A Type B decision is made for higher-order impacts and risks (Table 6-2) if there is greater uncertainty or complexity around the activity, and there are relevant concerns from stakeholders. In this instance, established good practice is not considered sufficient and further assessment is required to support the decision and ensure the risk is ALARP.

A Type C decision typically involves sufficient complexity, higher-order impact and risks (Table 6-2), uncertainty, or stakeholder interest to require a precautionary approach. In this case, relevant good practice still has to be met, additional assessment is required, and the precautionary approach must be considered for those controls that only have a marginal cost benefit.

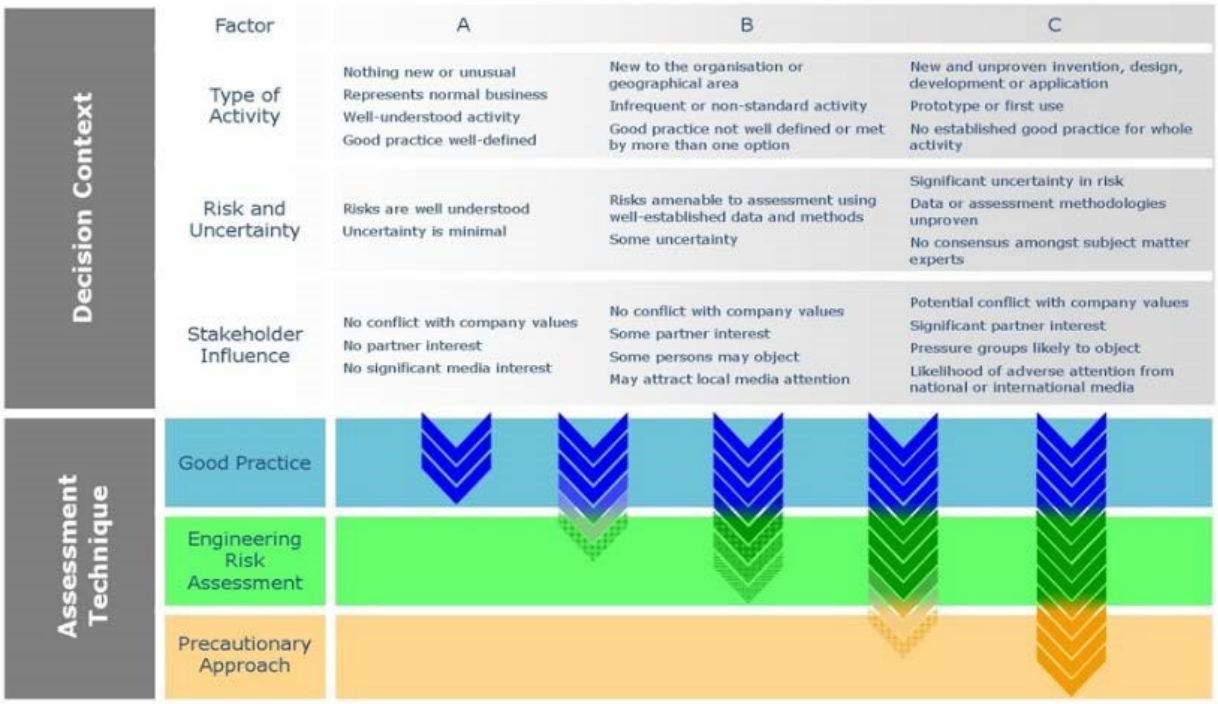


Figure 6-2: ALARP Decision Support Framework

(Source: Ref. 37)

In accordance with the regulatory requirement to demonstrate that environmental impacts and risks are ALARP, CAPL has considered the above decision context in determining the level of assessment required. This is applied to each aspect described in Section 7.

The assessment techniques considered include:

- good practice
- engineering risk assessment
- precautionary approach.

6.5.2.2 Good Practice

OGUK (Ref. 37) defines 'Good Practice' as:

> *The recognised risk management practices and measures that are used by competent organisations to manage well-understood hazards arising from their activities.*

'Good Practice' can also be used as the generic term for those measures that are recognised as satisfying the law. For this EP, sources of good practice include:

- requirements from Australian legislation and regulations
- relevant Commonwealth Government policies
- relevant Commonwealth Government guidance
- relevant industry standards
- relevant international conventions.

If the ALARP technique is determined to be 'Good Practice', further assessment ('Engineering Risk Assessment') is not required to identify additional controls. However, additional controls that provide a suitable environmental benefit for an insignificant cost have been identified.

6.5.2.3 Engineering Risk Assessment

All potential impacts and risks that require further assessment are subject to an engineering risk assessment. Based on the various approaches recommended in OGUK (Ref. 37), CAPL believes the methodology most suited to this activity is a comparative assessment of risks, costs, and environmental benefit. A cost–benefit analysis should show the balance between the risk benefit (or environmental benefit) and the cost of implementing the identified measure, with differentiation required such that the benefit of the risk reduction measure can be seen and the reason for the benefit understood.

6.5.2.4 Precautionary Approach

After considering all available engineering and scientific evidence, OGUK (Ref. 37) state that if the assessment, taking into account all available engineering and scientific evidence, is insufficient, inconclusive, or uncertain, then a precautionary approach to hazard management is needed. A precautionary approach will mean that uncertain analysis is replaced by conservative assumptions that will result in control measures being more likely to be implemented.

That is, environmental considerations are expected to take precedence over economic considerations, meaning that a control measure that may reduce environmental impact is more likely to be implemented. In this decision context, the decision could have significant economic consequences to an organisation.

6.5.3 Likelihood

For environmental impacts (where there is a planned emission or discharge resulting in a known change to the environment) likelihood is not considered.

For risks where the aspect or event may lead to environmental impacts under certain circumstances, the likelihood (probability) of the defined consequence occurring is determined. The likelihood is considered on the assumption that all control measures are in place. The likelihood of a consequence occurring was identified using one of the six likelihood categories shown in Figure 6-1.

6.5.4 Quantification of the Level of Risk

The Integrated Risk Prioritization Matrix (Figure 6-1) was applied during an Environmental Risk Assessment Workshop. This matrix uses consequence and likelihood rankings of 1 to 6, which when combined, result in a risk level between 1 (highest risk) and 10 (lowest risk). Risk assessment outcomes are based solely on risk assessment to the environment (as defined under OPGGS(E)R).

6.6 Risk and Impact Acceptance Criteria

NOPSEMA provides guidance on demonstrating that impacts and risks will be of an acceptable level (Ref. 38). This guidance indicates that an 'acceptable level' is the level of impact or risk to the environment that may be considered broadly acceptable with regard to all relevant considerations including:

- principles of ecologically sustainable development (ESD)

- legislative and other requirements (including laws, policies, standards, conventions)
- matters protected under Part 3 of the EPBC Act, consistent with relevant policies, guidelines, threatened species recovery plans, plans of management, management principles etc.
- internal context (e.g. consistent with titleholder policy, culture, and company standards)
- external context (the existing environment and stakeholder expectations)

6.6.1 Principles of ESD and Precautionary Principle

The principles of ESD are considered in Table 6-1 in relation to acceptability evaluations.

Table 6-1: Principles of ESD in Relation to Petroleum Activity Acceptability Evaluations

Principles of ESD	How they have been applied
(a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social, and equitable considerations;	CAPL's impact and risk assessment process integrates long-term and short-term economic, environmental, social, and equitable considerations. This is demonstrated through the Integrated Risk Prioritization Matrix (Figure 6-1) that includes provision for understanding the potential long-term and short-term impacts associated with its activities, and the ALARP process that balances the economic cost against environmental benefit. As this principle is inherently met through the application of the EP assessment process, this principle is not considered separately for each evaluation.
(b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;	Consider if there is serious or irreversible environmental damage (i.e. consequence level between Moderate [4] and Catastrophic [1]). If so, assess whether there is significant uncertainty associated with the aspect.
(c) the principle of inter-generational equity—that the present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations;	The risk assessment methodology ensures that potential impacts and risks are reduced to levels that are considered ALARP. If the potential impacts and risk are determined to be serious or irreversible, the precautionary principle is implemented to ensure that potential risks are managed to ensure that the environment is maintained for the benefit of future generations.
(d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making.	Evaluate if there is the potential to affect biological diversity and ecological integrity.
(e) improved valuation, pricing, and incentive mechanisms should be promoted.	Not considered relevant for petroleum activity acceptability demonstrations.

Under the EPBC Act, the Minister must also take into account the precautionary principle in determining whether to not to approve the taking of an action. The precautionary principle (Section 391(2) of the EPBC Act) is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage.

6.6.2 Defining an Acceptable Level of Impact and Risks

Following NOPSEMA's ALARP Guidance Note (Ref. 36; GN0166), CAPL has applied the approach that lower-order environmental impacts or risks (Table 6-2) assessed as Decision Context A are 'broadly acceptable', while higher-order environmental impacts or risks determined to be Decision Context B or C require further evaluation against a defined acceptable level because they are not inherently 'broadly acceptable'. However, in accordance with NOPSEMA's Decision Making Guidelines (Ref. 39) even where the impact or risk is evaluated as being a lower-order impact or risk, but the aspect associated with the activity is listed as a key threat to protected matters under an EPBC Act Statutory Instrument, or identified as an aspect of concern to listed conservation values under an EPBC Act Marine Bioregional Plan and can result in a credible impact or risk, CAPL will define an acceptable level of impact and risk in accordance with the EPBC Act Statutory Instrument.

Table 6-2: CAPL Definition of Lower- and Higher-order Impacts and Risks

Magnitude	Impacts	Risk	Decision Context
Lower order	Consequence Level: 4–6	Risk Level: 7–10	A
Higher order	Consequence Level: 1–3	Risk Level: 1–6	B/C

CAPL will considers these types of documents when defining the acceptable level of impact or risk:

- bioregional plans
- AMP plans
- conservation advice
- recovery plans
- government guidelines.

The objectives of the documents are identified and, having regard for the described activity, CAPL will set an acceptable level of impact that aligns with these objectives. Where the impact arising from the activity is inconsistent with the defined level (or objectives of the relevant documents), it is unacceptable.

6.6.3 Summary of Acceptance Criteria

Table 6-3 outlines the criteria that CAPL have used to demonstrate that impacts and risks from each of the identified aspects are acceptable.

Table 6-3: Acceptability Criteria

Acceptability Test	How They Have Been Applied
Principles of ESD	Is there the potential to affect biological diversity and ecological integrity? Do activities have the potential to result in permanent/ irreversible; medium-large scale; moderate-high intensity environmental damage?
	If yes: Is there significant scientific uncertainty associated with aspect?
	If yes: Are there additional measures to prevent degradation of the environment from this aspect?

Acceptability Test	How They Have Been Applied
Relevant environmental legislation and other requirements	Confirm that impact and risk management is consistent with relevant Australian environmental management laws and other regulatory / statutory requirements
Internal context	Confirm that all good practice control measures have been identified for this aspect through CAPL's management systems and the management of impacts and risks is consistent with company policy, culture and standards
External context	What objections and claims regarding this aspect have been made, and how have they been considered / addressed?
Defined acceptable level	Is the impact and risk broadly acceptable (i.e. Decision Context A)?
	If no: For higher-order environmental impacts and risks (Decision Context B or C), what is the defined level of impact, and does the activity meet this level?

6.7 Environmental Performance Outcomes, Standards, and Measurement Criteria

Environmental performance outcomes, performance standards, and measurement criteria were defined to address the environmental impacts and risks identified during the risk assessment.

CAPL is committed to conducting activities associated with the petroleum activity in an environmentally responsible manner and aims to implement best practice environmental management as part of a program of continual improvement to reduce potential impacts and risks to ALARP. CAPL defines environmental performance outcomes, standards, and measurement criteria that relate to managing the identified environmental risks as:

- **Environmental Performance Outcomes**: the level of performance in managing the potential environmental impacts and environmental risks from each petroleum activity
- **Environmental Performance Standards**: measurable statements of performance of a system, item of equipment, person, or procedure that are used to manage environmental impacts and risks for the duration of the petroleum activity
- These statements will consider the effectiveness of the control measures, and in accordance with NOPSEMA's Environment Plan Decision Making Guideline (A524696; Ref.39), effectiveness will be considered with regards to the controls functionality, availability, reliability, survivability, independence, and compatibility with other control measures.
- **Measurement Criteria**: compliance and assurance statements or records that detail how CAPL enacts the outlined performance standard; these are used to determine whether the environmental performance outcomes and standards have been met and whether the implementation strategy has been complied with. If no practicable quantitative target exists, a qualitative criterion is set.

7 Environmental Risk Assessment and Management Strategy – Petroleum Activity

To meet the requirements of the OPGGS(E)R, Regulation 13(5) and (6), *Evaluation of environmental impacts and risks* and Regulation 13(7) *Environmental performance outcomes and standards,* this Section evaluates the impacts and risks associated with the petroleum activity appropriate to the nature and scale of each impact and risk and details the control measures that are used to reduce the risks to ALARP and an acceptable level. Additionally, Environmental Performance Outcomes, Environmental Performance Standards, and Measurement Criteria have been developed and are described in the following sections.

As described in Section 4.1.1, CAPL conducted an assessment of alternatives to evaluate wellhead decommissioning options. The alternatives (or additional controls) assessed included the base case requirement of full removal of the wellhead. Further alternatives including installing an overtrawl structure on the wellhead or rock dumping over the wellhead were considered but not taken forward into the assessment. Removal of the WTR 2 wellhead is assessed in the following section in the assessment of additional control measures and cost benefit analysis.

7.1 Physical Presence (Marine Users)

Cause of Aspect			
The physical presence of the wellheads were identified as having the potential to result in physical interaction with other marine users within the operational area; specifically trawl fisheries.			
Potential Impacts and Risks			
Impacts	**C**	**Risks**	**C**
N/A	-	Physical interaction has the potential to result in: ▪ Exclusion of commercial shipping vessels ▪ Exclusion of fishing effort / damage to fishing (trawl) equipment	6
Consequence Evaluation			
Exclusion of commercial shipping vessels Small numbers of commercial shipping vessels may be encountered near the OA, however given the water depth of 126m they are not expected to be impacted by the physical presence of the wellhead. As a standard marine safety requirement, notation of the wellhead on navigational charts will occur, ensuring that commercial vessels are aware of the location of the wellhead. There is no Petroleum Safety Zone (PSZ) in place, therefore vessels would not be required to avoid the broader area around the wellhead and it is noted that WAFIC has specifically requested that a PSZ not be put in place around the wellhead to ensure that commercial fishers are able to access the area. Consequently, impacts to commercial shipping (i.e. exclusion from the area) is not considered credible and is not assessed further. **Exclusion of fishing effort / damage to fishing (trawl) equipment)** As identified in Table 2-4, several commercial fisheries have licences that overlap the OA associated with this EP. However, commercial fishing effort in the OA is low and the presence of the wellhead does not exclude these commercial fishers from operating in the OA. Annual fishing records indicate that only one fishery, the Mackerel Managed Fishery, was active in the OA between 1999-2019 with no more than three vessels potentially operating within the OA each year (Ref. 1). Consultation with WAFIC specific to this fishery indicated that they do not fish much deeper than 70m water depth. Importantly, even if operating in 70m water depth this is a pelagic fishery and they would be fishing in the upper 10% of the water column and activities would never occur near the seafloor i.e. wellhead. Given this fishery is trolling only, they would not anchor to fish. The limited commercial fishing activity in the OA was confirmed through			

engagement with WAFIC and engagement with licence holders has not indicated any projected increase in the near term. Consequently, the presence of the abandoned well at water depths of 126m is not expected to result in impacts to the Mackerel's Managed Fishery, through exclusion resulting in loss of catches. These impacts are not considered credible and not assessed further.

The OA is located within the area of the PFTIMF. As per Section 5.2.2, the OA is within Zone 1 of the PFTIMF. . A single licence holder responded to consultation requesting that the wellhead be removed. WAFIC provided feedback that their preference was for the wellhead to be removed. Key commercial fishery management controls used in the fishery include area closures, gear restrictions and individual transferable effort allocations (Ref. 31). Zone 1 of the PFTIMF has been closed to trawling since 1998. The Pilbara Fish Trawl Interim Managed Fishery Management Plan 1997 (including amendments up to 2019) details arrangements for the fishery which include the maximum fish trawl units (as fishing hours) that can be allocated for use in each zone. Zone 1 is allocated as 'nil' units. A 2021 assessment of the PFTIMF as an approved Wildlife Trade Operation by DAWE set a condition that the PFTIMF is to continue to implement the Pilbara Fish Trawl Interim Managed Fishery Management Plan 1997 (Ref. 30). DAWE are to be informed of any material changes to the management arrangements of the PFTIMF. DPIRD have advised that the allocation in Zone 1 is unlikely to change in the short to medium term. It will be considered as part of the management review when the resource plans are developed under the new Act (Fisheries and Aquatic Resources Management Act), noting that there is always the potential to change in the future (Ref.40). Should a material change occur, such as the opening of Zone 1 in the future to the PFTIMF, abandonment of the WTR 2 wellhead in situ would only prevent trawling in the immediate area of the wellhead

The area of the wellhead is limited to an area of 9m², whereas the PFTIMF currently occupies an area of 14,980 square nautical miles (Ref. 29). Therefore, if Zone 1 was to open in the future, and based on a conservative calculation that the entire OA could not be trawled, only 0.000034% of the current area of the fishery that is available would be excluded from trawling. This is a conservative estimate based on the current open trawling areas of the PFTIMF (i.e. does not include Zone 1 or Zone 2 Areas 3 and 6) and could be even less when taking into account the area that would become available within Zone 1 and also that the area to be excluded would not be the entire OA and would be closer to the immediate area of the wellhead (9m²). Furthermore, trawling undertaken as part of the PFTIMF is reported to occur in water between 50 and 100 m deep, whereas the WTR 2 wellhead is located in deeper waters (126 m) (Ref.29). Given the incidental size of the area that the wellhead covers compared to the available area of the fishery, along with the water depth at the OA being deeper than those trawled, impacts to catch volume are not anticipated to be affected, consequently this is not considered further.

Trawl vessels are equipped with navigational equipment such as echo sounders and GPS plotters which detect seabed obstacles such as wellheads and show the vessels position relative to marked seabed infrastructure and allow trawlers to plan their routes to safety avoid the obstacle (Ref. 41). A review of the historical fishing vessel incident data from AMSA Monthly Domestic Vessel Incident Reporting Database (2 year data set) and Australian Transport Safety Bureau (ATSB) Marine Safety Investigations Reports (1982-2021) shows that there are no reported fishing vessel incidents confirmed as related to offshore oil and gas infrastructure in Australia (Ref. 42 and Ref.43).

Outside of Australia, historically, wellheads are recorded to have caused fewer snag incidents in commercial fisheries, compared to pipelines and marine debris from oil and gas operations, which accounted for more than 50% of incidents in the UK between 1989 and 2016 (Ref.44). In comparison, production infrastructure, which includes wellheads, were involved in 4% of incidents over the same period (Rouse, 2020). Overall, the likelihood of interactions between trawl equipment and oil and gas infrastructure is reducing over time, as a result of an increase in communication between the oil & gas industry and improvement in fishery GPS equipment (Ref. 44). Furthermore, the WTR-2 wellhead has been abandoned since 1974 with no known incidents having occurred to date.

Assuming that fishing in this area may occur in the future, it was evaluated that potential interaction from leaving the wellhead in-situ would be localised to the specific area of the wellhead. This risk will be managed through:

• Communicating the location of the WTR-2 wellhead with fisheries stakeholders; and

• Marking the WTR-2 wellhead on navigation charts.

Consequently, this risk was assigned a consequence rating of Incidental (6).

ALARP Decision Context Justification

The WTR-2 wellhead has been abandoned since 1974 and comprises a small disturbance footprint. Potential impacts associated with leaving the wellhead in situ are well understood and were evaluated to conservatively result in an incidental impact to other marine users. The level of certainty associated with this evaluation is

high given the consultation that was undertaken with potentially affected commercial fisheries. During stakeholder consultation, one objection was raised regarding physical presence of the wellhead from a PFTIMF licence holder. WAFIC stated that their preference was for removal of the wellhead. Catch and effort data from DPIRD indicated that only one fishery, the Mackerel Managed Fishery, was active in the OA between 1999-2019 with no more than three vessels potentially operating within the OA each year (Ref. 1) The Mackerel Managed Fishery is a pelagic fishery with fishing undertaken by handline or troll line (Ref. 45), these activities are conducted in shallow water and would not interact with the wellhead. Consultation with WAFIC specific to this fishery indicated that they do not fish much deeper than 70m water depth. The location of the OA is within an area of the PFTIMF which remains closed. The WTR 2 wellhead is located in water depths that are deeper than those trawled by the PFTIMF. The area of the wellhead is the equivalent to 0.000034% of the current PFTIMF area.

Therefore, the proposed activities are not expected to result in an impact to commercial operations (via loss of catches or damage to fishing equipment) from presence of wellheads on the seabed given the long-term presence of the wellhead.

Accordingly, CAPL has applied ALARP Decision Context A.

Control Measure	Source of Good Practice Control Measure
▪ Coordinates for any suspended wells provided to the Australian Hydrographical Service (AHS)	Under the Navigation Act 2012, AHS is responsible for maintaining and disseminating hydrographic and other nautical information and nautical publications. Specifically, subsea infrastructure is identified as a potential subsea hazard to commercial shipping activities (such as fisheries) and thus locations are included on appropriate marine charts.
▪ Ongoing consultation	In accordance with Regulation 13 (4) of the OPGGS(E)R, the Environment Plan must describe the requirements, including legislative requirements, that apply to the activity and are relevant to the environmental management of the activity; and demonstrate how those requirements will be met. CAPL has identified that in some circumstances, the *Environment Protection (Sea Dumping) Act 1981* may apply to the in situ abandonment of infrastructure. CAPL is in the process of consulting with the DAWE as to the application of this act to this activity. As such, CAPL will consult with the DAWE regarding the applicability of that legislation to this activity to ensure that all obligations are met.

Additional control measures and cost benefit analysis

Additional control measure	Benefit	Cost
Implement base case requirement and revisit well and remove wellhead	**Societal - Post Execution** The benefit associated with this control measure is the complete removal of physical presence risk and interaction with other marine users. However, this is only considered an incidental benefit given consultation records indicate limited fishing effort is expected to occur within proximity of the wellhead, the area of the wellhead is extremely limited when compared with the available fish trawl area and the wellhead is marked on marine charts.	**Environmental Impact – Post Execution** The wellhead has been abandoned since 1974 and recent images from an ROV survey (Figure 7-2and Figure 7-3) indicate that a micro habitat has formed around the wellhead. Removal of the wellhead would lead to the loss of this micro habitat.
		Environmental Risk – During Execution Activity to remove the well head has the potential to result in seabed disturbance and other impacts, including: • Smothering and alteration of benthic habitats; • Localised and temporary increase in turbidity near the seabed. which has the potential to impact on receptors; and

		• Vessel impacts to fauna during execution of the works. There would also be green house gas emissions associated with the removal campaign and subsequent wellhead disposal.
		Cost – During Execution Based upon the assumption of a rig in the vicinity of the field i.e. activity undertaken as part of a broader campaign, rather than standalone campaign, it takes approximately 2 days to mobilise a MODU to location, 3 days to anchor the rig, 3 days to cut and pull the wellhead and 2 days to de-mobilise the rig (~10 days in total). Current estimated daily spread rates are between $800 000 and $1 000 000. Therefore, the cost of implementing this control measure is estimated conservatively to be in the order of ~$9 000 000*. This is assuming operations are successful. Using a Dynamic Position vessel with appropriate cutting equipment to cut and pull the wellhead would take a similar duration to the MODU including 5 days to rig up and mobilise vessel, 2 days to cut and retrieve the wellhead, and 3 days to demobilise and rig down vessel. Based on current estimated daily spread rates, along with mobilisation / demobilisation fees and equipment and personnel rates, the total cost of implementing this control measure is conservatively estimated to be in the order of ~$3 200 000. This is assuming operations are successful. If there are unexpected operational outcomes (which is a likely result when re-entering a well of this age), the time/cost estimate could easily be in significantly higher than this estimate. As this control measure does not give certainty that the wellhead will be successfully removed and given the significant cost that would only result in an incidental benefit due to limited expected interaction with other marine users, the implementation of this control measure is considered grossly disproportionate to the level of risk reduction achieved.
		Technical – During Execution The water depth at the wellhead is beyond the maximum operating depth for air diving, therefore operations to remove the wellhead would require use of a Remotely Operated Vehicle (ROV). As the wellhead is positioned on a guide base external cutting would require cutting tools to be positioned external of the wellhead to sever the wellhead, conductor and internal casing strings. In order to mount a diamond wire saw the guide base would need to be removed or the substrate below the guide base would need

		to be removed by dredging below to allow access. Due to the constraints associated with external cutting, internal cutting would be the likely methodology used to remove the wellhead. Unexpected operational outcomes may occur as a result of re-entering a well of this age, these outcomes may include that cutting and pulling of the wellhead is not successful. As this control measure does not give certainty that the wellhead will be successfully removed and given the significant cost that would only result in an incidental benefit due to limited expected interaction with other marine users, the implementation of this control measure is considered grossly disproportionate to the level of risk reduction achieved.
Likelihood and Risk Level Summary		
Likelihood	Based upon the fishing and consultation records that indicate limited operation of commercial fisheries in the OA, including no trawl fishing, and that there have been no known incidents over the 46 years the wellhead has been present, the likelihood that commercial fisheries will interact with the wellhead resulting in damage to fishing equipment is considered Unlikely (4).	
Risk Level	Low (9)	
Determination of Acceptability		
Principles of ESD	The cost benefit analysis of alternatives is aligned with the Offshore Petroleum Decommissioning Guideline (Ref. 5) and considered environmental, social and safety criteria both short and long-term to evaluate each decommissioning alternative. This approach is consistent with the ESD principle 'a' which requires that 'decision-making processes should effectively integrate both long-term and short-term economic, environmental, social, and equitable considerations' and c) the principle of inter-generational equity—that the present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations'. The consequence associated with this aspect is Incidental (6). Therefore, no further evaluation against the Principles of ESD is required.	
Relevant Environmental Legislation and Other Requirements	Legislation and other requirements considered as relevant control measures include: ▪ Navigation Act 2012 – coordinates of wellheads provided to AHS/AHO ▪ Environment Protection (Sea Dumping) Act 1981 – Sea Dumping Permit ▪ Decommissioning principles within the Department of Industry, Innovation and Science (now the Department of Industry, Science, Energy and Resources) Discussion Paper – Decommissioning Offshore Petroleum Infrastructure in Commonwealth Waters, 2018 include that alternative decommissioning approaches to full removal of infrastructure can be considered when the alternative approach delivers equal or better environmental outcomes compared to complete removal. As demonstrated by the cost benefit analysis better environmental outcomes are achieved through the retention of the wellhead in situ as the benthic and epibenthic habitat is retained.	
Internal Context	No CAPL Environmental Performance Standards were deemed relevant.	
External Context	No objections or claims with the activity were raised.	

	DPIRD did not raise any concerns potential impacts and risks on WA aquatic resources and associated fisheries.		
Defined Acceptable Level	In accordance with Section 5.6, these risks are inherently acceptable as they are lower-order risks with the potential impacts defined as ALARP decision Type A, which are broadly acceptable. Additionally, the potential risks associated with the activity are not inconsistent with any recovery plan, conservation advice, or relevant bioregional plan. The worst-case potential impacts associated with the physical presence of the wellhead were deemed to be Incidental (6) based on the small footprint of the wellhead, with limited exposure to other marine users. Based on the consultation CAPL has undertaken to date, the level of certainty that no interaction will occur with commercial fishers is high, with the potential for fishing in the future considered to apply a level of conservatism to the evaluation.		
Environmental Performance Outcomes	**Performance Standards / Control Measures**	**Measurement Criteria**	**Responsibility**
Prevent impacts to socioeconomic values identified within the permit areas by implementing well abandonment procedures.	Coordinates for any suspended wells provided to the Australian Hydrographical Service (AHS)	Records confirm coordinates for any / all suspended wells provided to AHS.	CAPL Drilling Superintendent
	CAPL will engage with DAWE regarding the applicability of the Environment Protection (Sea Dumping) Act 1981 to these activities to ensure any obligations under this act are met as directed by DAWE	Records demonstrate that CAPL has commenced engagement with the DAWE regarding the applicability of the Environment Protection (Sea Dumping) Act 1981 to these activities to ensure any obligations under this act are met.	CAPL Environmental Approvals Coordinator

7.2 Seabed Disturbance

Cause of Aspect
The physical presence of the wellhead on the seabed.

Potential Impacts and Risks

Impacts	C	Risks	C
Leaving the wellhead in situ has the potential to result in: ▪ Alteration of benthic habitat	6	Leaving the wellhead in situ has the potential to result in: ▪ Seabed contamination leading to impacts to fauna arising from chemical toxicity	6

Consequence Evaluation

Alteration of Benthic Habitat

The area of the benthic habitat impacted by the WTR-2 well is approximately 9m^2 (3m x3m). As described in Section 4.1.1, Seamap Australia spatial data indicates that the benthic habitat present within the operational area is made up of calcareous gravel, sand and silt (Ref 9). Sandy substrates on the shelf within this bioregion are thought to support low density communities of bryozoans, molluscs and echinoids. Imagery from the recent ROV survey indicated that the seabed in the area is absent of any visible benthic habitat in the vicinity of the wellhead (Figure 7-1).

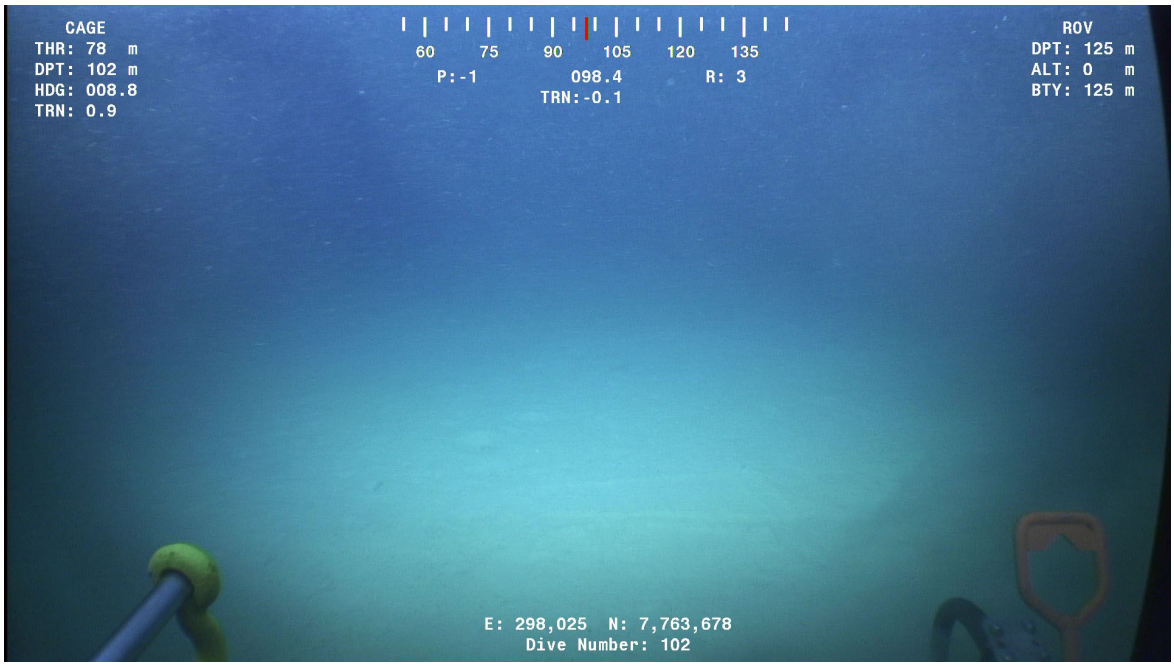


Figure 7-1 Seabed floor surrounding WTR-2 OA

In contrast the three-dimensional structure of the wellhead has formed a hard substrate that has been colonised by an epibenthic assemblage supporting a range of fish communities (Figure 7-2 and Figure 7-3).

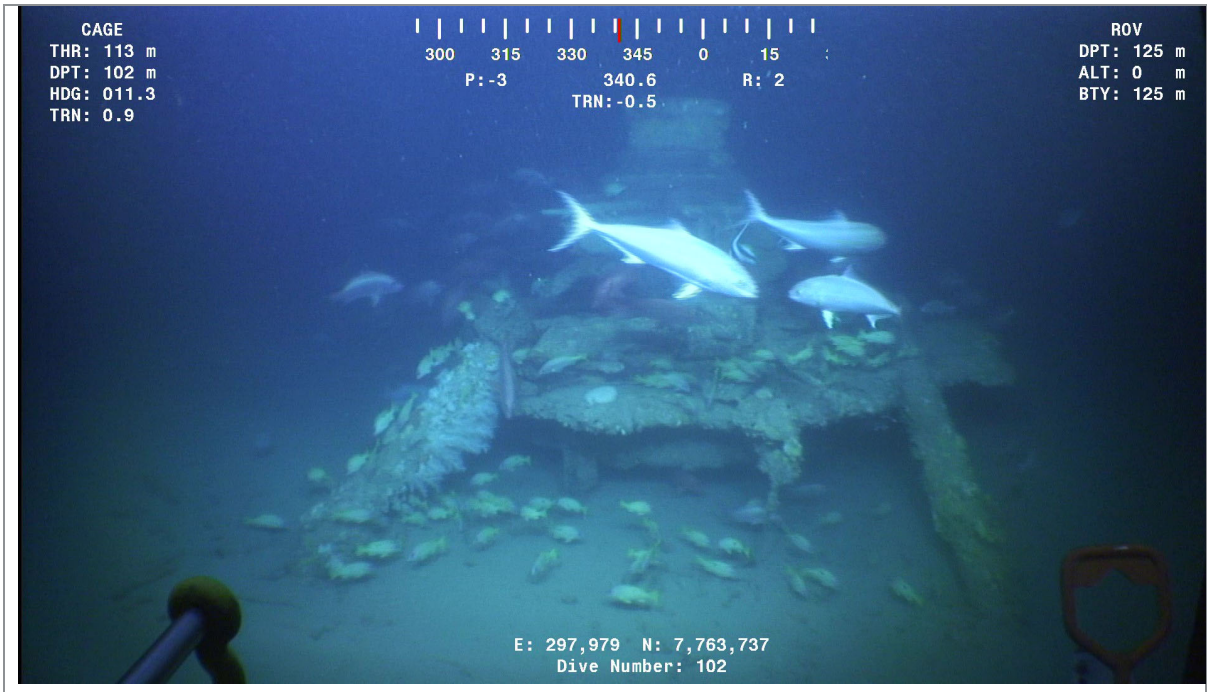


Figure 7-2 Epibenthic habitat around WTR-2

Figure 7-3 Epibenthic habitat around WTR-2

Physical presence of anthropogenic structures on the seabed is known to provide hard substrate that becomes colonised with fouling organisms and may support increased fish communities (Ref. 46). In some circumstances, these areas may in turn also support foraging by marine megafauna (Ref. 47). Removal of the wellhead would result in a complete loss of the epibenthic assemblage. While this effect is localised given the small scale of the structure, it nevertheless a negative effect at a local scale. As no negative impacts are anticipated to result from the localised changes to the marine habitat, this has not been evaluated further.

Seabed contamination

Marine corrosion studies have shown that for metal structures such as the X-mas trees and wellheads, corrosion is likely to be a relatively slow process, occurring at about 0.2 mm/year (Ref. 48). Over long time scales, corrosion of wellhead structures may contribute to an increase in breakdown products (mostly iron compounds) in the sediments surrounding the wellheads. Iron compounds generally have no to very low toxicity to marine organisms (Ref. 49) and any build up in the sediments surrounding the wellhead through ongoing deposition would be counteracted by gradual dissipation as a result of local sediment movements. Given the low toxicity of iron, the slow release rate and rapid dilution of the open ocean environment, it is likely that any exposure to marine sediments, benthic habitats and water quality would be limited to the immediate vicinity of the wellhead, with no significant impacts expected to the values and sensitivities identified in Section 4. Evidence from the recent ROV survey (Figure 7-2 and Figure 7-3) indicates that the wellhead structure is intact and supports an epibenthic community thus indicating that there has been minimal impact to the benthic and epibenthic habitat in the vicinity of the wellhead.

Consequently, this impact was assessed as incidental (6).

ALARP Decision Context Justification	
Evidence from the recent ROV survey indicates that the wellhead is intact and an epibenthic community has developed around it. Furthermore, the wellhead has been in place since 1974 and to date there have been no objections raised, including during recent stakeholder consultation. Although the well head is located within a spatially defined KEF (the Ancient Coastline at 125m), impacts from corrosion would be confined to a localised area and given the footprint of the wellhead is 9m^2 the potentially impacted area is negligible compared to the overall extent of the feature and is not expected to impact the values of the KEF. The impacts associated with seabed disturbance are considered lower-order impacts (Table 5-2). As such, CAPL applied ALARP Decision Context A for this aspect.	
Control Measure	**Source of Good Practice Control Measure**
None identified	No controls have been applied for these impacts and risks as seabed disturbance is a lower-order impact and risk; with any impacts from corrosion being confined to the immediate vicinity of the wellhead.
Likelihood and Risk Level Summary	
Likelihood	Based upon the slow corrosion rates of steel structures and the fact that any leachate would disperse quickly leading to small scale and localised impacts, the likelihood of seabed contamination leading to impacts to fauna arising from chemical toxicity was considered Unlikely(4).
Risk Level	Low (9)
Acceptability Summary	
Principles of ESD	The impact associated with this aspect is limited to localised disturbance of well-represented soft sediment communities over a long time; consequently, this aspect is not considered as having the potential to affect biological diversity and ecological integrity. The impact and risk associated with this aspect is Incidental (6). Therefore, no further evaluation against the Principles of ESD is required.
Relevant Environmental Legislation and Other Requirements	Decommissioning principles within the Department of Industry, Innovation and Science (now the Department of Industry, Science, Energy and Resources) Discussion Paper – Decommissioning Offshore Petroleum Infrastructure in Commonwealth Waters, 2018 include that alternative decommissioning approaches to full removal of infrastructure can be considered when the alternative approach delivers equal or better environmental outcomes compared to complete removal. As demonstrated by the cost benefit analysis (Section 7.1) better environmental outcomes are achieved through the retention of the wellhead in situ as the benthic and epibenthic habitat is retained.
Internal Context	No CAPL environmental performance standards / procedures were deemed relevant for this aspect.

External context	During stakeholder consultation, no objections or claims were raised regarding seabed disturbance arising from the activity.		
Defined Acceptable Level	In accordance with Section 5.6, these impacts are considered inherently acceptable as they are lower-order impacts. In addition, the potential impacts associated with the activity are not inconsistent with any recovery plan, conservation advice, or relevant bioregional plan.		
Environmental Performance Outcomes	**Performance Standards / Control Measures**	**Measurement Criteria**	**Responsibility**
N/A	**N/A**	N/A	N/A

8 Implementation Strategy

To meet the requirements of the OPGGS(E)R, Division 2.3, Regulation 14, *Implementation strategy for the environment plan*, this Section describes the implementation strategy, which identifies the systems, practices, and procedures used to ensure the environmental impacts and risks of the activities are continuously reduced to ALARP and the environmental performance outcomes and standards detailed in Section 6 are achieved.

8.1 Systems, Practices, and Procedures

CAPL's operations are managed in accordance with the OEMS, which is a comprehensive management framework that supports the corporate commitment to protect the safety and health of people and the environment. This framework ensures a systematic approach to environmental management, with the environmental aspects of each project addressed from project conception, throughout project planning, and as an integral component of implementation, as shown in Figure 7-1.

Figure 8-1: CAPL OEMS Process Overview

Under the OEMS there are key focus areas including workforce safety and health, process safety, reliability and integrity, environment, efficiency, security, and stakeholders. In addition, common expectations support the OE objective of each focus area enabling CAPL to implement activities in a manner that is consistent with its Operational Excellence Policy 530 (Appendix A). Of the focus areas and common expectations described under the OEMS, those relevant to this EP are detailed in Table 7-1. The following subsections summarise the key processes that help demonstrate how CAPL is effective in reducing environmental impacts and risks to ALARP and an acceptable level.

Under the OEMS, records (including compliance records to demonstrate environmental performance and compliance with this EP) will be retained in accordance with Regulation 27 of the OPGGSER.

Table 8-1: OEMS Focus Areas and Common expectations Relevant to this Activity

OEMS focus area	Relevant Expectation	Key Processes Relevant to this Activity
Common Expectation – Risk Management	Risk Management - Operate and maintain facilities to prevent injuries, illness, and incidents	ABU OE Risk Management (Ref. 33)
Focus Area - Process safety, reliability and integrity	Management of Change - Manage both permanent and temporary changes to prevent incidents	ABU Management of Change for Facilities and Operations (Ref. 50)
Common Expectation – Incident investigation and reporting	Incident investigation and Reporting - Investigate and identify root causes of incidents to reduce or eliminate systemic causes to prevent future incidents	ABU Incident Investigation and Reporting (Ref. 51)
Common Expectation – Emergency Management	Prepare for and respond to incidents and manage crises that could affect personnel, the environment, assets, communities and the business.	ABU Emergency Management Process (Ref. 52)
Common expectation - Assurance	Assurance - Verify conformance with applicable legal and company requirements	ABU – OE Assurance (Ref. 54)
Focus Area - Stakeholders	Stakeholder Engagement and Issues Management - Reach out to the community and engage in open dialogue to build trust	Community and Stakeholder Engagement (Ref. 53)
Common Expectation – Competency	Competency – Identify, build and sustain competency standards for roles critical to OE performance.	Competency Development and Assurance (Ref. 56)

8.1.1 Risk Management

The OE Risk Management Process (Ref. 33) provides a framework for managing HSE risks and is designed to be consistent with the environmental risk management requirements of ISO 14001 Environmental Management System (Ref.55) and ISO 31000:2009 Risk Management Standard (Ref. 34).

This process is summarised in Section 5 of this EP. Additional risk assessments must be undertaken if the MOC process (Section 7.1.2) is triggered. Risk assessments are undertaken in accordance with this process.

The HES Risk Management Process and the MOC process (Section 7.1.2) are the key systems CAPL use to ensure, that in accordance with Regulation 14(3)(a), the impacts and risks of the petroleum activity continue to be identified and reduced to ALARP.

8.1.2 Management of Change

The Management of Change for Facilities and Operations Process (Ref. 50) manages changes to facilities, operations, products, and the organisation so as to

prevent incidents, support reliable and efficient operations, and keep unacceptable risks from being introduced into CAPL's business.

In conjunction with the OE Risk Management Process (Section 7.1.1.1), this process is followed to document and assess the impact of changes to activities described in Section 6. These changes will be addressed to determine if there is potential for any new or increased environmental impact or risk not already provided for in this EP. If these changes do not trigger relevant petroleum regulations, as detailed below, this EP will be revised, and changes recorded in the EP without resubmission.

This EP must be resubmitted to NOPSEMA for acceptance/approval before:

- commencing any new activity, or significantly modifying, changing, or adding a new stage of an existing activity, not provided for in this EP
- changing the instrument holder for, or operator of, the activity
- a significant new environmental impact or risk, or significant increase in an existing environmental impact or risk, occurs that is not provided for in this EP
- a series of new environmental impacts or risks, or a series of increases in existing environmental impacts or risks, occur which, taken together, amount to the occurrence of a significant new environmental impact or risk, or a significant increase in an existing environmental impact or risk, not provided for in this EP.

8.1.3 Incident Investigation and Reporting

The Incident Investigation and Reporting Process (Ref. 51) describes how CAPL reports and investigates incidents. In accordance with this process, environmental incidents will be reported by CAPL as per Section 7.4.

The process requires investigation and identification of root causes of incidents to reduce or eliminate systemic causes and to prevent future incidents. This includes incidents resulting in injury, operational impact, near miss, occupational illness, environmental, reliability, business disruption, and community concerns.

The process includes:

- incident notification
- incident investigation, reporting, and documentation
- incident investigation competency model
- competency management for investigators
- leveraging and institutionalising lessons learned across the organisation.

The objective of the process is to determine the root causes of an incident, which results in the generation of actions that can be implemented to directly stop or control the current incident or reduce the risk of future incidents.

A CAPL software program and database is used to input incident data directly from the field, as well as access data including root cause information, action tracking, progress reporting, and escalation. All identified non-conformances, corrective, and preventive actions will be added to the database, and assigned to personnel for timely closure.

8.1.4 Emergency Management

The *Emergency Management Process* (Ref. 52) provides organisational structures, management processes, and the tools necessary to:

- respond to emergencies and prevent or mitigate emergency and/or crisis situations
- respond to incidents safely, rapidly and effectively
- restore or resume affected operations of strategic importance.

Regulation 14(8) of the OPGGS(E) requires that the implementation strategy for an EP must contain an OPEP. An evaluation was undertaken to determine if any credible spill scenarios were present for this activity (Section 3). The evaluation determined that the activity poses no credible spill risks. Consequently, no OPEP is provided for this EP.

8.1.5 Stakeholder Engagement and Issues Management

The Community and Stakeholder Engagement Process (Ref. 53) systematically identifies stakeholders and plans and executes engagement to foster mutual understanding, dialogue, and trust.

In accordance with Regulation 14(9) of the OPGGS(E)R, Section 2.6 describes the process undertaken for appropriate consultation with relevant authorities and relevant interested persons or organisations. CAPL will continue to engage with relevant stakeholders as described in Section 2.6).

8.1.6 Assurance

The ABU OE Assurance Process (Ref. 54) outlines expectations to ensure a process is in place to enable conformance with applicable legal and company requirements, verify necessary safeguards are in place and functioning, and that non-compliances are reported and tracked to closure.

To support the implementation of the ABU OE Assurance Process, CAPL have developed an ABU integrated assurance system to ensure safeguards are in place, functioning and effective. The levels include:

- asset / facility / function assurance: ongoing, routine, planned verifications of safeguards specific for the asset / facility (e.g. HES inspections, audits, infrastructure integrity inspections, preventive maintenance, emergency drills and exercises, compliance reviews, performance reviews)
- ABU OEMS assurance: implemented through the established system-based assurances within the OEMS and ABU OE Processes (e.g. assessments, reviews, audits, inspections, workshops, engagements) that support the CAPL assets and major capital project assurance plans and identify and respond to the systemic deterioration of safeguards and progress areas for improvement
- external assurance: assurance activities undertaken by third-party entities (e.g. regulatory inspections, joint venture partner reviews)
- corporate and functional assurance: assurance activities of CAPL functional groups (e.g. drilling and completions, HSE, facilities engineering [FE]) and OEMS focus areas to address OEMS requirements, safeguards and areas for improvement.

8.1.7 Competency

The Competency Development and Assurance Process (Ref. 56) identifies and assesses required competencies for environmental roles—employees, contractors, etc. must comply with these requirements.

All personnel (including contractors and subcontractors) are required to attend inductions and training that are relevant to their role. Training and induction programs help personnel understand their environmental responsibilities and increase their awareness of the management and protection measures required to reduce potential impacts on the environment.

In accordance with Regulation 14 (5) of the OPGGS(E)R, each employee responsible for the implementation of task-specific control measures (Table 8-2) shall be aware of their specific responsibilities detailed within this EP. People who hold responsibilities relating to the implementation of this EP are hired by CAPL based on their particular qualifications, experience, and competency.

8.2 Chain of Command and Roles and Responsibilities

8.2.1 Chain of Command

In accordance with Regulation 14(4) of the OPGGS(E)R, Figure 8-2 outlines a clear chain of command for the implementation of the petroleum activity. More detailed roles and responsibilities are described in Section 8.2.2.

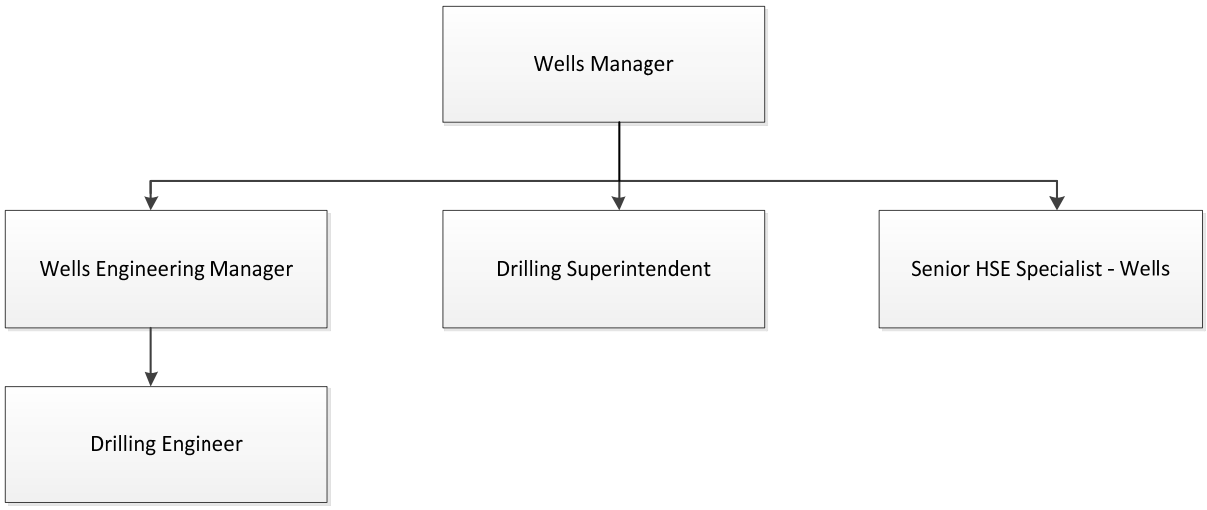


Figure 8-2: Chain of Command

8.2.2 Roles and Responsibilities

The roles and responsibilities for the implementation of task-specific control measures are detailed in Section 7, and are summarised in Table 8-2.

Table 8-2: Roles and Responsibilities

Roles	Responsibilities under this EP
CAPL D&C Engineering Manager	Ensure: • The documented control measures are implemented in accordance with Section 8 of this EP • The EP is implemented, maintained and reviewed in accordance with Section 8 of this EP
CAPL Environmental Approvals Coordinator	CAPL will commence engagement with Department of Environment and Energy to determine the applicability of the *Environment Protection (Sea Dumping) Act 1981* to these activities.

8.3 Monitoring

Regulation 14(7) of the OPGGS(E)R requires that the implementation strategy provides for sufficient monitoring of, and maintaining a quantitative record of, emissions and discharges such that a record can be used to assess whether the environmental performance outcomes and standards in the EP are being met.

There are no emissions of discharges within Commonwealth waters from the petroleum activity with the potential to result in environmental impacts and risks. Thus, no monitoring is proposed for this activity.

8.4 Reporting

8.4.1 Incident Reporting

In accordance with CAPL's Incident, Investigation and Reporting Process (Ref. 51), all environmental incidents will be reported by CAPL in accordance with Table 8-3.

Table 8-3: Incident Reporting

Recordable Incident Reporting – Regulation 26B	
Legislative definition of 'recordable incident': *'**Recordable incident**, for an activity, means a breach of an environmental performance objective or environmental performance standard, in the environment plan that applies to the activity, that is not a reportable incident'* Recordable incidents are breaches of environmental performance objectives and standards identified in Section 7.	
Reporting Requirements	**Report to / Timing**
Written notification to NOPSEMA by the 15th of each month As a minimum, the written incident report must describe: • the incidents and all material facts and circumstances concerning the incidents • any actions taken to avoid or mitigate any adverse environmental impacts • any corrective actions already taken, or that may be taken, to prevent a repeat of similar incidents.	Submit written report to NOPSEMA by the 15th of each month
If no recordable incidents occur during the reporting month, a 'nil report' will be submitted.	

Reportable Incident Reporting – Regulations 26
Legislative definition of 'reportable incident':

Reportable Incident Reporting – Regulations 26	
*'**Reportable incident**, for an activity means an incident relating to an activity that has caused, or has the potential to cause an adverse environmental impact; and under the environmental risk assessment process the environmental impact is categorised as moderate or more serious than moderate.'* Therefore, reportable incidents under this EP are those events (not planned activities) that have a moderate or greater consequence (or risk) level. In accordance with this definition, no reportable incidents have been identified for this activity.	
Reporting Requirements	**Report to**
Verbal notification must be undertaken within two hours of the incident or as soon as practicable. This information is required: • the incident and all material facts and circumstances known at the time • any actions taken to avoid or mitigate any adverse environmental impacts.	Report verbally to NOPSEMA within two hours or as soon as practicable and provide written record of notification by email. Phone: (08) 6461 7090 Email: submissions@nopsema.gov.au
Verbal notification must be followed by a written report as soon as practicable, and not later than three days following the incident. At a minimum, the written incident report will include: • the incident and all material facts and circumstances • actions taken to avoid or mitigate any adverse environmental impacts • any corrective actions already taken, or that may be taken, to prevent a recurrence. If the initial notification of the reportable incident was verbal, this information must be included in the written report.	Written report to be provided to NOPSEMA, the National Offshore Petroleum Titles Authority, and DMIRS. Email: submissions@nopsema.gov.au Email: info@nopta.gov.au Email: petroleum.environment@dmp.wa.gov.au

8.4.2 Routine Reporting

Regulation 26C of the OPGGS(E)R requires the reporting of environmental performance of this EP, as described in Table 8-4

Table 8-4: Routine External Reporting Requirements

Reporting Requirement	Description	Reporting to	Timing
Environmental performance close out report	A report detailing environmental performance of the activity described in this version of the EP will be provided to NOPSEMA prior to activity close out	NOPSEMA Email: submissions@nopsema.gov.au Phone: (08) 6461 7090.	Upon completion of the activity
Notification of start and end of activity	CAPL shall complete Form FM1405 and submit to NOPSEMA 10 days before activity commencement	NOPSEMA Submissions NOPSEMA GPO Box 2568 PERTH 6001 Western Australia https://securefile@nopsema.gov.au/filedrop/submissions	Not required as this EP is a new version for an existing petroleum activity.
End of EP notification	CAPL shall complete Form FM1405 and submit to NOPSEMA within 10 days of activity completion		Once

8.5 Environment Plan Review

In accordance with Regulation 19 of the OPGGS(E)R, CAPL will submit a proposed revision of this EP at least 14 days before the end of a five-year period that commences on the date this EP is accepted.

Additional revisions and/or resubmission of this EP to NOPSEMA, in accordance with Regulation 17 of the OPGGS(E)R, will be undertaken in accordance with Section 8.1.2.

9 Definitions and Abbreviations

Table 9-1 defines the terms used in this document.

Table 9-1: Definitions and Abbreviations

Acronym / Abbreviation	Definition
ABU	Australian Business Unit
AHS	Australian Hydrographic Service
AIS	Automated Identification System
ALARP	As Low As Reasonably Practicable
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
APPEA	Australian Petroleum Production and Exploration Association
BIA	Biologically Important Area
CAPL	Chevron Australia Pty Ltd
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DPIRD	WA Department of Primary Industries and Regional Development (formerly Department of Fisheries)
EMBA	Environment that May Be Affected
Endangered Species	A species that is not critically endangered but is facing a very high risk of extinction in the wild in the near future.
EP	Environment Plan
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ESD	Ecologically Sustainable Development
HES	Health, Environment, and Safety
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
ISO	International Organization for Standardization
KEF	Key Ecological Feature
km	Kilometre
LOWC	Loss of Well Control
Migratory Species	Species listed as migratory under section 209 of the EPBC Act.
MODU	Mobile Offshore Drilling Unit, Drill Ship, or Intervention Vessel (collectively termed MODU)
N/A	Not Applicable
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority (Australia)
NOPTA	National Offshore Petroleum Titles Authority (Australia)
OA	Operational Area
OE	Operational Excellence
OEMS	Operational Excellence Management System
OGUK	Oil and Gas UK
OPGGS Act	Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006*

Acronym / Abbreviation	Definition
OPGGS(E)R	Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009
Protected Species	Species protected under the EPBC Act
PSZ	Petroleum Safety Zone
TAPL	Texaco Australia Pty Ltd
Threatened Species	Species listed as extinct, extinct in the wild, critically endangered, endangered, vulnerable or conservation dependent under section 178 of the EPBC Act.
Vulnerable Species	A species is listed as vulnerable under the EPBC Act if it is not critically endangered or endangered and it is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
WA	Western Australia
WAFIC	Western Australian Fishing Industry Council
WAPET	West Australian Petroleum
WTR	West Tryal Rocks

10 References

The following documentation is either directly referenced in this document or is a recommended source of background information.

Table 10-1: References

Ref No	Description	Document ID
1.	National Offshore Petroleum Safety and Environmental Management Authority. 2017. *Decision-Making Guideline – Criterion-10A(g) Consultation Requirements*. Available from: https://www.nopsema.gov.au/assets/Corporate/Decision-making-guidelines-consultation-package-November-2016.pdf [Accessed 20 November 2020]	
2.	NOPSEMA. 2019. *Bulletin #2 – Clarifying statutory requirements and good practice*. Available online at: https://www.nopsema.gov.au/assets/Bulletins/A696998.3.pdf [Accessed 22 February 2020]	
3.	APPEA. 2017. *Stakeholder Consultation and Engagement Principles and Methodology – Draft*.	
4.	West Australian Petroleum Pty. Ltd., 1975. West Tryal Rocks No. 2 Well Completion Report. Available from: NOPIMS | Department of Mines, Industry Regulation and Safety (dmp.wa.gov.au) [Accessed 30 November 2020]	I00030913
5.	Department of Industry, Science, Energy and Resources. 2018. Offshore Petroleum Decommissioning Guideline. Available at: https://www.nopta.gov.au/_documents/guidelines/decommissioning-guideline.pdf [Accessed 5 October 2021]	
6.	NOPSEMA. 2020. Section 572 Maintenance and removal of property policy. Available at: https://www.nopsema.gov.au/sites/default/files/documents/2021-07/A720369.pdf [Accessed 5 October 2021]	
7.	Department of the Environment and Heritage. 2006. A Guide to the Integrated Marine and Coastal Regionalisation of Australia Version 4.0. Department of the Environment and Heritage, Canberra, Australian Capital Territory	
8.	Department of Sustainability, Environment, Water, Population and Communities. 2012. Marine bioregional plan for the North-west Marine Region prepared under the Environment Protection and Biodiversity Conservation Act 1999. Department of Sustainability, Environment, Water, Population and Communities. Canberra, Australian Capital Territory. Available from: https://www.environment.gov.au/system/files/pages/1670366b-988b-4201-94a1-1f29175a4d65/files/north-west-marine-plan.pdf [Accessed 26 November 2020]	
9.	University of Tasmania. [n.d.] Seamap Australia – a national seafloor habitat classification scheme. Institute for Marine and Antarctic Studies, University of Tasmania. Available from: http://metadata.imas.utas.edu.au:/geonetwork/srv/en/metadata.show?uuid=4739e4b0-4dba-4ec5-b658-02c09f27ab9a [Accessed 26 November 2020]	
10.	Department of the Environment, Water, Heritage and the Arts. 2008. The North-west Marine Bioregional Plan – Bioregional Profile. Department of the Environment, Water, Heritage and the Arts, available from: The North-West Marine Bioregional Plan: Bioregional profile (environment.gov.au) [Accessed 26 November 2020]	
11.	Department of Agriculture, Water and the Environment. 2020. Protected Matters Search Report. http://www.environment.gov.au/epbc/pmst/index.html [Report created 18 November 2020]	
12.	Threatened Species Scientific Committee. 2015. Approved Conservation Advice for Megaptera novaeangliae (humpback whale). Canberra, Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/38-conservation-advice-10102015.pdf [Accessed 26 November 2020]	

Ref No	Description	Document ID
13.	Department of the Environment. 2015. Blue Whale Conservation Management Plan. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/recovery/blue-whale-conservation-management-plan [Accessed 26 November 2020]	
14.	Threatened Species Scientific Committee. 2015. Approved Conservation Advice for Balaenoptera borealis (sei whale). Canberra, Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/34-conservation-advice-01102015.pdf. [Accessed 26 November 2020]	
15.	Threatened Species Scientific Committee. 2015. Approved Conservation Advice for Balaenoptera physalus (fin whale). Canberra, Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/37-conservation-advice-01102015.pdf [Accessed 26 November 2020]	
16.	Commonwealth of Australia. 2015. Biologically Important Areas of Regionally Significant Marine Species. Australian Government Department of the Environment and Energy.	
17.	Environment Australia. 2017. Recovery Plan for Marine Turtles in Australia – July 2017-2027. Canberra, Environment Australia. Available from: http://www.environment.gov.au/system/files/resources/46eedcfc204b-43de-99c5-4d6f6e72704f/files/recovery-plan-marine-turtles2017.pdf [Accessed 26 November 2020]	
18.	Threatened Species Scientific Committee. 2008. Commonwealth Conservation Advice on Dermochelys coriacea. Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs /1768-conservation-advice.pdf [Accessed 26 November 2020]	
19.	Department of the Environment. 2014. Recovery Plan for the Grey Nurse Shark (Carcharias taurus). Department of the Environment, Canberra, Australian Capital Territory. Available from: http://www.environment.gov.au/resource/recovery-plan-grey-nurse-shark-carcharias-taurus [Accessed 26 November 2020]	
20.	Department of Sustainability, Environment, Water, Population and Communities. 2013. Recovery Plan for the White Shark (Carcharodon carcharias). Available from: http://www.environment.gov.au/biodiversity/threatened/publications/ recovery/white-shark.html. [Accessed 26 November 2020]	
21.	Department of the Environment. 2015. Sawfish and River Sharks: Multispecies Recovery Plan. Department of the Environment, Canberra, Australian Capital Territory. Available from: http://www.environment.gov.au/biodiversity/threatened/publications/recovery/sawfish-river-sharks-multispecies-recovery-plan [Accessed 26 November 2020]	
22.	Threatened Species Scientific Committee. 2008. Approved Conservation Advice for Pristis zijsron (Green Sawfish). Department of the Environment, Canberra, Australian Capital Territory. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/68442-conservation-advice.pdf [Accessed 26 November 2020]	
23.	Threatened Species Scientific Committee. 2015. Approved Conservation Advice for Rhincodon typus (Whale Shark). Department of the Environment, Canberra, Australian Capital Territory. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/66680-conservation-advice-01102015.pdf [Accessed 26 November 2020]	
24.	Department of Environment, Water Heritage and the Arts. 2011. National recovery plan for threatened albatrosses and giant petrels 2011-2016, Commonwealth of Australia. Available from: http://www.environment.gov.au/system/files/resources/bb2cf1200945-420e-bdfa-d370cf90085e/files/albatrosses-and-giant-petrelsrecovery-plan.pdf . [Accessed 26 November 2020]	

Ref No	Description	Document ID
25.	Cogger, H.G. 1975. Sea Snakes of Australia and New Guinea. In: W.A. Dunson (ed.). The Biology of Sea Snakes. University Park Press, Baltimore. pp. 59–139.	
26.	Cogger, H. 2000. Reptiles and amphibians of Australia. Reed Books, Sydney, Australia.	
27.	Australian Maritime Safety Authority (AMSA). 2019. Automated Identification System (AIS) Point Density Map.	
28.	DPIRD. 2020. *Fish Cube WA Data Extract*. Available by request from DPIRD	
29.	Department of Fisheries. 2010. A Bycatch Action Plan for the Pilbara Fish Trawl Interim Managed Fishery. Fisheries Management Paper No. 244. Available at: http://www.fish.wa.gov.au/documents/management_papers/fmp244.pdf. [Accessed 5 October 2021]	
30.	Department of Agriculture, Water and the Environment. 2021. Assessment of the Western Australian Pilbara Fish Trawl Interim Managed Fishery. Available at: https://www.awe.gov.au/sites/default/files/env/pages/a95da5cb-4d11-4760-a53d-ad10a77a [Accessed 5 October 2021]	
31.	Department of Fisheries. 1997. PFTIMF Management Plan 1997 (incorporating amendments up to and including Amendment 2019 published in Government Gazette No. 53 on 26/04/2019). Available at: https://www.wa.gov.au/sites/default/files/2021-08/Pilbara%20Fish%20Trawl%20%28Interim%29.pdf. [Accessed 5 October 2021]	
32.	Commonwealth of Australia. 2018. Australian National Shipwrecks. Australian Government Department of the Environment and Energy	
33.	Chevron Australia. 2020. *ABU OE Risk Management Process*. Perth, Western Australia.	OE-03.01.01
34.	Standards Australia/Standards New Zealand. 2009. *ISO 31000:2009 Risk Management – Principles and Guidelines*. Sydney, Australia/Wellington, New Zealand	
35.	Standards Australia/Standards New Zealand. 2012. *Handbook 203:2012. Managing Environment-Related Risk*. Sydney, Australia/Wellington, New Zealand.	
36.	National Offshore Petroleum Safety and Environmental Management Authority. 2015. *ALARP Guidance Note.* N-04300-GN0166 Revision 6 June 2015. Available from: https://www.nopsema.gov.au/assets/Guidance-notes/A138249.pdf[Accessed 01 December 2020]	
37.	Oil and Gas United Kingdom. 2014. *Guidance on Risk Related Decision Making Issue* 2 July 2014	
38.	National Offshore Petroleum Safety and Environmental Management Authority. 2016. *Decision-making – Criterion 10A(c) Acceptable level*. N-04750-GL1637 Rev 0 November 2016. Available from: https://www.nopsema.gov.au/assets/Corporate/Decision-making-guidelinesconsultation-package-November-2016.pdf [Accessed 01 December 2020]	
39.	National Offshore Petroleum Safety and Environmental Management Authority. 2017. Environment Plan Decision Making – Guideline. A524696-GL1721. Revision No. 3. May 2017. Available from: https://www.nopsema.gov.au/assets/Guidelines/A524696.pdf [Accessed 01 December 2020]	
40.	DPIRD. 2021. S. Newman (personal communication, 9 November 2021).	
41.	Santos. 2021. Tern-1 Wellhead Abandonment Environment Plan	
42.	AMSA. 2021. Incident Reporting- Monthly and annual incident reports [Internet, available:https://www.amsa.gov.au/vessels-operators/incident-reporting]	

Ref No	Description	Document ID
43.	ATSB 2021. Safety Investigations and Reports [Internet, available http://www.atsb.gov.au/publications/safety-investigation-reports/?mode=Marine]	
44.	Rouse, S., Hayes, P., Wilding, T.A. (2020). Commercial fisheries losses arising from interactions with offshore pipelines and other oil and gas infrastructure and activities. ICES Journal of Marine Science. 77(3). Page(s) 1148-1156.	
45.	State Law Publisher Mackerel Managed Fishery Management Plan 2011 Available from: Fish Resources Management Act 1994 (slp.wa.gov.au) (accessed 16/03/2021)	
46.	Van Der Stap, T., Coolen, J.W.P. and Lindeboom, H.J. 2016. Marine Fouling Assemblages on Offshore Gas Platforms in the Southern North Sea: Effects of Depth and Distance from Shore on Biodiversity. Plos One 11(1)	
47.	Arnould, J.P.Y., Monk, J., Ierodiaconou, D., Hindell, M.A., Semmens, J. 2015. Use of Anthropogenic Sea Floor Structures by Australian Fur Seals: Potential Positive Ecological Impacts of Marine Industrial Developments. Plos One 10(7)	
48.	Melchers, R.E., 2005. Effect of Immersion Depth on Marine Corrosion of Mild Steel. Corrosion Science Section NACE International	
49.	Svobodová, Z., Lloyd, R., Máchová, J. and Vykusová, B. 1993. Water quality and fish health. EIFAC Technical Paper. No. 54. Rome, FAO. 1993. 59 p.	
50.	Chevron Australia. 2021. *ABU Management of Change for Facilities and Operations: Upstream and Gas Standardised OE Process*. Chevron Australia, Perth, Western Australia	OE-04.00.01
51.	Chevron Australia. 2021. *Incident Investigation and Reporting (II&R) execution manual – ABU Incident investigation and reporting*. Chevron Australia, Perth, Western Australia	OE-09.00.01
52.	Chevron Australia. 2015. Emergency Management Chevron Corporation ABU Standardised OE Process. Chevron Australia, Perth, Western Australia.	OE-11.01.01
53.	Chevron Australia. 2015. *Community and Stakeholder Engagement– ABU Standardised OE Process*. Rev. 6.0. Chevron Australia, Perth, Western Australia	OE-10.00.01
54.	CAPL. 2018. *ABU – OE Assurance Corporate Process*. CAPL, Perth, Western Australia.	OE-12.01.01
55.	Standards Australia/Standards New Zealand. 2016. *AS/NZS ISO 14001:2004 Environmental Management Systems – Requirements with Guidance for Use*. Sydney, Australia/Wellington, New Zealand	
56.	CAPL. 2015. *Competency Development and Assurance: ABU – Standardized OE Process*. CAPL, Perth, Western Australia.	OE-03.13.01

Appendix A Operational Excellence Policy 530

policy 530

operational excellence: achieving world-class performance

It is the policy of Chevron Corporation to protect the safety and health of people and the environment, and to conduct our operations reliably and efficiently. The Operational Excellence Management System (OEMS) is the way Chevron systematically manages workforce safety and health, process safety, reliability and integrity, environment, efficiency, security, and stakeholder engagement and issues. OEMS puts into action our Chevron Way value of Protecting People and the Environment, which places the highest priority on the safety and health of our workforce and the protection of communities, the environment and our assets. Compliance with the law is a foundation for the OEMS.

Our OEMS is a risk-based system used to understand and mitigate risks and maintain and assure safeguards. OEMS consists of three parts:

leadership and OE culture

Leadership is the largest single factor for success in OE. Leaders are accountable not only for achieving results, but achieving them in the right way. Leaders must demonstrate consistent and rigorous application of OE to drive performance and meet OE objectives.

focus areas and OE expectations

Chevron manages risks to our employees, contractors, the communities where we operate, the environment and our assets through focus areas and OE expectations that guide the design, management and assurance of safeguards.

management system cycle

Chevron takes a systematic approach to set and align objectives; identify, prioritize and close gaps; strengthen safeguards and improve OE results.

We will assess and take steps to manage OE risks within the following framework of focus areas and OE expectations:

Workforce Safety and Health: We provide a safe and healthy workplace for our employees and contractors. Our highest priorities are to eliminate fatalities and prevent serious injuries and illnesses.

Process Safety, Reliability and Integrity: We manage the integrity of operating systems through design principles and engineering and operating practices to prevent and mitigate process safety incidents. We execute reliability programs so that equipment, components and systems perform their required functions across the full asset lifecycle.

Environment: We protect the environment through responsible design, development, operations and asset retirement.

Efficiency: We use energy and resources efficiently to continually improve and drive value.

Security: We protect personnel, facilities, information, systems, business operations and our reputation. We proactively identify security risks, develop personnel and sustainable programs to mitigate those risks, and continually evaluate the effectiveness of these efforts.

Stakeholders: We engage stakeholders to foster trust, build relationships, and promote two-way dialogue to manage potential impacts and create business opportunities. We work with our stakeholders in a socially responsible and ethical manner, consistent with our respect for human rights, to create a safer, more inclusive business environment. We also work with our partners to responsibly manage Chevron's non-operated joint venture partnerships and third-party aviation and marine activities.

There are specific OE expectations which need to be met under each focus area. Additional expectations apply to all focus areas and address legal, regulatory and OE compliance; risk management; assurance; competency; learning; human performance; technology; product stewardship; contractor OE management; incident investigation and reporting; and emergency management.

Through disciplined application of the OEMS, we integrate OE processes, standards, procedures and behaviours into our daily operations. While leaders are responsible for managing the OEMS and enabling OE performance, every individual in Chevron's workforce is accountable for complying with the principles of 'Do it safely or not at all' and 'There is always time to do it right'.

Line management has the primary responsibility for complying with this policy and applicable legal requirements within their respective functions and authority limits. Line management will communicate this policy to their respective employees and will establish policies, processes, programs and standards consistent with expectations of the OEMS.

Employees are responsible for understanding the risks that they manage and the safeguards that need to be in place to mitigate those risks. Employees are responsible for taking action consistent with all Company policies, and laws applicable to their assigned duties and responsibilities. Accordingly, employees who are unsure of the legal or regulatory implications of their actions are responsible for seeking management or supervisory guidance.

Mark Hatfield
Managing Director, Australasia Business Unit

the human energy company™

Appendix B Stakeholder Consultation Records

Appendix B.1 Engagement Material

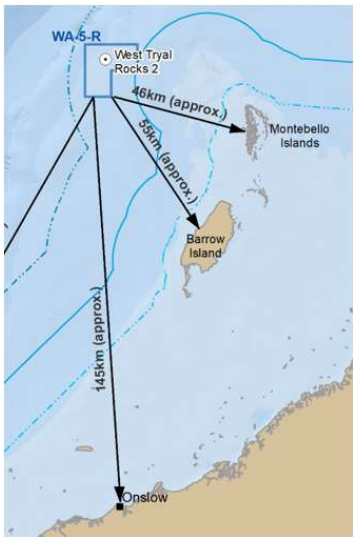
West Tryal Rocks Well Abandonment – Email to accompany factsheet for stakeholder consultation – FINAL

Dear Stakeholder,

Chevron Australia is currently developing a West Tryal Rocks Well Abandonment Environment Plan to cover the retention of an abandoned wellhead, located approximately 145 kilometres offshore north of Onslow. See attached factsheet. This Environment Plan is a requirement recently advised by NOPSEMA.

The West Tryal Rocks 2 (WTR-2) well was drilled and abandoned by West Australian Petroleum (WAPET) in 1974, with the wellhead remaining in situ in retention lease WA-5-R. This lease was subsequently taken over by Chevron Australia in 2000.

There have not been any activities over this site since it was abandoned by WAPET in 1974. As the exploration, appraisal and abandonment program has been completed no further activities are proposed.



Location	Lat -20. 214388, Long 115.066795
Water Depth	Approximately 130metres
Site Information	The wellhead extends approximately two metres above the seabed and covers an area of approximately nine square metres.
Petroleum Safety Zone	There are currently no exclusion or cautionary zones over the West Tryal Rocks wellhead site. This is not intended to change as a result of this Environment Plan.
Feedback	All feedback and requests for more information are to be directed to Micha Stoker at Chevron via abuenvplaninfo@chevron.com or 08 9216 4000.

The attached fact sheet provides a location map, outlines potential risks and impacts relating to the wellhead remaining in situ and proposed control measures. As part of its commitment to effective consultation, Chevron Australia is seeking feedback from relevant stakeholders.

WAFIC is sending this information out (via a blind email) on a fee-for-service basis on behalf of Chevron to ensure licence holders receive this in a timely manner via an accurate list.

As a key relevant party to this EP, your feedback is important and will help identify and manage any additional potential impacts not already identified by Chevron and may form part of the Environment Plan. Should you wish to provide feedback or obtain more information please contact Micha at Chevron.

Many thanks and best regards

west tryal rocks well abandonment

environment plan consultation

November 2020

overview

The West Tryal Rocks 2 (WTR-2) well was drilled and abandoned by West Australian Petroleum (WAPET) in 1974, with the wellhead remaining in situ in retention lease WA-5-R (see above image).

In 2000, Chevron Australia became operator of the oil and gas exploration and production assets previously managed by WAPET, including retention lease WA-5-R.

In May 2020, NOPSEMA advised Chevron Australia that an Environment Plan was required to cover the retention of the wellhead in situ.

location and water depths

WTR-2 is located within retention lease WA-5-R, located approximately 145 kilometres north of Onslow at a water depth of approximately 130metres.

The wellhead extends approximately two metres above the seabed and covers an area of approximately nine square metres.

See location map on page 3.

Table 1: Wellhead coordinates and water depth.

Well Name	Title	Latitude	Longitude	Water Depth
WTR-2	WA-5-R	-20.214388	115.066795	126m

activity summary

As the exploration, appraisal and abandonment program has been completed no further activities are proposed.

exclusion zones

There are currently no exclusion or cautionary zones over the West Tryal Rocks wellhead site. This is not intended to change as a result of this Environment Plan.

The location will be marked on nautical charts.

approvals process

Petroleum activities in Commonwealth waters, are regulated by the National Offshore Petroleum

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Safety and Environmental Management Authority (NOPSEMA).

Section 572 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act)* provides the requirements for the maintenance and removal of property by a titleholder.

As part of the environmental approval process, Chevron Australia is developing an Environment Plan to demonstrate how obligations under section 572 of the OPGGS Act are met. The Environment Plan will be assessed by NOPSEMA in accordance with the requirements of the *Offshore Petroleum and Greenhouse Gas Storage (Environment)* Regulations (2009).

environmental impact and implications for stakeholders

No further onsite operations will be undertaken at the WTR-2 wellhead site and the only potential impacts relate to the wellhead remaining in situ.

This is the same status for this site since the wellhead was abandoned by WAPET in 1974.

Chevron is assessing potential impacts and risks to the marine environment and relevant stakeholders from leaving the wellhead in situ. These along with proposed control measures are summarised in Table 2.

Further details will be provided in the Environment Plan and will incorporate feedback generated during the consultation process.

Table 2: Summary of key impacts/ risks and proposed controls

Potential Impact/Risk	Proposed control
Planned activities	
Physical presence of infrastructure on seafloor impacting interests of relevant stakeholders	• Stakeholder engagement activities as part of the Environment Plan. • Consultation with relevant marine users, including petroleum titleholders, commercial fishers and their representative organisations, and government departments (i.e. DPIRD, Australian Fisheries Management Authority) to inform decision making for the activity and development of the Environment Plan. • Coordinates for WTR-2 provided to the Australian Hydrographical Service (AHS).

providing feedback

Feedback from interested and relevant stakeholders on potential or perceived impacts associated with Chevron's proposed WTR-2 Well Abandonment Environment Plan will be carefully considered and assessed.

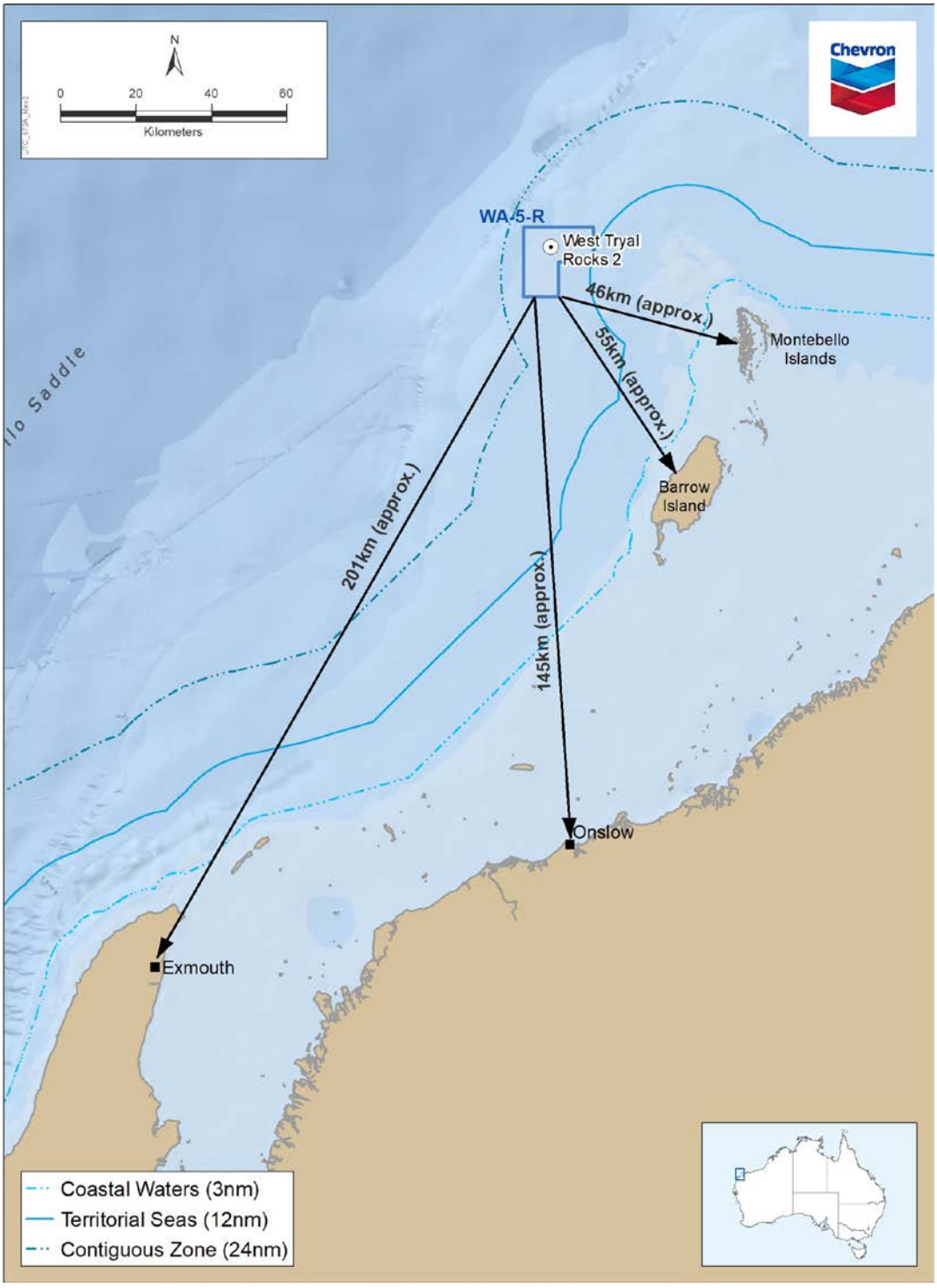
Please note that stakeholder feedback and Chevron's response will be included in the Environment Plan.

NOTE: If feedback is identified as sensitive by a stakeholder, Chevron will make this known to NOPSEMA for the information to remain confidential.

Feedback can be directed to:

Micha Stoker
Partnerships Advisor
abuenvplaninfo@chevron.com
Telephone (08) 9216 4000

location map



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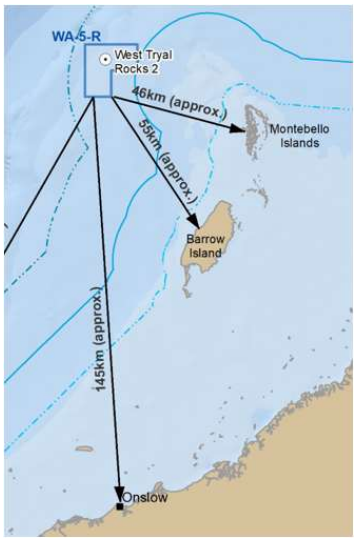
West Tryal Rocks Well Abandonment – Email to accompany factsheet for stakeholder consultation – FINAL

Dear Stakeholder,

Chevron Australia is currently developing a West Tryal Rocks Well Abandonment Environment Plan to cover the retention of an abandoned wellhead, located approximately 145 kilometres offshore north of Onslow. See attached factsheet. This Environment Plan is a requirement recently advised by NOPSEMA.

The West Tryal Rocks 2 (WTR-2) well was drilled and abandoned by West Australian Petroleum (WAPET) in 1974, with the wellhead remaining in situ in retention lease WA-5-R. This lease was subsequently taken over by Chevron Australia in 2000.

There have not been any activities over this site since it was abandoned by WAPET in 1974. As the exploration, appraisal and abandonment program has been completed no further activities are proposed.



Location	Lat -20. 214388, Long 115.066795
Water Depth	Approximately 130metres
Site Information	The wellhead extends approximately two metres above the seabed and covers an area of approximately nine square metres.
Petroleum Safety Zone	There are currently no exclusion or cautionary zones over the West Tryal Rocks wellhead site. This is not intended to change as a result of this Environment Plan.
Feedback	All feedback and requests for more information are to be directed to Micha Stoker at Chevron via abuenvplaninfo@chevron.com or 08 9216 4000.

The attached fact sheet provides a location map, outlines potential risks and impacts relating to the wellhead remaining in situ and proposed control measures. As part of its commitment to effective consultation, Chevron Australia is seeking feedback from relevant stakeholders.

WAFIC is sending this information out (via a blind email) on a fee-for-service basis on behalf of Chevron to ensure licence holders receive this in a timely manner via an accurate list.

As a key relevant party to this EP, your feedback is important and will help identify and manage any additional potential impacts not already identified by Chevron and may form part of the Environment Plan. Should you wish to provide feedback or obtain more information please contact Micha at Chevron.

Many thanks and best regards

west tryal rocks well abandonment

environment plan commercial fishing consultation

November 2020

overview

The West Tryal Rocks 2 (WTR-2) well was drilled and abandoned by West Australian Petroleum (WAPET) in 1974, with the wellhead remaining in situ in retention lease WA-5-R (see above image).

In 2000, Chevron Australia became operator of the oil and gas exploration and production assets previously managed by WAPET, including retention lease WA-5-R.

In May 2020, NOPSEMA advised Chevron Australia that an Environment Plan was required to cover the retention of the wellhead in situ.

location and water depths

WTR-2 is located within retention lease WA-5-R, located approximately 145 kilometres north of Onslow at a water depth of approximately 130metres.

The wellhead extends approximately two metres above the seabed and covers an area of approximately nine square metres.

See location map on page 3.

Table 1: Wellhead coordinates and water depth.

Well Name	Title	Latitude	Longitude	Water Depth
WTR-2	WA-5-R	-20.214388	115.066795	126m

activity summary

As the exploration, appraisal and abandonment program has been completed no further activities are proposed.

exclusion zones

There are currently no exclusion or cautionary zones over the West Tryal Rocks wellhead site. This is not intended to change as a result of this Environment Plan.

The location will be marked on nautical charts.

approvals process

Petroleum activities in Commonwealth waters, are regulated by the National Offshore Petroleum

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Safety and Environmental Management Authority (NOPSEMA).

Section 572 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act)* provides the requirements for the maintenance and removal of property by a titleholder.

As part of the environmental approval process, Chevron Australia is developing an Environment Plan to demonstrate how obligations under section 572 of the OPGGS Act are met. The Environment Plan will be assessed by NOPSEMA in accordance with the requirements of the *Offshore Petroleum and Greenhouse Gas Storage (Environment)* Regulations (2009).

commercial fishing

While the WTR-2 wellhead has been in place since 1974, Chevron recognises the commercial fishing sector is an important and relevant stakeholder group whose members may have interests, functions, and activities that could be affected (positively or negatively) by the retention of the wellhead in situ. Chevron is engaging proactively with the commercial fishing sector to seek feedback, including in relation to potential snag hazards.

environmental impact and implications for stakeholders

No further onsite operations will be undertaken at the WTR-2 wellhead site and the only potential impacts relate to the wellhead remaining in situ.

This is the same status for this site since the wellhead was abandoned by WAPET in 1974.

Chevron is assessing potential impacts and risks to the marine environment and relevant stakeholders from leaving the wellhead in situ. These along with proposed control measures are summarised in Table 2.

Further details will be provided in the Environment Plan and will incorporate feedback generated during the commercial fishing consultation process.

Table 2: Summary of key impacts/ risks and proposed controls

Potential Impact/Risk	Proposed control
Planned activities	
Commercial fishing	• Consultation with commercial fishers and their representative organisations, and government departments (i.e. DPIRD, Australian Fisheries Management Authority) to inform decision making for the activity and development of the Environment Plan. • Consultation with commercial fishers to assess potential snag hazards. • Coordinates for WTR-2 provided to the Australian Hydrographical Service (AHS). • There are currently no exclusion or cautionary zones over the West Tryal Rocks wellhead site. This is not intended to change as a result of this Environment Plan.

providing feedback

Feedback from the commercial fishing sector and other interested and relevant stakeholders on potential or perceived impacts associated with Chevron's proposed WTR-2 Well Abandonment Environment Plan will be carefully considered and assessed.

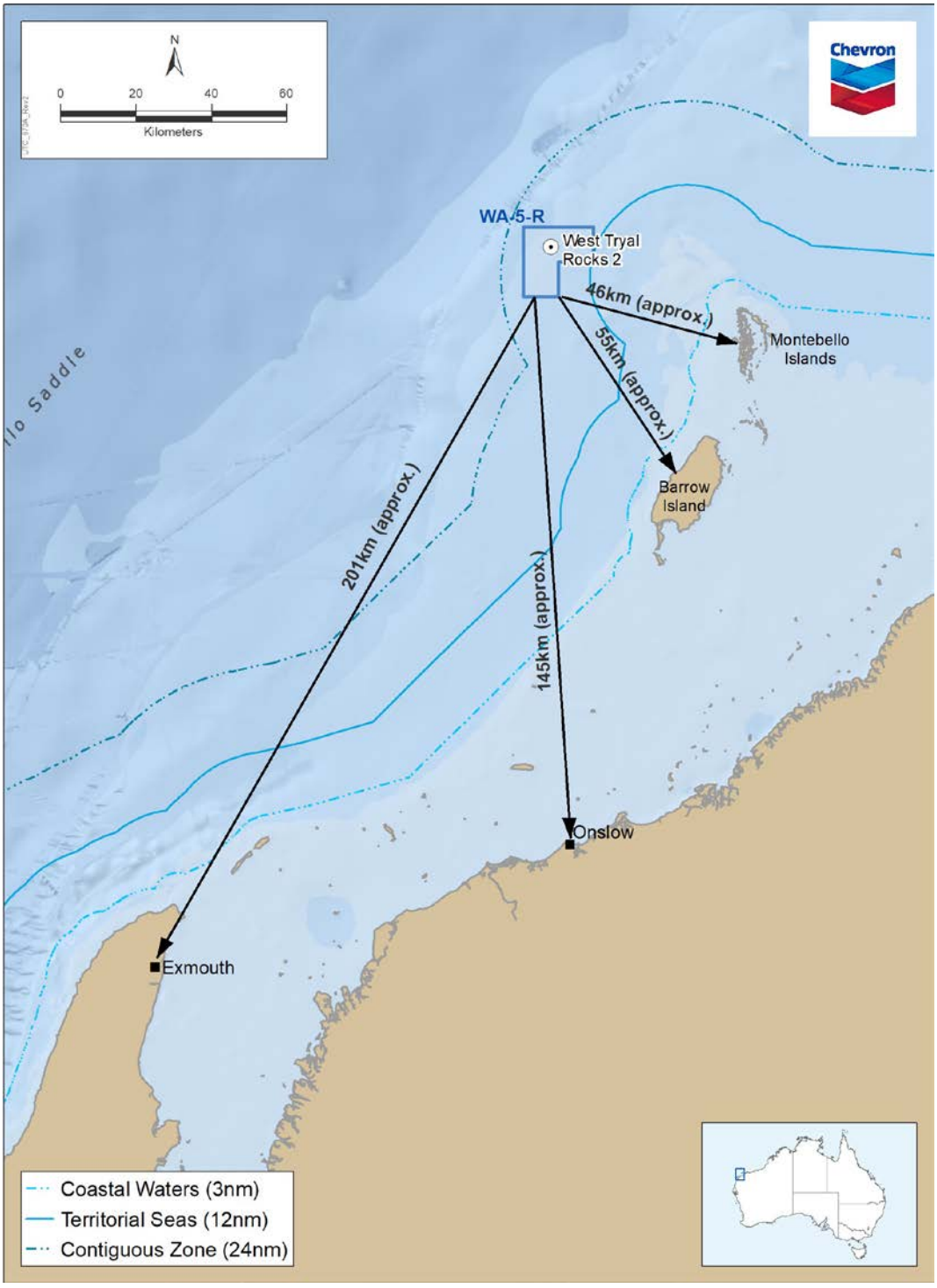
Please note that stakeholder feedback and Chevron's response will be included in the Environment Plan.

NOTE: If feedback is identified as sensitive by a stakeholder, Chevron will make this known to NOPSEMA for the information to remain confidential.

Feedback can be directed to:

Micha Stoker
Partnerships Advisor
abuenvplaninfo@chevron.com
Telephone (08) 9216 4000

location map



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Appendix B.2 Sensitive Information Report

The Stakeholder Engagement Log and consultation records have been withheld because they contain sensitive information.

Appendix C Matters of National Environmental Significance Reports

Australian Government

Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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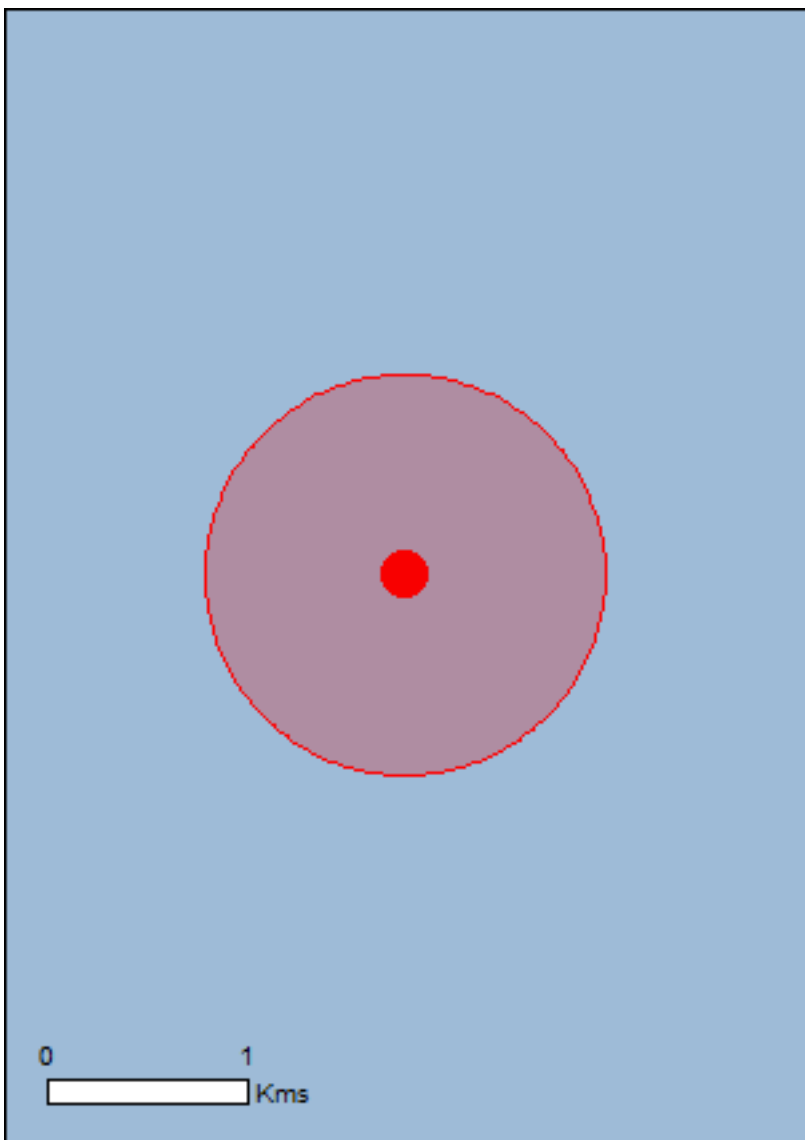
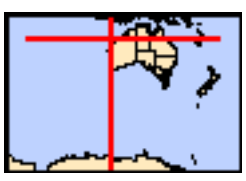


This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates

Buffer: 1.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	18
Listed Migratory Species:	33

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at 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:	59
Whales and Other Cetaceans:	24
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		
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
Mammals		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species

Name	Status	Type of Presence
		habitat known to occur 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 likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Sharks		
Carcharias taurus (west coast population) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

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 likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat likely to occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known

Name	Threatened	Type of Presence
		to occur within area
Tursiops aduncus (Arafura/Timor Sea populations)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat 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
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 likely to occur

Name	Threatened	Type of Presence within area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
[Pandion haliaetus](#) Osprey [952]		Species or species habitat may occur within area
Fish		
[Acentronura larsonae](#) Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
[Bulbonaricus brauni](#) Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
[Campichthys tricarinatus](#) Three-keel Pipefish [66192]		Species or species habitat may occur within area
[Choeroichthys brachysoma](#) Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
[Choeroichthys latispinosus](#) Muiron Island Pipefish [66196]		Species or species habitat may occur within area
[Choeroichthys suillus](#) Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
[Doryrhamphus dactyliophorus](#) Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
[Doryrhamphus janssi](#) Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
[Doryrhamphus multiannulatus](#) Many-banded Pipefish [66717]		Species or species habitat may occur within area
[Doryrhamphus negrosensis](#) Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
[Festucalex scalaris](#) Ladder Pipefish [66216]		Species or species habitat may occur within area
[Filicampus tigris](#) Tiger Pipefish [66217]		Species or species habitat may occur within area
[Halicampus brocki](#) Brock's Pipefish [66219]		Species or species habitat may occur within area
[Halicampus grayi](#) Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptiles		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
Hydrophis czeblukovi Fine-spined Seasnake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [1111]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area

Name	Status	Type of Presence
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia simus Dwarf Sperm Whale [58]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
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

Name	Status	Type of Presence
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
Ancient coastline at 125 m depth contour	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

-20.21326 115.06637

Acknowledgements

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-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

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Please feel free to provide feedback via the Contact Us page.

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