Gorgon and Jansz–Io
Drilling, Completions and Well Maintenance Program Environment Plan

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Gorgon and Jansz–Io

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Document information

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Approvals

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1 Environment Plan summary

In accordance with Regulations 28 and 35 of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth) (OPGGS(E)R) all Environment Plans (EPs) are published (with the sensitive information part removed) on the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA) website.

To fulfil the requirements of an EP summary for public disclosure, as required by Regulations 35(6) and 35(7), the *Gorgon and Jansz–Io Drilling Completions Well Maintenance Environment Plan Summary* (Table 1-1) has been prepared from material provided in this EP, and in the EP summary statement format preferred by NOPSEMA.

Table 1-1: Environment Plan summary

Regulation	EP summary material requirement	Relevant Section of the EP
35(7)(a)(i)	the location of the activity	Section 2.2, Section 3.1.1
35(7)(a)(ii)	a description of the receiving environment	Section 4
35(7)(a)(iii)	a description of the activity	Section 3
35(7)(a)(iv)	details of environmental impacts and risks	Section 7
35(7)(a)(v)	a summary of control measures for the activity	Section 7
35(7)(a)(vi)	a summary of the arrangements for ongoing monitoring of the titleholder's environmental performance	Section 8
35(7)(a)(vii)	a summary of the response arrangements in the oil pollution emergency plan	Section 7.17, Ref. 1
35(7)(a)(viii)	details of consultation already undertaken, and plans for ongoing consultation	Section 6
35(7)(a)(ix)	details of the titleholder's nominated liaison person for the activity	Section 2.4

2 Introduction

2.1 Overview

Chevron Australia Pty Ltd (CAPL) Gorgon Liquefied Natural Gas (LNG) assets (Gorgon Project) produce hydrocarbon fluids from offshore fields (Gorgon and Jansz) and transport these fluids through subsea flowlines. These fluids are then processed on and exported from an LNG facility located on Barrow Island off the coast of Western Australia (WA). Activities described in this EP include the operational Gorgon and Jansz production wells. A total of 29 wells (15 Gorgon, 14 Jansz) have been drilled and completed, across 2 drilling campaigns, within the Gorgon and Jansz fields. 18 wells (8 Gorgon, 10 Jansz) were constructed as part of the Gorgon Foundation Project (GFP) campaign (2012–2014), and a further 11 wells (7 Gorgon, 4 Jansz) were constructed during the Gorgon Stage 2 (GS2) campaign (2019–2020).

CAPL has developed this Environment Plan (EP) to manage the environmental impacts and risks for well intervention and maintenance of the operational Gorgon and Jansz production wells.

This EP has been prepared in accordance with the requirements of the Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGS Act) and Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (OPGGS(E)R) as administered and for regulatory acceptance by the National Offshore Petroleum Safety and Environment Management Authority (NOPSEMA).

2.2 Location

Activities described in this EP (which include the operational Gorgon and Jansz production wells) are located within production licenses WA-37-L and WA-38-L, ~130 km off the north-west coast of WA, and ~65 km north-west of Barrow Island (Figure 2-1).

The Jansz gas fields are located within production licences WA-36-L, WA-39-L and WA-40-L ~200 km off the north-west coast of WA in water depths of ~1,350 m (Figure 2-1).

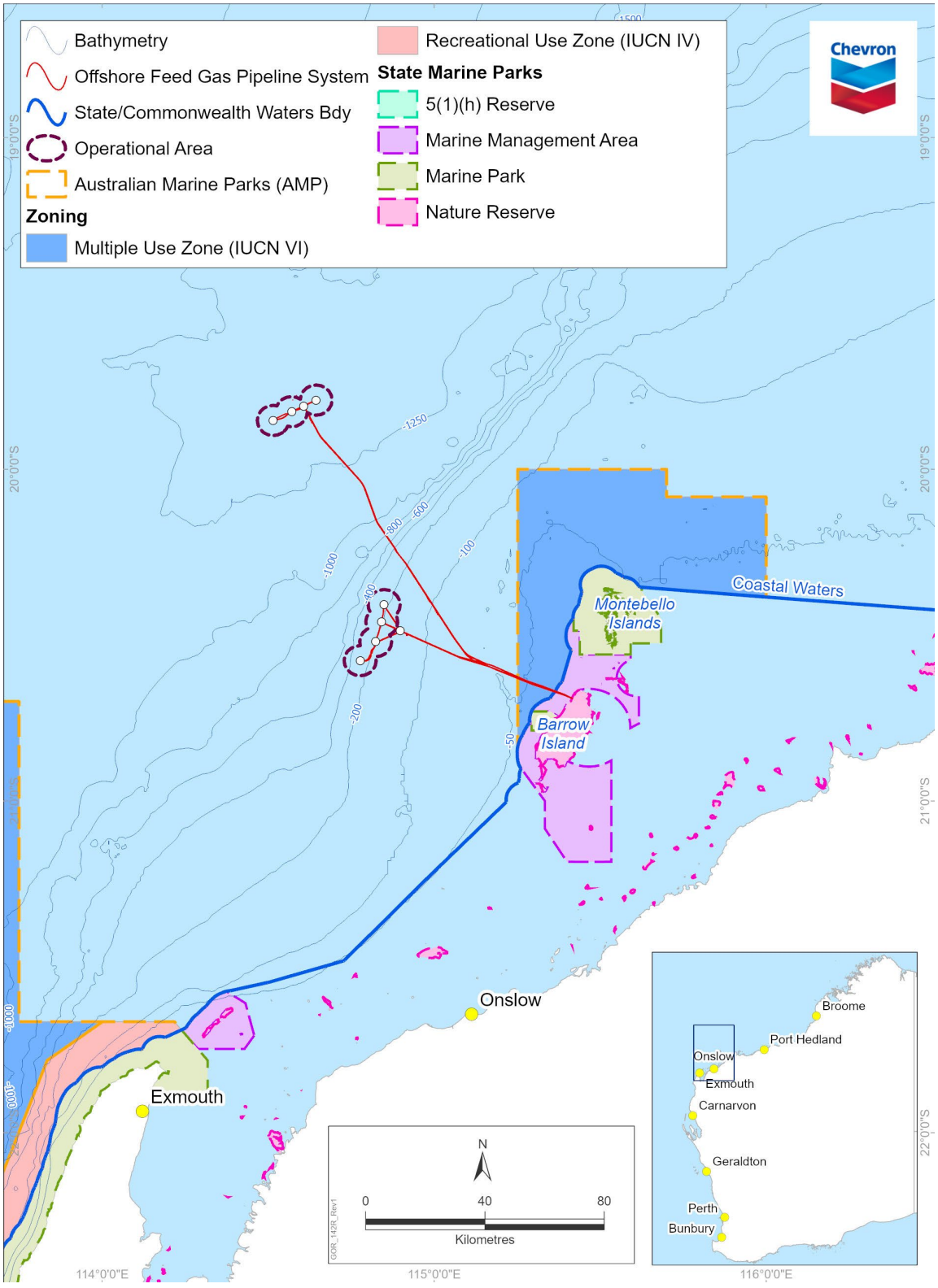


Figure 2-1: Overview of Gorgon and Jansz infrastructure

2.3 Scope

2.3.1 In scope

This EP relates to petroleum activities to be undertaken by CAPL, which comprise operations and works performed at the Gorgon and Jansz Foundation and Stage 2 wells ('GS2') and any well intervention or abandonment activities, including:

- drilling and completions (Section 3.2)
- Mobile Offshore Drilling Unit (MODU) operations (Section 3.2.1)
- formation evaluation (Section 3.3)
- well intervention activities (Section 3.4)
- well abandonment (Section 3.5)
- field support (Section 3.7)

2.3.2 Out of scope

The following activities are excluded from the scope of this EP:

- operation and monitoring of Gorgon and Jansz production wells; these are managed under the (NOPSEMA) accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations (Commonwealth Waters) Environment Plan* (Ref. 5)
- inspection, maintenance, and repairs of the Gorgon and Jansz hydrocarbon system; also managed under the NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations (Commonwealth Waters) Environment Plan* (Ref. 5)
- manifold and tie back installations
- vessels (including emergency response vessels) transiting to or from the Operational Area (OA) (i.e. outside the OA); these vessels are subject to the Commonwealth *Navigation Act 2012* and not performing the petroleum activity
- helicopters transiting to or from the OA (i.e. outside the OA); these aircraft are subject to the *Air Navigation Act 1920*, Civil Aviation Safety Regulations 1998, and the Federal Aviation Regulations and not performing the petroleum activity.

2.4 Titleholder details

CAPL is the nominated titleholder of the production licenses on behalf of the titleholder companies listed in Table 2-1. The contact details for the titleholders' nominated liaison person for this EP are listed in Table 2-2.

Regulation 23(3) of the OPGGS(E)R requires that CAPL notifies NOPSEMA of a change in the titleholder, a change to the titleholder's nominated liaison person, or a change in the contact details for either the titleholder or the nominated liaison person.

Section 286A of the OPGGS Act requires notification is provided to NOPSEMA and the National Offshore Petroleum Titles Administrator (NOPTA) if there is a change to a registered titleholder or contact details for the registered titleholder; this notification is to occur within 30 days of such a change.

Table 2-1: Titleholders' details

Titles	Details	Titleholders	Nominated Titleholder	Address
WA-36-L WA-37-L WA-38-L WA-39-L WA-40-L	Production Licence Production Licence Production Licence Production Licence Production Licence	Chevron Australia Pty Ltd Chevron Australia Pty Ltd Mobil Australia Resources Company Pty Limited Shell Australia Pty Ltd Osaka Gas Gorgon Pty Ltd	Chevron Australia Pty Ltd (ACN: 086 197 757)	1 The Esplanade Perth WA, 6000

Table 2-2: Nominated liaison person

Position	HSE Team Lead Regulatory Affairs
Company	Chevron Australia Pty Ltd
ACN	086 197 757
Business address	1 The Esplanade, Perth WA, 6000
Telephone number	+61 8 9216 4000
Email	feedback@chevron.com

2.5 Environmental management framework

CAPL's operations are managed in accordance with Chevron Corporation's Operational Excellence Management System (OEMS), which is described in Section 8.

2.5.1 Environmental policy

CAPL's commitment to environmental management in all aspects of operations is documented in Chevron Corporations' Operational Excellence Policy 530 (Appendix A).

2.5.2 Relevant requirements

In accordance with Regulation 21(4) of the OPGGS(E)R, Table 2-3 and Table 2-4 lists the legislative and other requirements that apply to the petroleum activity and that are relevant to the environmental management of the activity.

Table 2-3: Commonwealth legislative requirements

Legislation	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met
Australian Maritime Safety Authority Act 1990 (Cth)	Aims to promote maritime safety, protect the marine environment from pollution from ships or other environmental damage caused by shipping, and provide for a national search and rescue service	Requirements include involving the Australian Maritime Safety Authority (AMSA) in response to relevant spill events	Roles and responsibilities are described in the Oil Pollution Emergency Plan (OPEP) (Ref. 1)
Biosecurity Act 2015 (Cth)	This Act is about managing diseases and pests that may cause	Pre-arrival reporting before arrival in Australian territory	Section 7.8

Legislation	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met
Biosecurity Regulations 2016 (Cth)	harm to human, animal, or plant health or the environment. The Act provides for managing biosecurity risks in Australia and its external territories. It also provides for managing risks related to ballast water.	Ballast water management plans and certificates, and reporting of ballast water discharges	
Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) EPBC Regulations 2000 (Cth)	Provides for protecting and managing nationally and internationally important flora, fauna, ecological communities, and heritage places	The EP must describe matters protected under Part 3 of the EPBC Act and assess any impacts and risks to these protected matters	Sections 4 and 7
		EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans	Sections 7.2 and 7.6
		Injury or death caused to EPBC listed fauna shall be reported	Section 8.4.2
		The Gorgon Gas Development was approved with conditions under EPBC Act in 2007. Condition 16A (Plan for the Management of Offshore Impacts) of EPBC 2003/1294 includes relevant requirements—refer to Table 2 4.	This EP, including the OPEP (Ref. 1) and Operational and Scientific Monitoring Plan (OSMP) (Ref. 2)
Navigation Act 2012	Provides for vessel and seafarer safety, and marine pollution prevention	Notice to Mariners	Sections 7.1 and 7.15
Navigation Act 2012 *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006* Various marine orders	Gives effect to the requirements under the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) in Australia	Marine order 30— Prevention of collisions	Section 7.15
		Marine order 91— Marine pollution prevention—oil	Sections 7.9, 7.14, and 7.15
		Marine order 95— Marine pollution prevention—garbage	Sections 7.9 and 7.13
		Marine order 96— Marine pollution prevention—sewage	Section 7.9
		Marine order 97— Marine pollution prevention—air pollution	Section 7.5
		Marine order 98— Marine pollution prevention—anti-fouling systems	Section 7.8

Legislation	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met
Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act) OPGGS Environment Regulations 2023 (OPGGS(E)R)	The OPGGS(E)R under the OPGGS Act requires a titleholder to have an accepted EP in place before commencing a petroleum activity. The regulations ensure petroleum activities are undertaken in an ecologically sustainable manner in accordance with an EP	An EP for a petroleum activity must be accepted by NOPSEMA before activities commence	This EP, including the OPEP (Ref. 1) and Operational and Scientific Monitoring Plan (OSMP) (Ref. 2)
OPGGS (Resource Management and Administration) Regulations 2011	These regulations require a titleholder to have an accepted Well Operations Management Plan (WOMP) in place. A WOMP ensures systems are in place to manage well integrity and well activities.	A WOMP for a petroleum well activity must be accepted by NOPSEMA before activities commence	CAPL will develop a WOMP for the any drilling activities described in this EP. The WOMP will be reviewed and accepted by NOPSEMA before activities commence. As such, there is currently no WOMP to reference for drilling. The Chevron Gorgon Project Producing Phase WOMP (Ref. 6) includes unplanned / contingency well interventions / workovers
Underwater Cultural Heritage Act 2018	Provides protection for shipwrecks, sunken aircraft, and other cultural heritage sites in Australian waters	Identify the presence of protected cultural heritage sites and assess any impacts and risks to these sites	Sections 4 and 6

Table 2-4: Standards and guidelines

Standard/guideline	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met
National Light Pollution Guidelines for Wildlife, including Marine Turtles, Seabirds and Migratory Shorebirds (Ref. 7)	Outlines the process to be followed where there is the potential for artificial lighting to affect wildlife; applies to new projects, lighting upgrades and where there is evidence of wildlife being affected by existing artificial light	The EP must assess if artificial lighting is likely to affect wildlife and identify the management tools to minimise and mitigate impacts and risks	Section 7.4
Australian Ballast Water Management Requirements (Ref. 4)	Provides guidance on how vessel operators should manage ballast water when operating within Australian seas in order to comply with the	Ballast water management requirements for vessels, including having a ballast water management plan	Section 7.8

Standard/guideline	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met
	Biosecurity Act 2015 (Cth). They also align to the International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004 (the Ballast Water Management Convention).	and certificate (unless an exemption applies).	
Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Ref. 8)	International Maritime Organization (IMO) guidelines for global management of biofouling.	Requires a biofouling management plan and record book to be available and maintained	Section 7.8
National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (Ref. 9)	Department of Agriculture, Fisheries and Forestry (DAFF) guidance document has been developed to assist industry manage the risk of marine pest translocation and introduction via biofouling.	Requires biofouling risk assessments to be completed	Section 7.8
Minamata Convention on Mercury	The Minamata Convention on Mercury is an international treaty that seeks to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds. Australia ratified the Convention in December 2021.	Article 9 of the Convention concerns controlling, and where feasible, reducing releases of mercury or mercury compounds to land and water. Article 11 of the Convention concerns disposal of mercury contaminated waste.	Section 7.10

3 Description of the petroleum activity

3.1 Overview

This section describes the petroleum activity as required under Regulation 21(1) of the OPGGS(E)R. The description of the petroleum activity is presented in the following sections:

- Drilling and completions (to replace an existing well) — including drilling, completions, and contingency well activities (Section 3.2)
- MODU operations—includes positioning, and general (non-drilling) activities (Section 3.2.1)
- Formation evaluation (Section 3.3)
- Well intervention (to repair an existing well) – major rig workover using MODU and/or light well intervention (LWI) vessel riser-based or riserless (Section 3.4)
- Well abandonment using MODU and/or LWI vessel riser-based or riserless (Section 3.5)
- Planned and contingency discharge of fluids to the environment (Section 3.6)
- Field support—including using support vessels, helicopters, and remotely operated vehicles (ROVs) (Section 3.7).

3.1.1 Location and Operational Area

The Gorgon and Jansz–Io fields are located in the Northern Carnarvon Basin, WA shown in (Figure 2-1).

The Gorgon field is located in Production Licences WA-37-L, and is a large north-east—south-west trending, fault-bounded structure ~45 km long. It is ~60 km north-west of Barrow Island and well locations range in water depths from ~200 m to 250 m at Gorgon Manifolds 1, 2, 3 and 4.

The Jansz–Io field (referred to herein as Jansz) is located across Production Licences WA-36-L and WA-39-L. It is ~70 km north-west of the Gorgon gas field and 125 km north-west of Barrow Island. Well locations range in depth between ~1,315 m and 1,350 m at Jansz Drill Centres 1, 2 and 3.

Coordinates for the 29 existing production wells are listed in Table 3-1. 15 wells are located in the Gorgon field and 14 wells are located in the Jansz field.

The Operational Area (OA) for the petroleum activity described in this EP is defined as 5 km buffer around the existing production wells (Figure 3-1). Given the distance between the 2 fields, 2 separate OAs were identified for this EP.

Both OAs are located wholly within Commonwealth waters. Neither OA has islands or other emergent features within or adjacent to it. The petroleum activity described in Section 3 of this EP will be undertaken wholly within the OAs.

The OAs encompass a 500 m safety exclusion zone that will be requested around the MODU for the duration of activities.

Table 3-1: Gorgon and Jansz well locations

Existing production	Latitude (south)			Longitude (east)			Water depth
	degrees	minutes	seconds	degrees	minutes	seconds	
GOR-1A	20°	24′	29.13"	114°	50′	56.00"	217 m
GOR-1B	20°	24′	27.69"	114°	50′	57.03"	217 m
GOR-1C	20°	24′	28.372"	114°	50′	56.841"	215 m
GOR-1D	20°	24′	28.611"	114°	50′	57.734"	215 m
GOR-1E	20°	24′	29.171"	114°	50′	58.313"	215 m
GOR-1F	20°	24′	30.019"	114°	50′	58.543"	215 m
GOR-1G	20°	24′	29.87"	114°	50′	59.26"	216 m
GOR-2B	20°	27′	36.535"	114°	50′	31.386"	199 m
GOR-2C	20°	27′	37.095"	114°	50′	31.964"	199 m
GOR-3B	20°	31′	11.275"	114°	49′	25.845"	199 m
GOR-3C	20°	31′	11.835"	114°	49′	26.424"	199 m
GOR-4C	20°	34′	38.62"	114°	46′	38.40"	250 m
GOR-4D	20°	34′	38.34"	114°	46′	37.54"	248 m
GOR-4E	20°	34′	37.79"	114°	46′	36.95"	251 m
GOR-4F	20°	34′	36.93"	114°	46′	36.67"	252 m
JZI-1B	19°	49′	36.51"	114°	34′	13.94"	1,338 m
JZI-1C	19°	49′	36.40"	114°	34′	12.96"	1,338 m
JZI-1D	19°	49′	35.44"	114°	34′	12.47"	1,338 m
JZI-1E	19°	49′	34.62"	114°	34′	12.95"	1,338 m
JZI-1F	19°	49′	33.97"	114°	34′	12.93"	1,338 m
JZI-2B	19°	47′	28.31"	114°	38′	40.03"	1,349 m
JZI-2C	19°	47′	28.40"	114°	38′	41.00"	1,349 m
JZI-2D	19°	47′	29.36"	114°	38′	41.54"	1,349 m
JZI-2E	19°	47′	30.17"	114°	38′	41.01"	1,349 m
JZI-2F	19°	47′	30.83"	114°	38′	41.04″	1,349 m
JZI-3C	19°	51′	11.42"	114°	30′	54.64"	1,316 m
JZI-3D	19°	51′	10.40"	114°	30′	54.33"	1,314 m
JZI-3E	19°	51′	09.69"	114°	30′	54.97"	1,316 m
JZI-3F	19°	51′	09.04"	114°	30′	55.05"	1,314 m

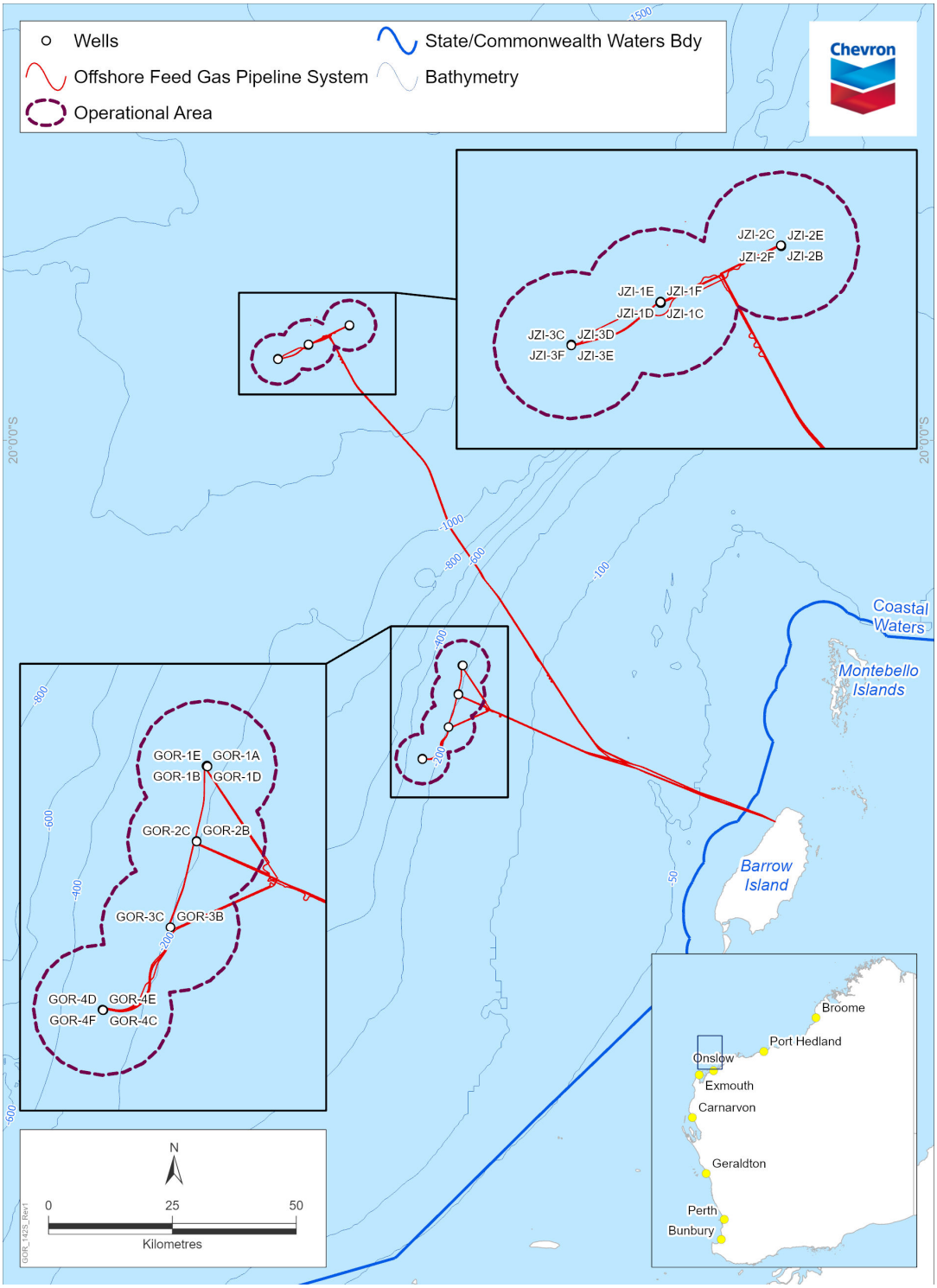


Figure 3-1: Well locations

3.1.2 Timing

Drilling operations are not planned to occur during the application period of this EP. However, unscheduled remediation works may be required to restore well productivity as described in Section 3.1. Remediation works activities may include re-drilling of an existing well (Section 3.2), well intervention activities (Section 3.4) and/or well abandonment (Section 3.5). Each activity is expected to take ~65 days. This duration is indicative and subject to potential operational delays

(e.g. weather, unplanned contingencies) and final design considerations (e.g. tree option selection).

Well intervention activities may be undertaken at any time of year during the operation of the facilities, and may commence any time after acceptance of this EP.

During the life of a well, an intervention may be required for various reasons, including but not limited to well equipment failure repairs, critical well component replacement/repair, formation impairment repairs, data acquisition, well suspension etc. Given the unknown requirements of future well intervention activities, it is not feasible to provide an estimated schedule. Therefore, for the purposes of assessing impact and risk in this EP, CAPL will assume that any activity carried out under this EP will take ~65 days.

All well activities covered in this EP will be conducted 24 hours/day and 7 days/week.

3.1.3 Reservoir properties

3.1.3.1 GFP and GS2 wells

The GFP and GS2 Gorgon and Jansz-Io wells target similar reservoir pools in terms of hydrocarbon composition. A ‘pool’ is an underground reservoir containing a common accumulation of oil or gas. Each zone of a structure that is completely separated from any other zone in the same structure, such that the accumulations of oil and gas are not common with each other, is considered a separate ‘pool’.

Consequently, the hydrocarbon types and flow rates are expected to be similar and the properties of the Gorgon and Jansz-Io fields are summarised in Table 3-2 Table 3-2.

3.1.3.2 Hydrocarbon composition

Table 3-2 summarises the compositional analyses undertaken by Shell Development Australia (Ref. 301) in 1999 for the reservoirs. More recent assays conducted during well flowbacks in 2014 (Ref. 302) indicate that the initial compositional analysis is still suitable for supporting the risk and impact evaluation conducted in this EP.

Table 3-2: Production reservoir properties

Property	Gorgon	Jansz–Io
Density (kg/m^3)	848 (at 15 °C)	743.1 (at 15 °C)
American Petroleum Institute (API)	35.3	47.9
Dynamic viscosity (centipoises; cP)	2.4 (at 20 °C)	1.2 (at 25 °C)
Pour Point (°C)	−9	−30
Condensate to Gas Ratio (bbl/MMscf)	5.9	4.09
Oil Property Category	Group II	Group I
Oil Persistence Classification	Persistent (light)	Non-persistent

The weathering and behaviour of the condensate is further discussed in the unplanned release spill modelling in Section 7.16.

3.1.3.3 Flow rate

All Gorgon wells have a steady-state design gas rate of 270 MMscfd, while all Jansz wells have a steady-state design gas rate of 240 MMscfd.

3.2 Drilling and completions

3.2.1 MODU

The rig chosen to complete activities under this EP may comprise a MODU, or LWI vessel. The MODU selected to complete the activities in this EP will either be anchored or use dynamic positioning (DP) depending on the type of activity. The MODU has minimal movement capability when undertaking drilling activities, and thus has right-of-way over other vessels.

A MODU mooring system will include 2 or 3 anchors from each corner of the main deck that will be placed by one of the support vessels. Anchors may be placed on the seabed and tested by the support vessels before the MODU arrives.

Disturbance footprints from anchoring systems vary; however, it is estimated that for a semisubmersible MODU with an 8- to 12-point mooring system, the anchoring system (allowing for both anchor footprint and disturbance from anchor chains) could be up to 13,000 m^2 (Ref. 11).

3.2.2 Well design and drilling method

The well design and drilling process is subject to change, depending on individual well design requirements. Any changes to well design must be reflected in the Gorgon and Jansz Producing Phase Well Operations Management Plan (WOMP) (Ref. 6) and any changes would be subjected to an evaluation against the activity as described in this Plan (see Section 8.3.2.2).

3.2.2.1 Gorgon

An indicative overview of the base-case drilling design and procedure for the Gorgon wells are provided in Table 3-3.

The drilling method proposes using a combination of sea water with high-viscosity gel sweeps, water-based fluids (WBF), and Non-Aqueous Drilling Fluids (NADFs) as outlined in Table 3-3. An indicative casing schematic of the Gorgon production wells is provided in Figure 3-2.

Table 3-3: Gorgon wells base-case drilling methodology

Hole size		Casing size		Cuttings discharge location	Drill fluid type
in	mm	in	mm		
42	1,067	36	914	Seabed (riserless)	Sea water with high-viscosity sweeps
26	660	20	508	Seabed (riserless)	Sea water with high-viscosity sweeps
17½	444	14	355	Sea surface	WBF (contingency NADF)
12¼ × 13½	311 × 343	10¾	273	Sea surface	NADF
9½	178			Sea surface	NADF

MD = measured depth

A 42″ hole is drilled riserless to a depth of ~70 m below the seabed, and a 36″ conductor casing run and cemented back to the seabed.

Once the 36″ casing is set, a 26″ section is drilled riserless to a depth of ~400 m below the seabed and a 20″ casing string run and cemented to the mudline.

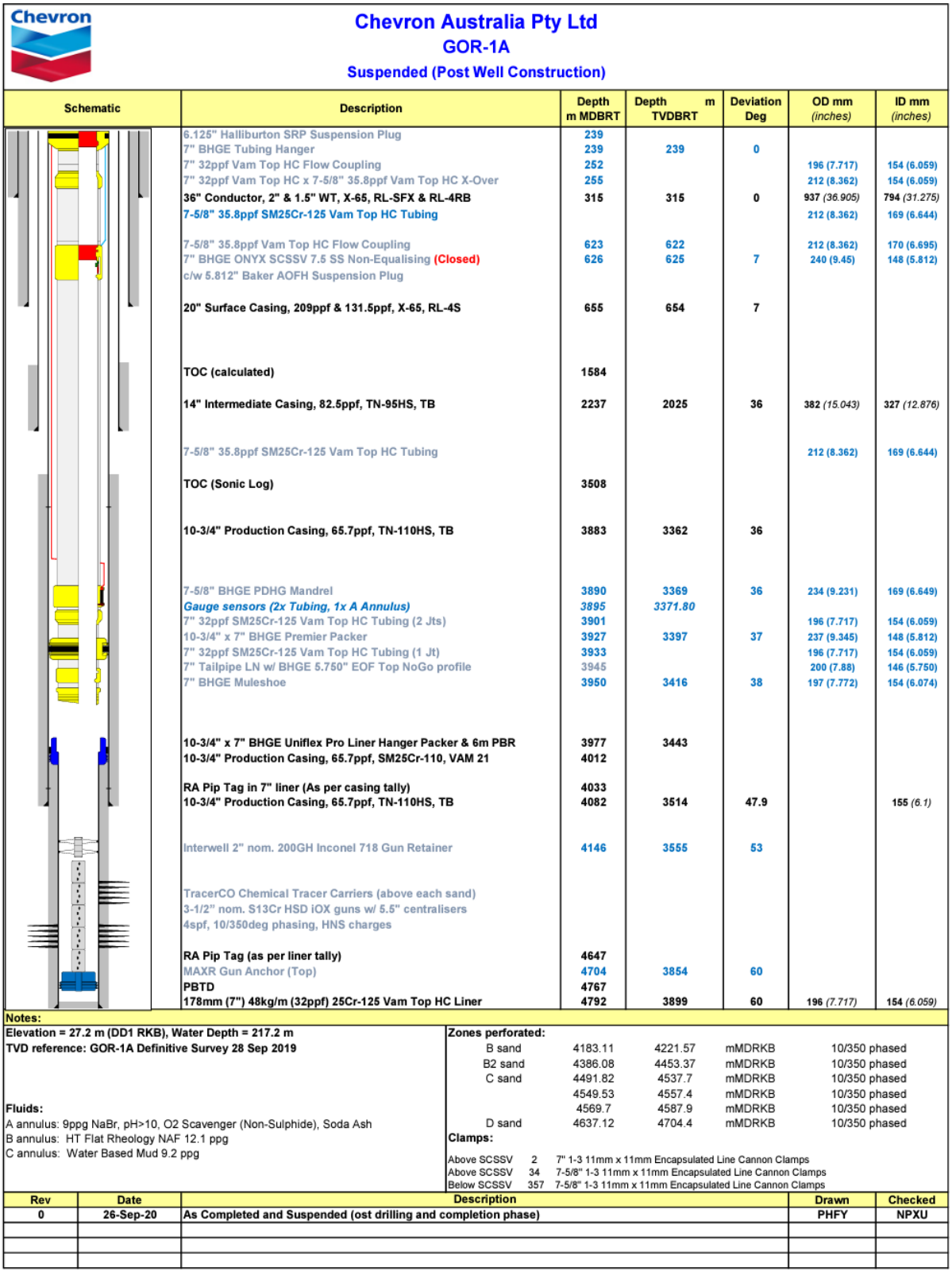
After completing the 36″ hole section and installing the blowout preventer (BOP) and riser, a 17½″ hole is drilled to ~2,000 m below the seabed using primarily a water-based mud (WBM); however, an NADF may be selected based on engineering considerations. A 14″ casing string is then cemented in position.

A 13½ × 12¼″ hole will be drilled with NADF to ~30 m above the Intra-Jurassic Unconformity, ~3,500 TVD (Manifold 1 [M1]), ~3,600 m (Manifold 4 [M4]), and a 10¾″ production casing string cemented in position.

An 8¾″ hole will be drilled to total depth (TD) with NADF. The 7″ production liner will be set at well TD. This liner isolates the different sand zones and allows selective perforating and completion of the target sands.

Before drilling the production section of the well, pilot-hole sections may be required to reduce geological uncertainty. The pilot hole is expected to comprise a 12¼″ section followed by an 8½″ section. Both sections are proposed to be drilled with NADF. The 12¼″ pilot-hole section will be drilled to a depth of ~3,000–3,600 m below the seabed with NADF. A 9⅝″ casing string is to be run to the bottom of this hole section and cemented in position before drilling the 8½″ pilot hole, which will then be plugged and abandoned.

The 9⅝″ casing will then be cut and retrieved from below the 13⅝″ casing shoe. A sidetrack will be performed and a 12¼″ hole will be drilled to ~3,000 m to 3,600 m depth with NADF. The 8¾″ production hole will be drilled with a water-based reservoir drill-in fluid (WBRDIF). This drill-in fluid is re-used but is discharged at the end of the drilling program.



Chevron Australia Pty Ltd
GOR-1A
Suspended (Post Well Construction)

Schematic	Description	Depth m MDBRT	Depth m TVDBRT	Deviation Deg	OD mm (inches)	ID mm (inches)
	6.125" Halliburton SRP Suspension Plug	239				
	7" BHGE Tubing Hanger	239	239	0		
	7" 32ppf Vam Top HC Flow Coupling	252			196 (7.717)	154 (6.059)
	7" 32ppf Vam Top HC x 7-5/8" 35.8ppf Vam Top HC X-Over	255			212 (8.362)	154 (6.059)
	36" Conductor, 2" & 1.5" WT, X-65, RL-SFX & RL-4RB	315	315	0	937 *(36.905)*	794 *(31.275)*
	7-5/8" 35.8ppf SM25Cr-125 Vam Top HC Tubing				212 (8.362)	169 (6.644)
	7-5/8" 35.8ppf Vam Top HC Flow Coupling	623	622		212 (8.362)	170 (6.695)
	7" BHGE ONYX SCSSV 7.5 SS Non-Equalising (Closed)	626	625	7	240 (9.45)	148 (5.812)
	c/w 5.812" Baker AOFH Suspension Plug					
	20" Surface Casing, 209ppf & 131.5ppf, X-65, RL-4S	655	654	7		
	TOC (calculated)	1584				
	14" Intermediate Casing, 82.5ppf, TN-95HS, TB	2237	2025	36	382 *(15.043)*	327 *(12.876)*
	7-5/8" 35.8ppf SM25Cr-125 Vam Top HC Tubing				212 (8.362)	169 (6.644)
	TOC (Sonic Log)	3508				
	10-3/4" Production Casing, 65.7ppf, TN-110HS, TB	3883	3362	36		
	7-5/8" BHGE PDHG Mandrel	3890	3369	36	234 (9.231)	169 (6.649)
	Gauge sensors (2x Tubing, 1x A Annulus)	*3895*	*3371.80*			
	7" 32ppf SM25Cr-125 Vam Top HC Tubing (2 Jts)	3901			196 (7.717)	154 (6.059)
	10-3/4" x 7" BHGE Premier Packer	3927	3397	37	237 (9.345)	148 (5.812)
	7" 32ppf SM25Cr-125 Vam Top HC Tubing (1 Jt)	3933			196 (7.717)	154 (6.059)
	7" Tailpipe LN w/ BHGE 5.750" EOF Top NoGo profile	3945			200 (7.88)	146 (5.750)
	7" BHGE Muleshoe	3950	3416	38	197 (7.772)	154 (6.074)
	10-3/4" x 7" BHGE Uniflex Pro Liner Hanger Packer & 6m PBR	3977	3443			
	10-3/4" Production Casing, 65.7ppf, SM25Cr-110, VAM 21	4012				
	RA Pip Tag in 7" liner (As per casing tally)	4033				
	10-3/4" Production Casing, 65.7ppf, TN-110HS, TB	4082	3514	47.9		155 *(6.1)*
	Interwell 2" nom. 200GH Inconel 718 Gun Retainer	4146	3555	53		
	TracerCO Chemical Tracer Carriers (above each sand)					
	3-1/2" nom. S13Cr HSD iOX guns w/ 5.5" centralisers					
	4spf, 10/350deg phasing, HNS charges					
	RA Pip Tag (as per liner tally)	4647				
	MAXR Gun Anchor (Top)	4704	3854	60		
	PBTD	4767				
	178mm (7") 48kg/m (32ppf) 25Cr-125 Vam Top HC Liner	4792	3899	60	196 *(7.717)*	154 *(6.059)*

Notes:

Elevation = 27.2 m (DD1 RKB), Water Depth = 217.2 m
TVD reference: GOR-1A Definitive Survey 28 Sep 2019

Fluids:
A annulus: 9ppg NaBr, pH>10, O2 Scavenger (Non-Sulphide), Soda Ash
B annulus: HT Flat Rheology NAF 12.1 ppg
C annulus: Water Based Mud 9.2 ppg

Zones perforated:

B sand	4183.11	4221.57	mMDRKB	10/350 phased
B2 sand	4386.08	4453.37	mMDRKB	10/350 phased
C sand	4491.82	4537.7	mMDRKB	10/350 phased
	4549.53	4557.4	mMDRKB	10/350 phased
	4569.7	4587.9	mMDRKB	10/350 phased
D sand	4637.12	4704.4	mMDRKB	10/350 phased

Clamps:

Above SCSSV	2	7" 1-3 11mm x 11mm Encapsulated Line Cannon Clamps
Above SCSSV	34	7-5/8" 1-3 11mm x 11mm Encapsulated Line Cannon Clamps
Below SCSSV	357	7-5/8" 1-3 11mm x 11mm Encapsulated Line Cannon Clamps

Rev	Date	Description	Drawn	Checked
0	26-Sep-20	As Completed and Suspended (ost drilling and completion phase)	PHFY	NPXU

Figure 3-2: Schematic of a typical Gorgon production well

3.2.2.2 Jansz

An indicative overview of the base-case drilling design and procedure for the Jansz wells are provided in Table 3-4.

The drilling method proposes using a combination of sea water with high-viscosity gel sweeps, water-based fluids (WBF), and Non-Aqueous Drilling Fluids (NADFs) as outlined in Table 3-4. An indicative casing schematic of the Jansz production wells is provided in Figure 3-3.

Table 3-4: Summary of the Jansz wells base-case drilling methodology

Hole size		Casing size		Cuttings discharge location	Drill fluid type
in	mm	in	mm		
42	1,067	36	914	Seabed (riserless)	Sea water with high-viscosity sweeps
26	660	20	508	Seabed (riserless)	Sea water with high-viscosity sweeps
17½	444	13⅝	346	Sea surface	WBF (contingency NADF)
12¼	311	9⅝	273	Sea surface	NADF
8½ × 9⅞	216 × 251	Open-hole Gravel Pack (OHGP)		Sea surface	WBF

MD = measured depth

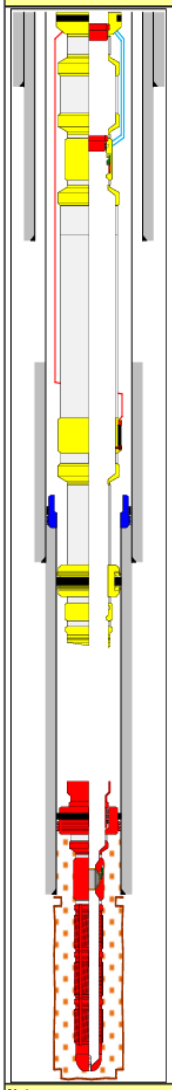
A 42″ hole is drilled riserless to a depth of ~70 m below the seabed, and a 36″ conductor casing run and cemented back to the seabed.

Once the 36″ casing is set, a 26″ section is drilled riserless to a depth of ~400 m below the seabed and a 20″ casing string run and cemented to mudline.

After completing the 26″ hole section and installing the BOP and riser, a 17½″ hole is drilled to ~1,250 m below the seabed using primarily a WBM; however, an NADF may be selected based on engineering considerations. A 13⅝″ casing string is then cemented in position.

A 12¼″ hole will be drilled with NADF to the top of the Jansz sandstone and a 9⅝″ production liner cemented in position.

The well will then be suspended with kill-weight suspension brine.



Chevron Australia Pty Ltd

JZI-3C

Suspended (Post Well Construction)

Description	Serial Number	Depth m MDBRT	Depth m TVDBRT	Deviation Deg	OD (inches)	ID (inches)
7" BHGE TH & 7" 32ppf VT-HC x TSH Blue X-Over Pup Jt + Saver Sub	C-54-5387812-1	1334	1334	0	18.750	6.052
6.125" SRP suspension plug installed in TH nipple						
7" 32ppf TSH Blue x 9-5/8" 53.5ppf TSH Blue X-Over Flow Coupling	107237003-2	1341	1341	0	10.626	6.052
36" Conductor Shoe, 2" & 1.5" WT, X-65, RL-SFX & RL-4RB		1411	1411	0	36.000	33.000
9-5/8" 53.5ppf 13Cr-80 TSH Blue Tubing					10.626	8.535
13-5/8" Production Casing, 88.2ppf, S13Cr-110 VAM-21 (bottom)		1564	1564	0	13.625	12.400
9-5/8" 53.5ppf TSH Blue x 7" 32ppf TSH Blue X-Over Flow Coupling	107237004-2	1799	1799	4	10.626	6.052
7" BHGE DeepShield-6 SS SCSSV (Closed)	1666022	1820	1820	7	9.380	8.535
5.812" AOFH suspension plug installed in SCSSV nipple						
7" 32ppf 13Cr-80 TSH Blue Tubing					7.732	6.052
7" 32ppf TSH Blue x 9-5/8" 53.5ppf TSH Blue X-Over Flow Coupling	107237003-03	1825	1825	7	10.626	6.052
20" Surface Casing Shoe, 209ppf & 131.5ppf, X-65, RL-4S		1845	1845	8	20.000	18.750
9-5/8" 53.5ppf 13Cr-80 TSH Blue Tubing					10.626	8.535
TOC (calculated)		2327	2300			
9-5/8" BHGE PDHG Mandrel w/ Triple Gauge	14932450	2446	2395	41	10.926	8.529
9-5/8" BHGE PDHG Sensor		2447	2396			
9-5/8" 53.5ppf TSH Blue x 7" 32ppf TSH Blue X-Over Flow Coupling	107237804-01	2465	2409	42	10.626	6.052
13-5/8" x 9-5/8" BHGE ZXP Liner Hanger Packer & PBR (TOC at Liner Top)	106668839 SN01	2493	2430	43	12.050	8.535
7" 32ppf 13Cr-80 TSH Blue Tubing					7.732	6.052
13-5/8" Production Casing Shoe, 88.2ppf, TN-110HS, TSH Blue		2603	2509	44	13.625	12.400
7" Cut Locator Nipple		2612	2515	44	7.760	5.820
9-5/8" x 7" BHGE Premier Packer		2613	2516	45	8.298	5.875
7" 32ppf 13Cr-80 TSH Blue Tubing					7.732	6.052
7" Tailpipe LN w/ BHGE 5.750" AOF Top NoGo profile	107079926-05	2635	2532	44	7.861	5.750
7" BHGE Self-Aligning Muleshoe	107195787-05	2640	2536	44	8.340	6.008
6" PBR & Seal Assembly	0004258201-04	3173	2824	75	8.110	4.696
9-5/8" Halliburton VCH Retrievable GP Pack Assembly	0004297270-05	3177	2825	75	8.300	4.650
9-5/8" Halliburton FS2-LX Fluid Loss Device	0004290046-01	2832	2832	78	8.015	4.625
5-1/2" Shunted Blank pipe,5-1/2" 20ppf 13Cr-80 Base Pipe, SLHT (bottom)		3255	2841	80	8.250	4.778
9-5/8" Production Liner Shoe, 53.5ppf, 13Cr-80, TSH Blue		3263	2842	80	9.625	8.545
Optipac Screens: 9 Gauge (225 um) slot opening, 2x2 Shunt Tube Configuration, 5-1/2" 20ppf 13Cr-80 Base Pipe , SLHT					8.250	4.778
5-1/2" HAL Wash Down Shoe Assembly	0004279682-04	3505	2884	80	6.126	
8-1/2" x 9-7/8" (Under-Reamed) Open-Hole TD		3508	0	80		

Notes:

Elevation - 25m above MSL (DD KG2 RT), water depth = 1,315.5m below MSL
True Vertical Depths are relative to JZI-3C final survey
Control lines:
2x SCSSV CL (3/8" OD tube) in 14mm x 38mm 2-core flatpack encapsulation
1x PDHG TEC (1/4" OD cond) 11x11mm encapsulation
PDHG porting: 2 x Tubing, 1 x A-Annulus
TH x SCSSV CL interface: 9/16" AEMP female x 3/8" tube conn.
TH x PDHG TEC interface: RMS Pumptools 1" WellConnect

Fluids:
A-Annulus: 10ppg 7% KCl/ NaCl, O2 Scavenger (Non-Sulphite), Corrosion Inhibitor (Amine type), Biocide, Caustic Soda (pH 9+)
Open hole: N-Flow breaker (formic acid) 9.7ppg NaBr base brine
Carrier Fluid: Aqualinear 9.5ppg NaCl/KCl base brine
Gravel size: 30/50 Econoprop

Clamps:
2 x TubeTec clamps installed on X-Over Flow Couplings below and above SCSSV and below TH. OD 12.165" (6x clamps installed)
1 x 9-5/8" LAS Cannon Single Channel Clamp installed on each tubing coupling between PDHG and SCSSV. Running OD 11.32" (50x clamps installed)
1 x 9-5/8" LAS / SS 316 Cannon Dual Channel Clamp installed on each tubing coupling between SCSSV and TH. Running OD 11.53" (20x LAS & 17x SS 316 clamps on top ~200m installed)
1 x 7" SS 316 Cannon Dual Channel Clamp installed on each 7" tubing joint coupling above SCSSV. Running OD 8.67" (4x clamps installed)

Rev	Date	Description	Drawn	Checked
A	3-Dec-19	Schematic Created after Drilling Phase	L. Blyth	M. Briggs
B	24-Dec-19	SCSSV depth updated	L. Blyth	PH
C	30-Jun-20	As Built post completion c/w suspension plugs	LJQL	PHFY

Figure 3-3: Schematic of a typical Jansz production well

3.2.3 Drilling fluid, cuttings handling and disposal

Both the 42″ and 26″ hole sections are to be drilled with sea water and high-viscosity gel sweeps, with cuttings circulated to the seabed.

The high-viscosity sweeps will comprise ~90% sea water, with the remaining ~10% made up of drilling fluid additives that are either completely inert in the marine environment, naturally occurring benign materials, or readily biodegradable organic polymers with a very fast rate of biodegradation in the marine environment. Drilling additives typically used include: sodium chloride, potassium chloride, bentonite (clay), cellulose polymers, guar gum, barite, and calcium carbonate.

Once the top-hole sections are complete, installation of the riser and BOP provides a conduit back to the MODU, forming a closed circulating system. As such, primary and secondary solids control equipment onboard the MODU removes cuttings from drilling fluids before being recirculated back to the well. Solids control equipment include:

- shale shakers
- centrifuge(s)
- cuttings dryer.

Various shaker screen mesh sizes can be used to remove a specific cuttings particle size, thereby optimising drilling fluid physical properties. Cuttings discharged are expected to range from very fine (20 µm) to very coarse (<1 cm diameter) after removal from the drilling fluid.

Cuttings are expected to comprise predominantly claystone, marl, and calcilutite from the upper sections of the wellbore, and sandstone and siltstone from the lower sections of the well. An indicative cuttings volume of ~680 m^3 (Gorgon), 441 m^3 (Jansz) is expected to be generated during well replacement operations, but actual volumes will depend on the final depth and drilling of the particular well (e.g. actual total depth, lost circulation, well washout, potential re-spud, etc.).

Throughout the drilling program several different fluids shall be circulated into the well in a closed system including, but not limited to, NADF, WBF, sea water, and kill-weight brine. During the displacement of one fluid to another, there is an interface mixture of both fluids. This interface mixture may be discharged depending on its content. Drilling fluids are supplied to CAPL by a business partner (contractor) who must ensure and demonstrate that heavy metal constituents (mercury and cadmium) of weighting fluid (barite) meets contract specifications.

Further control measures are described in Section 7.10. The NADF tanks on the MODU are cleaned when drilling operations are completed, and after NADF has been removed from the tanks. Volumes of residual NADF are consolidated and recovered by mechanical means (e.g. squeegee, mud vacuum) before tank washing, dilution, and discharge. NADF tank washing residue (verified to comprise <1% residual hydrocarbon) may be discharged into the marine environment.

Indicative (average) volumes of drilling fluids and cuttings discharged per well have been estimated based on historical data (Table 3-5).

Table 3-5 Indicative volume of fluids and cuttings per production well

Discharge type	Average volumes (m^3)	
	Gorgon	Jansz
WBF	1,665	1962
Suspension and completion fluids (brine)*	100	1907
Wellbore clean-up fluid discharge (NADF brine interface)	100	120
NADF tank washing	100	100
Cuttings (WBF sections)	432	394
Cuttings (NADF sections)	248	47
**Gorgon expected to comprise NaBr; Jansz expected to comprise NaCl/KCl*		

3.2.4 Cementing operations

Upon completing the top-hole sections, a casing is inserted and the annulus between the casing and the hole sealed with cement. For the conductor and surface casing, a cementing product is pumped until returns are observed at the seabed.

On liner cement jobs, occasionally small quantities of cement products and spacer may be circulated (discharged) out of the well from above the top of the liner.

Wherever possible, the cement line flush volumes are included in the planned cement jobs. When a job is completed, the cement unit is cleaned, and the residual cement discharged overboard. The discharge volumes of residual cement products are ~1 m^3.

In the rare event that the cement products become contaminated, the entire volume (~48 m^3) may need to be discharged to sea.

3.2.5 Blowout preventer installation and testing

A BOP is installed after completing the top-hole sections. A BOP comprises a series of hydraulically operated valves and sealing mechanisms (annular preventers and ram preventers) that are normally open to allow drilling fluid to circulate up the marine riser to the MODU.

A BOP is to be used for the drilling and completion program to provide an additional barrier to prevent a loss of well control (LOWC) event. The BOP is used to close in the well in the event of an influx or kick, in which the hydrostatic pressure in the wellbore fluid is exceeded by formation pressure. The MODU's high-pressure circulating system would be used in this event, after closing of the BOP, to remove the influx from the well and regain a hydrostatic pressure overbalance condition. The annular and ram preventers are used to shut in around various tubulars in the well, while the blind shear rams shear the pipe and seal the well.

Once installed, regular function and pressure tests are undertaken; function tests will be undertaken weekly except in exceptional circumstances. Function testing is undertaken by activating the hydraulic control system onboard the MODU to pressurise the rams within the BOP stack.

The BOP control system discharges control fluid into the sea upon operation. A full function test to close and open all rams and annulars discharges ~2.5 m^3 of diluted control fluid. The control fluid is a water-soluble product and is diluted to 1–

3% with potable water for use. The fluid is fully biodegradable and expected to readily disperse after discharge from the BOP.

Note: Pressure-control equipment other than a BOP may be used for well intervention works; however, these activities are not considered to be dissimilar. During well intervention function testing, an additional small volume release of subsea hydraulic fluid would be expected via actuation of valves on the Christmas tree; however, these is not expected to be any different to that captured in the Gorgon Operations EP (Ref. 303).

3.2.6 Well suspension after drilling or between lower and upper completions

Well suspension involves setting 2 retrievable suspension packers within the well. The suspension packers provides a barrier, isolating the formation, and ensuring well integrity is maintained while the wells are temporarily suspended.

Following installation of the suspension packer, a wellhead cap may be installed to provide mechanical protection to the wellhead and protect it from marine growth. To inhibit marine growth or corrosion, a biocide and corrosion inhibitor are injected into or placed within the wellhead cap.

The wellhead cap can hold <1 m^3 of dilute corrosion inhibitor / biocide mixture. At this stage, there is no release to the environment; however, when the wellhead cap is removed, the fluid is discharged to the environment.

3.2.7 Completions and tree installation

Section 3.2.7.1 outlines the completions and subsea tree installation operational steps while using a vertical tree whereas Section 3.2.7.2 covers a horizontal tree.

3.2.7.1 Run completion and vertical tree installation

Gorgon completions

A tubing head spool will be run through the water column and landed on the wellhead. The BOP will then be connected to the tubing head spool, the suspension packers retrieved, and a wellbore cleanout performed. Perforation guns will be run into the production liner, spaced out, and left in the well. Finally, the 7″ × 7⅝″ upper completion will be run, and the tubing hanger landed in the tubing head spool. The well will then be displaced to packer fluid, and the production packer will be set, followed by pressure testing. Once testing is complete, the well will be perforated and 2 slickline plugs will be set in the well. BOPs are then recovered to surface. The next step would be to install a vertical tree if selected (see vertical tree installation). Refer to Section 3.2.7.2 if a horizontal tree has been selected.

Jansz–Io completions

A tubing head spool will be run through the water column and landed on the wellhead. The BOP will then be connected to the tubing head spool and the suspension packers retrieved. The 8½″ × 9⅞″ reservoir section will then be drilled using a reservoir drill-in fluid (RDIF) through the Jansz sandstone. The RDIF will be built with minimal low gravities and fines using sized $CaCO_3$ for enhanced fluid loss control. At TD, the well will be displaced to solids-free RDIF and brine before commencing gravel pack operations. WBF will be re-used but may be discharged at the end of the drilling campaign.

The well will be gravel packed and a fluid loss device installed and closed ahead of temporarily suspending the well with 2 suspension packers. The well will subsequently be re-entered, the suspension packers removed, and the upper completion installed. The 9⅝″ upper completion will be run, and the tubing hanger landed in the tubing hanger spool. The well will then be displaced to packer fluid and the tubing displaced to a treated dilute brine system with an oxygen scavenger, biocide, and hydrate inhibitor (monoethylene glycol [MEG]). The production packer will be set, followed by pressure testing. Once testing is complete, the fluid loss device will be cycled open and the well temporarily suspended with 2 slickline plugs set in the well and the BOPs recovered to surface.

The wells may be suspended after gravel packing and clean-up operations depending on the project schedule, which may change. If the well is suspended after the gravel packing operations, the fluid loss device will be tested and defined as the primary barrier. The suspension packer will be set and tested as the secondary barrier.

Vertical tree installation

The vertical subsea trees will be installed from a support vessel or MODU.

Before installing a vertical subsea tree, the well locations are surveyed using an ROV. The survey verifies that both the tubing head spool and work area are free from obstruction and that the subsea tree installation can begin.

Following the ROV survey, the wellhead cap is removed in preparation for running the subsea tree. At this stage, the previously injected or placed biocide and corrosion inhibitor is exposed from within the wellhead and may be further diluted by sea water. As previously described, the volume of diluted chemical would be ~0.003 m^3 of corrosion inhibitor and 0.00025 m^3 of biocide.

The tubing head spool is then cleaned by either mechanical means (brush) or seawater jetting via a ROV in preparation for tree installation. If brushing or jetting does not adequately clean any potential calcareous deposit from the wellhead, a cap with the capability for injecting/jetting a small volume of acid (~10 L) may be used as a contingency to further clean the wellhead.

Once the tubing head spool is prepared and made ready, the subsea tree is deployed from within a safe lift area (SLA). After the subsea tree is suspended within the SLA, it is lowered to ~40 m above the seabed. From this position, it is then moved above the wellhead for installation.

When the subsea tree engages with the tubing head spool, the tree connector lock is pressurised, locking the tree in position on the wellhead. There may be a small discharge (~0.01 m^3) of control fluid at this point; however, no further discharges are expected.

After installation, function testing is carried out to confirm the pressure integrity of the subsea tree to tubing head spool and valve functionality. An overpull test is undertaken to verify the tree is secured in position. Valve functionality testing will discharge small volumes of control fluids (~30 L per test) to the sea.

If functionality of the subsea tree is degraded due to calcareous growth, the tree is then cleaned by either mechanical means (brush) or seawater jetting via a ROV. If brushing or jetting does not adequately clean any potential calcareous deposits, a baffle type tool with the capability for injecting and containing a small volume of

acid (~10 L) may be used as a contingency to soak deposits and further clean the tree.

For de-suspension, see Section 3.4.

3.2.7.2 Installation of horizontal tree and run completions

Horizontal tree installation

The horizontal subsea trees will be installed from a support vessel or MODU.

Before installing a horizontal subsea tree, the well locations are surveyed using an ROV. The survey verifies that both the wellhead and work area are free from obstruction and that the subsea tree installation can begin.

A support base or similar structure may be installed on the wellhead prior to the horizontal subsea tree, to support the flowline jumper during a contingency tree change-out.

Following the ROV survey, the wellhead cap is removed in preparation for running the subsea tree. At this stage, the previously injected or placed biocide and corrosion inhibitor is exposed from within the wellhead and may be further diluted by sea water. As previously described, the volume of diluted chemical would be ~0.003 m^3 of corrosion inhibitor and ~0.00025 m^3 of biocide.

The wellhead is then cleaned by either mechanical means (brush) or seawater jetting via a ROV in preparation for installing the tree. If brushing or jetting does not adequately clean any potential calcareous deposit from the wellhead, a cap with the capability for injecting/jetting a small volume of acid (~10 L) may be used as a contingency to further clean the wellhead.

Once the wellhead is prepared and made ready, the subsea tree is deployed from within a safe lift area (SLA). After the subsea tree is suspended within the SLA, it is lowered to ~40 m above the seabed. From this position, it is then moved above the wellhead for installation.

When the subsea tree engages with the tubing head spool, the tree cap lock is pressurised, locking the tree in position on the wellhead. There may be a small discharge (~0.01 m^3) of control fluid at this point; however, no further discharges are expected.

Completions

Assuming a horizontal tree has been selected and installed, the completion can be run and landed in the horizontal tree, which is provided with an internal profile, landing shoulder, and orientation helix guide for the tubing hanger.

The previously installed suspension packers are removed from wellbore, and the fluid within the wellbore is replaced with filtered brine. The displaced fluid is collected onboard and filtered via a diatomaceous earth (DE) filtration system. Spent DE filtration medium will be discharged overboard at the well location. It is anticipated that the completion phase for each well is likely to produce ~2 tonnes of used DE product. After completion activities, any remaining filtered brine may be discharged overboard, with volumes of a single wellbore ~400 m^3.

After the wellbore has been displaced to brine the wells are then displaced with the WBRDIF and the 8½″ × 9⅞″ reservoir section may be drilled through the tree if not previously drilled. In addition, gravel packing will be undertaken for the open-hole completion to keep the produced fluid clear of sand, if not already performed during the drilling phase.

A string of completion tubing, complete with production packer and a surface control subsurface safety valve (SCSSV), is then installed. Before the production packer is permanently set and tested, the annulus volume is displaced to a treated dilute brine system with an oxygen scavenger, biocide, and hydrate inhibitor (MEG).

Once the well is successfully completed, it is suspended by releasing the landing string and displacing the riser. Regardless of the tree type, after installation, function testing is carried out to confirm the pressure integrity of the subsea tree to wellhead and valve functionality. An overpull test is undertaken to verify the tree is secured in position. Valve functionality testing will result in the discharge of small volumes of control fluids (~0.03 m^3 per test) to the sea.

3.2.8 Wellbore clean-up and flowback

Wellbore and casing clean-up is required at various stages of the drilling activity to ensure the contents of the well are free of contaminants before the next stage of drilling. A clean-up pill train (cleaning agent) and other chemicals may be used to remove residual fluids (including NADF) from the wellbore.

During the clean-up process, fluids are circulated back to the MODU and if required, analysed before they are discharged overboard. Any displaced fluid that has the potential to contain NADF is analysed for residual hydrocarbons before discharge overboard.

Wells may be subject to a flowback at the end of the completions phase. Further information on flowback is provided in Section 3.4.4.

3.2.9 Contingency activities

In the event of technical or operational issues during the drilling activity, contingency activities may be required. The activities are not expected to cause additional risks or impacts but may generate additional volumes of drilling fluids, cuttings, cement, or seabed disturbance.

Table 3-6 lists indicative volumes of discharges from contingency operations.

3.2.9.1 Well re-spud

If technical or operational issues are encountered while drilling, such as a failure to meet installation criteria, a well re-spud may be required. This activity could involve moving the MODU within the immediate area of the primary well and to recommence drilling. A well re-spud would result in an increase in the volume of cuttings and cement generated. No movement of the MODU anchors would be required for a re-spud, and as such there is no change to the area of seabed temporarily disturbed from anchoring.

3.2.9.2 Sidetrack

A sidetrack is an alternative to a well re-spud, which involves drilling a secondary wellbore away from the primary wellbore. This may be done to avoid an unusable section of the primary wellbore, or if it is otherwise inaccessible. A sidetrack would be expected to result in an increase of cuttings generated and potentially previously described cement discharges.

3.2.9.3 Well suspension

Well suspension involves applying suitable barriers, removing the riser and disconnecting the MODU from the well. Well suspension activities would be undertaken in accordance with the NOPSEMA-accepted WOMP. In some cases, the BOP may be left in place. Well suspension may be required in the instance of extreme weather events. Planned disconnection of the riser would result in the riser being displaced with sea water before it was disconnected and therefore no planned discharge of drilling fluids and cuttings is expected.

3.2.9.4 Emergency disconnect sequence

If the MODU needs to rapidly disengage from the well, an emergency disconnect sequence may be required. The sequence involves closing the BOP and disconnecting the riser. The process of disconnecting the riser would result in discharge of drilling fluids and cuttings to the environment.

3.2.9.5 Cementing operations

Additional cementing operations may be required as a contingency activity due to unplanned events (e.g. kick-off plugs, failed formation integrity test, lost circulation remediation). The discharges are expected to be no different from those described in cementing operations (Section 3.2.4).

3.3 Formation evaluation

The well may be evaluated using ‘logging while drilling’ techniques and mud logging. Wireline logging and formation testing/sampling may be performed based on the results of the primary evaluation tools.

Wireline evaluation may be undertaken to determine rock and fluid properties of the targets. A suite of standard wireline logs may be run, including gamma ray, neutron-density, resistivity, sonic, acquisition of pressures and samples, vertical seismic profiling (VSP), and side-wall coring. No VSP activities are expected, but they have been provided for in this EP.

Typically, between 3 and 6 air guns are used during a VSP operation, with a volume of between 150 and 250 cubic inches each. The source is generally positioned 5–10 m below the water surface. VSP operations may use various methods: zero-offset, walk-above, or walk-away, as shown in Figure 3-4. Any of these VSP methods may be used during the well replacement drilling program.

VSP generates higher-intensity noise than routine drilling operations, with peak output ~195 decibels re 1 micropascal (dB re 1µPa) @ 1 m. VSP modelling indicates noise output is unlikely to exceed 160 dB re 1µPa @ 1 m at distances >350 m from the seismic source (Ref. 377).

Figure 3-4: Representation of VSP methodology

3.4 Well intervention activities

The well intervention strategy for the Gorgon and Jansz–Io wells is described in the Gorgon and Jansz Well Intervention Strategy & Equipment Sparing Philosophy (Ref. 218). The strategy outlines the types of well interventions that may be required over the field life, the expected intervention frequencies, lead-times and well availability. It defines organisational responsibility and notice periods for planning interventions. Also included is the equipment sparing philosophy, well kill requirements and well abandonment strategy. The current version of the Chevron Wells Global Technical Standard for Well Barrier Design (Ref. 364) shall be adhered to during any well intervention planning and execution activities.

Well intervention activities may include (but are not limited to):

- Tree installation and replacement
- SCSSV exercise / repair
- Well suspension and de-suspension
- Coiled tubing clean out
- Slickline / wireline operations
- Chemical treatments

For this EP, it is assumed that intervention on a single well may be required once a year, but intervention activities may be more frequent depending on well performance (no well interventions are planned to be undertaken).

During intervention activities, local control of the Christmas trees may be required. Valve actuation of the trees may be required, which will result in small releases of subsea control fluids to be released to the environment (see Section 3.6). Intervention activities also include removing marine fouling by mechanical or acid soaking, resulting in the release of marine-fouling debris and small amounts of acid to the environment. When retrieving intervention tooling, small volumes of wellbore fluids may be displaced back into the well using nitrogen gas. The nitrogen will then be vented to the environment (965 m^3 at each well hop). Alternatively base oil may be used; however, this fluid will not be discharged.

Well intervention activities, such as well de-suspension (pulling plugs), may also require small releases of MEG to the environment when inserting/removing tooling, hopping subsea equipment between wells on a multi-well intervention campaign and/or when recovering subsea equipment to surface between manifolds and/or at the end of an intervention campaign. The MEG may also contain conditioning chemicals such as Pipe Dye (e.g. Roemex RX-9026E).

The volume of MEG expected to be released during intervention activities per well is ~1 m^3. MEG usage is addressed further in Section 7.10.

Additionally, during de-suspension operations there may be small volumes of hydrocarbon gas that are required to be vented via the vent lines on the MODU or intervention vessel. The volume of gas flushed to the surface will be limited due to the small volume between barriers, and when vented at atmospheric pressure the volume is estimated to be no more than 17,286 SCF per well (489.49 standard cubic metres (SCM)).

The well intervention strategy assumes that all subsea tree repairs will be conducted using a multi-service vessel (MSV) and light well interventions will be conducted using a MODU, LWI vessel or MSV.

3.4.1 Subsea tree replacement strategy

GFP Gorgon and Jansz wells have been designed with horizontal trees (HXT). This means that suitable in-well barriers must be installed, and the upper completion retrieved, before removing and replacing the HXT.

GS2 Gorgon and Jansz wells have been designed with vertical trees (VXT). The VXT can be removed without having to pull the upper completion, assuming suitable barriers have been installed within the production tubing. Once barriers have been put in place then the VXT can be removed and replaced.

3.4.2 Slickline / wireline / coiled tubing operations

In slickline / wireline operations, a wire (slickline) or braided cable (wireline) or a long metal pipe (coiled tubing) is lowered into the well to run tools in and out of the wellbore. Before conducting these operations and entering the wellbore, pressure-control equipment is pressure tested to ensure that control of the well is maintained once it is opened. The well may also be controlled by using overbalanced drilling fluids. Although equipment may be located outside the well (resulting in fugitive fluid releases associated with greasing the slickline and wireline), all slickline / wireline / coiled tubing operations are contained within the wellbore.

Slickline / wireline operations may be conducted from a MODU or LWI vessel. For this EP, all slickline / wireline activities are provided for, and the types of tasks associated with this activity include (but are not limited to):

- setting and retrieving mechanical isolation barriers
- reservoir surveillance via logging / VSP
- surveillance of well performance
- venting
- perforating casing
- determining depth
- detaching production packers and anchoring mechanisms (to enable upper completions to be pulled)
- repairing well components
- reinstating wells (return to operations).

During well reinstatement, all well intervention barriers (such as pressure-control equipment / isolation plugs) are removed, before handing over the operational control of the well to the CAPL Operations Team (Section 8.2.1).

3.4.3 Well workovers

Well workovers are required to replace major well components or components otherwise inaccessible in the well. For the purposes of this EP, a workover may be required for:

- SCSSV, tubing, production packer or tubing hanger replacement

- Repair of control or chemical injection lines
- Wellhead repair
- Casing and/or liner repair
- Lower completion workover (including sidetrack of OHGP section)

All partial workovers and full workovers will be conducted using a MODU.

For the purposes of this EP, the types of tasks associated with well workovers may include (but are not limited to):

- removing production tubing (and associated equipment)
- wellbore clean-up
- replacing tubing (and associated equipment)
- venting / flaring
- pumping fluids down the wellbore
- well reinstatement (return to operations).

Workover operations will be preceded by a through tubing tree and tubing intervention, setting 2 barriers (plugs), to suspend the well before recovering the VXT.

The MODU BOP on tubing head spool with either a simplified landing string or tubing hanger recovery tool is used in the completion recovery. A subsea test tree could be a contingency option for live well situations.

The current version of the Chevron Wells Global Technical Standard, ABU (Australian Business Unit) Standard Operating Procedures (SOP) for Well Barrier Design (Ref. 13), shall be adhered to during any well workover planning and execution activities. This standard contains Chevron minimum requirements for preventing and/or mitigating formation fluid crossflow and/or release of fluids to the environment.

When pulling tubing, the production packers are first detached, the tubing is pulled, and then the well is cleaned using a brine that may include several chemicals (e.g. biocide, surfactant). Once clean, the tubing is installed and various completion equipment (such as downhole gauges, a tubing-retrievable safety valve, production packer to anchor the tubing) will be run with the production tubing string.

The contents of the wellbore (brine) will be discharged at the surface (~270 m^3).

3.4.4 Well testing and flowback

CAPL has no plan to conduct scheduled well testing or well flowback activities. However, these tasks may need to be done depending on the results of the maintenance program or well performance. For the purposes of this EP, the types of tasks associated with well testing and flowback may include (but are not limited to):

- wellbore clean-up
- venting of reservoir gas
- well reinstatement (return to operations).

If a well is underperforming, or surveillance indicates debris is contained within the well, the contents of the wellbore may be flowed to a MODU and vented or flared. As the gas produced from the Gorgon and Jansz fields comprises 'dry' gas, condensate drop-out from the flare boom is not expected.

During flowback, initial unloading of the well displaces the well fluids (i.e. suspension / completion brine). These are discharged overboard as the gas content makes it too dangerous to filter or treat them. Once the brines are unloaded, the gas stream is sent to flare via the production separator.

After the objectives of the well testing and flowback are achieved, the flow is stopped and the well may be cleaned using a brine that can include several chemicals, such as biocide and surfactant.

Before well reinstatement, the contents of the wellbore (brine) may be recirculated, with its contents discharged overboard as required.

3.5 Well abandonment

Once no longer required for use, wells must be abandoned in accordance with the requirements of section 572 of the OPGGS Act and the NOPSEMA-accepted WOMP (Ref. 6). Ceasing production or permanent well abandonment is not planned during the application period of this EP. The need for an unplanned abandonment may occur in scenarios such as:

- a catastrophic gravel pack failure (sidetrack or abandonment decision being based on Estimated Ultimate Recovery (EUR))
- abandoning a parent wellbore in the event of well replacement.

Plug and abandonment procedures permanently isolate the well and mitigate the risk of a potential release of wellbore fluids. A combination of mechanical plugs and cement plugs will be installed to serve as permanent barrier elements in accordance with the *Chevron Global Technical Standard – Well Barriers SOP* (Ref. 13). This standard ensures consistent abandonment designs to:

- Isolate hydrocarbon, hot water, or steam zones
- Protect freshwater aquifers (potable groundwater)
- Protect surface soil or sea from contamination by migration of formation fluid to surface.

Well abandonment activities will be conducted in accordance with an approved program, which will contain well barrier plans and schematics, as well as barrier verification methods prior to and during well abandonment.

3.5.1 Install BOP and well kill

Before commencing well abandonment operations the well will be suspended in a through tree and tubing intervention. The primary well kill method is bullheading down the landing string into the production tubing bore after the internal tree cap has been removed and the BOP and landing string are installed and tested to the HXT/VXT upper mandrel. Pressure and function testing of the BOP will follow to verify integrity of the barrier.

3.5.2 Cut / perforate casing / production tubing

Production tubing / well casing may either be cut or perforated. If production tubing exists, the annulus content (inhibited water or brine) will be displaced to

surface in a controlled manner and replaced with kill-weight brine. All returns at surface will be discharged overboard and may comprise small component of hydrocarbon. These discharges are expected to be no different to those discharges described in Sections 3.2.7 and 3.2.8. Any residual gas will be returned to the MODU and flared via a burner boom; where the flow of gas is not sufficient to sustain the flare, it will be vented. These releases are expected to be no different to those described in Section 3.4.4.

3.5.3 Install permanent barriers

Once the reservoir abandonment plug is set and tested, the wellbore contents above the reservoir barrier will be displaced and circulated to inhibited WBF of appropriate density. Wellbore content (weighted fluid and cement contaminated mud, water, barite, cement, and polymers) will be discharged from the surface. A series of plugs will be set (and tested) at intervals above the reservoir barrier in accordance with the WOMP and the well content above the plugs will be discharged as outlined above. The discharges are expected to be no different from those described in cementing operations (Section 3.2.4).

3.5.4 Remove BOP stack

Once the final permanent plug has been set and tested, the BOP stack can be detached from the wellhead and recovered back to the MODU. Before disconnecting the BOP stack from the wellhead, the system will be flushed with sea water. A small discharge of cement-contaminated sea water may occur upon completing this activity.

3.5.5 Severe and remove surface casing and wellhead

A wellhead cutting tool is then landed onto the wellhead to sever the casing just below the seabed (~1.5 m below the seabed). Cutting wellheads is anticipated to take ~12 hours per location. Cutting will generate metal swarf (<0.01 m^3) at the seabed. The wellhead is then pulled free and recovered to the MODU through the moonpool.

3.5.6 Conduct post-operation ROV survey

Once the wellhead is removed, an ROV is deployed from the MODU to conduct a post-operation survey. This survey records the condition of the seabed at the completion of the program, to ensure that no dropped objects or subsea equipment intended for removal remain on the seabed. This as-left survey involves a ~50 m radius visual check from the wellhead location.

3.6 Summary of discharges

Table 3-6 summarises the indicative discharges associated with the activities.

Table 3-6: Summary of planned and contingent discharges per well

Discharge type	Indicative volume (m^3)	Fluid discharge location
Drilling and completions fluids and cuttings		
WBF	1,693	Seabed / surface
Suspension and completions fluids (brine)	610	Surface
Wellbore clean-up fluid discharge (NADF brine interface)	48	Surface

Discharge type	Indicative volume (m^3)	Fluid discharge location
NADF residual tank washings	39	Surface
Cuttings (WBF sections)	323	Seabed / surface
Cuttings (NADF sections)	48	Surface
Diatomaceous earth (completion brine filtering medium)	400	Surface
Dilute corrosion inhibitor / biocide mixture (wellhead cap removal)	<1	Seabed
Control fluid (subsea test tree engagement and function testing)	<1	Seabed
Cementing operations		
Cement slurry (riserless / riser in place)	80 / 20	Seabed / surface
Spacer fluids (riserless / riser in place)	30 / 60	Seabed / surface
Residual cement (line flushing)	10	Surface
Blowout preventer installation and function testing		
BOP fluid (per function test)	2.1	Seabed
BOP fluid (per pressure test)	1	Seabed
Contingency and well intervention/workover activities		
Cuttings—well re-spud (riserless / riser in place)	201 / 404	Seabed / surface
Cements—– well re-spud (riserless / riser in place)	80 / 20	Seabed / surface
Cuttings—sidetrack (riser in place)^	404	Surface
Cuttings—emergency disconnect (riser in place)	140	Seabed
NADF drill fluids—emergency disconnect (riser in place)	41	Seabed
Failed cement job/ cement contamination (riser in place)	45	Surface
Cementing operations (riser in place)	60	Surface
Well intervention / well workover	610	Surface
MEG (during de-suspension)	1	Seabed
Hydrocarbon gas	490	Atmosphere
Nitrogen gas (N_2)	965	Atmosphere
Well abandonment		
Contaminated cement	100	Surface
Wellbore content	<130	Subsurface
Metal swarf, cement cuttings, grit, flocculant (wellhead removal)	<0.1	Seabed

^ *Indicative volume based on a worst-case 17.5" sidetrack hole*

3.7 Field support

3.7.1 Vessels

Vessels will be used during well intervention and drilling activities, as required. The vessels are selected to ensure they can fulfil several support functions, including:

- installing MODU anchors (if required)

- supplying and transferring goods and materials (e.g. food, fuel, bulk products, drilling fluids, etc.) to the MODU
- transferring waste or other material from the MODU
- helping monitor the 500 m radius safety exclusion zone around the MODU and in response to incidents and emergency situations.

Given the different support functions (e.g. using cranes, bunkering equipment), vessels of different sizes and specifications will be used. Up to 3 support vessels may be on site within the OA at any time, noting that vessel presence may vary during different stages of the activity. Vessels only enter the 500 m safety exclusion zone around the MODU under specific instruction from the MODU, such as for supporting specific activities, or when transferring goods and materials to the MODU.

Support vessel anchoring within the OA shall not be permitted except during emergencies (if required).

Vessels will not use Heavy Fuel Oil (HFO) but will use a lighter marine fuel such as marine diesel oil (MDO) or marine gas oil (MGO). Vessels are expected to return to port to bunker, although may occasionally bunker at sea.

Vessels routinely discharge various wastewater streams to the marine environment including sewage, greywater, food waste, cooling water, brine, and oily bilge water; vessels may also incinerate solid wastes.

In the event of unsafe environmental conditions (e.g. a cyclone passing over or close to survey area), the support vessels may transit away from the OA to a safer location. As per Section 2.3, once a vessel leaves the OA, it is no longer undertaking a petroleum activity.

3.7.2 Helicopters

The MODU is serviced by helicopters, with an expected routine flight frequency of ~5 flights per week, with additional flights as required to meet operational demands. Helicopter flights will primarily be used for passenger transfers / crew changes and minor supplies. Helicopters will be refuelled at an airport outside the OA; however, if helicopters have to refuel on the MODU, this will be undertaken in accordance with MODU-specific procedures.

3.7.3 Remotely operated vehicles

Underwater remotely operated vehicles (ROVs) may be deployed and controlled from either the MODU or support vessel to support or undertake:

- pre- or post-activity site surveys
- mooring/anchoring placement
- equipment deployment, monitoring, or retrieval
- tool deployment and operation.

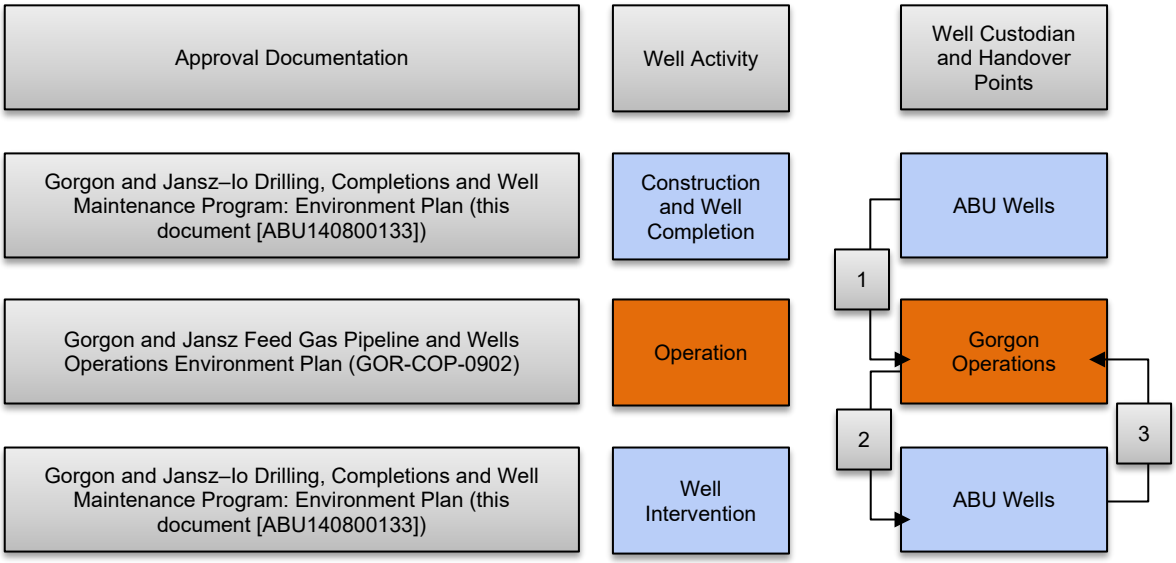
ROVs are generally equipped with a video camera and lighting. ROVs are also used to deploy specialist tooling and equipment. ROVs are closed systems, such that hydraulic fluids are circulated to move components, but these are not released to the environment.

ROVs will typically be stored on the deck of the vessels and/or MODU, but may be wet parked between activities, resulting in a temporary disturbance to a small area of the seabed.

3.8 Environment Plan interface and well custody

Under custodianship of the Gorgon Operations work group, the production wells are operated and managed in accordance with the Gorgon Operations EP and Gorgon WOMP (Ref. 303; Ref. 6).

If well intervention is required, intervention handovers will occur between the Gorgon Operations and CAPL Australian Business Unit (ABU) Wells work groups, with activities to be completed in accordance with this EP. Figure 3-5 shows the handover points when internal custodianship of the Gorgon production wells is exchanged.



Handover Points
1. Post-well construction
2. Pre-intervention
3. Post-intervention

Figure 3-5: Well custody arrangements for Gorgon and Jansz production wells

3.8.1 Well custodian

The party that most recently took receipt of the well through signature of the well handover certificate is the Well Custodian. The work group taking custody will be provided with a complete set of ‘as-built’ and ‘as-left’ well details as per the well handover document. The Gorgon Project: Well Handover process, Data Package and Certificates document (Ref. 41) outlines the process for handing over Gorgon and Jansz wells between departments and describes the information to be transferred.

The Well Custodian is responsible for operating the well, maintaining the overall integrity of the well, monitoring the well to confirm its operation is within determined limits, maintaining the well, and ascertaining if remedial works are required.

4 Description of the environment

4.1 Environment that may be affected

The environment that may be affected (EMBA) by the petroleum activity within scope of this EP has been defined as the area where a change to environmental receptors may potentially occur as a result of planned activities or unplanned events.

For the purposes of this EP, CAPL have also defined sub-areas of the EMBA that are used to support the subsequent impact and risk assessments (Table 4-1, Figure 4-1). Receptors present within the EMBA (and relevant to the purpose of each of the specific sub-areas) are described in the following sections.

For the following sections, this EP refers to the EMBA when it applies to all the sub-areas identified in Table 4-1, and to the Hydrocarbon EMBAs when referring to both the Unplanned Hydrocarbon Release Ecological EMBA and the Unplanned Hydrocarbon Release Social EMBA.

Table 4-1: Description of EMBA sub-areas for Gorgon and Jansz drilling and well intervention activities

EMBA sub-area	Description and purpose
Operational Area	The OA is defined as the area in which the petroleum activity will be undertaken (Section 3.1.1). As described in Section 3, there are 2 separate OAs for this EP; one for the Gorgon field and one for the Jansz field. The OA is relevant to the impact and risk assessments for all planned activities and unplanned events (except where specified by an aspect-specific EMBA), as the exposure area associated with these impacts and risks is considered to occur within the spatial extent of the OAs.
Underwater Sound EMBA (Sound EMBA)	The Sound EMBA is relevant to the impact and risk assessments for planned underwater sound emissions (Section 7.6), and determined by the predicted spatial extent (Table 7-4) of acoustic exposure at the relevant thresholds (Table 7-3). There are 2 separate Sound EMBAs described in this EP; one for the Gorgon field and one for the Jansz field.
Unplanned Hydrocarbon Release Ecological EMBA (Hydrocarbon Ecological EMBA)	The Hydrocarbon Ecological EMBA is relevant to the risk assessments for ecological receptors from unplanned hydrocarbon release events (Sections 7.15 and Section 7.16), and determined by the predicted spatial extent of hydrocarbon exposure at the relevant thresholds for surface, entrained, dissolved, and shoreline components (Table 7-10).
Unplanned Hydrocarbon Release Social EMBA (Hydrocarbon Social EMBA)	The Hydrocarbon Social EMBA is relevant to the risk assessments for social, economic, and cultural receptors from unplanned hydrocarbon release events (Sections 7.15 and Section 7.16), and determined by the predicted spatial extent of hydrocarbon exposure at the relevant thresholds for surface, entrained, dissolved, and shoreline components (Table 7-10). The Hydrocarbon Social EMBA incorporates lower thresholds for surface and shoreline hydrocarbon exposure that are associated with visible oil but are below concentrations at which ecological impacts are expected to occur.

The Planning Area for Scientific Monitoring is determined by the predicted spatial extent of hydrocarbon exposure at the relevant thresholds for surface, entrained, and dissolved components (Table 7-10). The values and sensitivities of this area are described in within Appendix D of the Operational and Scientific Monitoring Plan: Environmental Monitoring in the Event of an Oil Spill to Marine or Coastal Waters (Ref. 2). The Planning Area covers the spatial boundary of the EMBA.

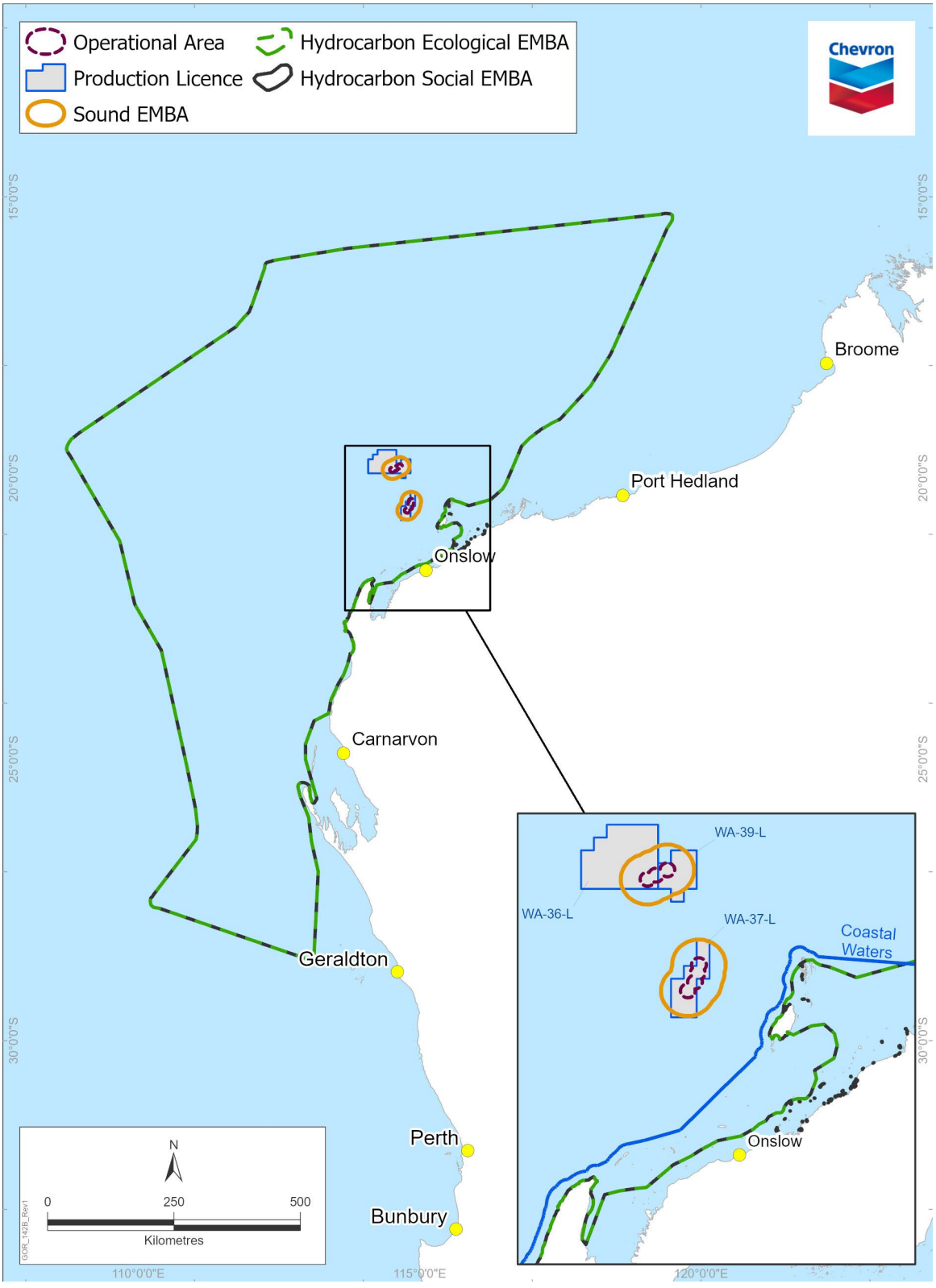


Figure 4-1: EMBAs for Gorgon and Jansz drilling and well intervention

4.2 Matters of National Environmental Significance

Matters of national environmental significance (MNES) are protected under the EPBC Act. The presence of MNES within the EMBA has been determined from the Australian Government's online Protected Matters Search Tool (PMST) (Ref.15). Table 4-2 summarises the presence of relevant marine and/or coastal MNES within the EMBA; the full PMST reports[1] are included in Appendix C.

Table 4-2: Presence of MNES within the EMBAs

MNES	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBAs
World Heritage properties^	×	×	×	×	✓
National Heritage places^	×	×	×	×	✓
Wetlands of international importance (Ramsar wetlands)^	×	×	×	×	×
Nationally listed threatened species^	✓	✓	✓	✓	✓
Nationally listed threatened communities^	×	×	×	×	×
Nationally listed migratory species^	✓	✓	✓	✓	✓
Commonwealth marine area^	✓	✓	✓	✓	✓
Great Barrier Reef Marine Park	×	×	×	×	×
Nuclear actions (including uranium mining)	—	—	—	—	—
Water resources (in relation to coal seam gas or large coal mining development)	—	—	—	—	—

^ *These MNES are also identified as particular values and sensitivities under the OPGGS(E)R.*

^ *Where ✓ = present, × = not present, and — = not relevant to the petroleum activity.*

4.3 Ecosystems and their constituent parts, including people and communities

4.3.1 Benthic communities and habitats

Benthic communities are biological communities that inhabit the seabed and are important for primary or secondary production. Benthic habitats are areas of seabed that do or can support these communities. Benthic communities play an important role in maintaining the integrity of marine ecosystems and the supply of ecological services. There is strong evidence that benthic communities are important for maintaining biological diversity as they provide structurally complex and diverse habitat, refuge for vulnerable life stages and a varied and increased food supply (Ref. 220).

The EMBA occurs within the North-west Marine Region (NWMR), which is typically characterised by shallow-water tropical marine ecosystems and high species richness (Ref. 60; Ref. 222). The high species richness is thought to be associated with the diversity of habitats available, such as limestone pavement, coral reefs, and pinnacles (Ref. 60). The broader benthic communities and

[1] *The PMST is a general database that includes all MNES, including species or features (such as terrestrial-based species or features) that are not expected to credibly occur within the EMBA.*

habitats that may be present within the EMBA are summarised below, with additional data specific to the OAs summarised in Section 4.3.1.

The geomorphology of Australia's continental margin is varied. Based on Geoscience Australia's geomorphic classification of seabed within Australia's exclusive economic zone (EEZ) (Ref. 223), the geomorphic feature present within the EMBA are shown in Table 4-3.

Table 4-3: Geomorphic features

Feature	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Abyssal plain / deep ocean floor					✓
Banks / shoals					✓
Canyon					✓
Continental rise					✓
Deep / hole / valley		✓		✓	✓
Knoll / abyssal hills / hills / mountains / peak					✓
Pinnacle					✓
Plateau					✓
Reef					✓
Ridge					✓
Shelf					✓
Slope	✓		✓		✓
Terrace			✓		✓
Trench / trough					✓

The composition, distribution, and movement of marine sediments is an important component of a marine ecosystem. These sediments can influence the primary biological production in the water column as well as the evolution and distribution of benthic habitats. North-west WA comprises bio-clastic, calcareous, and organogenic sediments deposited from relatively slow and uniform sedimentation rates (Ref. 260). Sediments in the NWMR generally become finer with increasing water depth, ranging from sand and gravels on the continental shelf to mud on the continental slope and abyssal plain (Ref. 224).

Based on the Commonwealth Scientific and Industrial Research Organisation's (CSIRO) marine benthic substrate database (Ref. 225), the predominant sea floor sediment type within the Gorgon OA and Sound EMBA is 'calcareous gravel, sand and silt', while the marine benthic substrate within the Jansz OA and Sound EMBA is 'calcareous ooze' Within the Hydrocarbon Ecological EMBA, 4 sea floor sediment types were identified: 'calcareous gravel, sand and silt', 'calcareous ooze', 'biosiliceous marl and calcareous clay', and 'mud and calcareous clay'.

The Integrated Marine and Coastal Regionalisation of Australia (IMCRA) is a biogeographic regionalisation of oceanic waters within Australia's EEZ (Ref. 226). The OAs and Sound EMBAs occur within the Northwest Province and Northwest Shelf Province provincial bioregion. In addition to the 2 provincial bioregions

already identified, the Hydrocarbon EMBA also intersect with the Northwest Transition Province, Central Western Province, Central Western Shelf Province, the Central Western Shelf Transition, Central Western Transition Province, Timor Province and the Southwest Shelf Transitional bioregions. The characteristics and features of ecological importance for each of these bioregions are summarised in Table 4-4. Listed threatened ecological communities (TECs) are a Matter of National Environmental Significance (MNES) under the EPBC Act, and a particular value and sensitivity under the OPGGS(E)R. There are no known TECs within any of the OAs or the EMBA.

Table 4-4: Features of provincial bioregions

IMCRA Provincial Bioregion^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Northwest Province	✓	✓	✓	✓	✓
Characteristics of the geomorphology and biological communities of the Northwest Province include: • bioregion occurs entirely on the continental slope and is comprised of muddy sediments • distinguished by a number of topographic features, such as the Exmouth Plateau, terraces and canyons (including the Swan and Cape Range canyons), as well as deep holes and valleys on the inner slope (including the Montebello Trough) • the benthic shelf and slope communities of this bioregion comprise both tropical and temperate species with a north-south gradient • the continental slope between North West Cape and the Montebello Trough has been identified as one of the most diverse slope habitats of Australia • the Exmouth Plateau is also likely to be an important area for biodiversity as it provides an extended area offshore for communities adapted to depths of ~1,000 m • information available on sediments in the bioregion indicates: – benthic communities are likely to include filter feeders and other epifauna – soft-bottom environments are likely to support patchy distributions of mobile epibenthos, such as sea cucumbers, ophiuroids, echinoderms, polychaetes and sea pens – biological communities within canyons in the bioregion are poorly understood. Features and areas of ecological importance within the Northwest Province have been identified as: • Exmouth Plateau • canyons on the slope, including the Cape Range Canyon • demersal fish communities associated with the slope. Of these features and areas within the Northwest Province, the demersal fish communities associated with the slope occurs within the Jansz OA, Jansz Sound EMBA, and Hydrocarbon EMBAs. The Exmouth Plateau and canyons on the slope also occur within the Hydrocarbon EMBAs. Refer to Section 4.3.7.1 for further descriptions of these features.					
Northwest Shelf Province	✓	✓	✓	✓	✓
Characteristics of the geomorphology and biological communities of the Northwest Shelf Province include: • bioregion occurs almost entirely on the continental shelf, except for a small area north of Cape Leveque that extends onto the continental slope • this bioregion includes more than 60% of the continental shelf in the NWMR • continental shelf gradually slopes from the coast to the shelf break, but displays a number of sea floor features such as banks/shoals and holes/valleys, including: – Glomar Shoals occur in ~26–70 m water depth and are distinguished by highly fractured molluscan debris, coralline rubble and coarse carbonate sand – Leveque Rise (large plateau), one of only 2 shelf plateaux within the NWMR					

IMCRA Provincial Bioregion^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
• significant areas of tidal sand waves or sandbanks (~5–10 m high) occur on the innermost reaches of Exmouth Gulf, and are one of only 3 major occurrences of this type of feature in the NWMR • shelf also contains several terraces and steps that extend into adjacent bioregions and reflect ancient coastlines from when the sea level in the NWMR was lower; the most prominent of these occurs at a water depth of ~125 m • sediment differentiation occurs on a north-south gradient • south of Broome, sediment is relatively homogenous and dominated by sands with small proportion of gravel • north of Broome, sediment is highly variable with sand or gravel dominance in no discernible spatial pattern • mud increases slightly within ~100 km of the coast, and within ~100 km of the shelf break, but is mostly absent from areas in between • sandy substrates on the shelf withing this bioregion are thought to support low density benthic communities of bryozoans, molluscs, and echinoids • sponge communities are also sparsely distributed on the shelf, but are found only in areas of hard substrate Features and areas of ecological importance within the Northwest Shelf Province have been identified as: • Browse Island and surrounding waters • Lacepede Islands and surrounding waters • Quondong Point, north of Broome and surrounding waters • West coast of the Dampier Peninsula, including Beagle and Pender bays and surrounding waters • Pilbara coast (between Exmouth and Broome) and surrounding waters Exmouth Gulf—Muiron Islands and surrounding waters • ancient coastline at 125 m depth contour • Glomar Shoals. Of these features and areas within the Northwest Shelf Province, none intersect with the Jansz OA and Sound EMBA, while the ancient coastline at 125 m depth contour occurs within Gorgon OA and Sound EMBA. Within the Hydrocarbon EMBAs, the ancient coastline at 125 m depth contour and Glomar Shoals occur (refer to Section 4.3.7.1 for further descriptions of this features), while parts of the Pilbara coast and Exmouth Gulf—Muiron Islands are intersected..					
Northwest Transition					✓
Characteristics of the geomorphology and biological communities of the Northwest Transition include below: • around half (52%) the bioregion occurs on the continental slope, with smaller areas in the north-west of the bioregion on the Argo Abyssal Plain and continental rise • encompasses a range of water depths, from the shelf break (~200 m water depth) to ~5,980 m over the Argo Abyssal Plain • other topographic features within the bioregion include areas of rise, ridges, canyons and apron/fans • sediments of the slope are dominated by sands, whereas the sediments of the abyssal plain/deep ocean floor are dominated by muds • the bioregion also has reefs such as Mermaid, Clerke, and Imperieuse reefs, which are collectively known as the Rowley Shoals • the benthos of the deep ocean areas are likely to support meiofauna (e.g. nematodes), larger infauna (e.g. polychaete worms, isopods), and sparsely distributed epibenthic communities (e.g. sea pens) • mobile benthic species (e.g. deepwater sea cucumbers, crabs, polychaetes) are likely to be associated with the sea floor, and bioregion may support sparse populations of bentho-pelagic fish and cephalopods in low densities Features and areas of ecological importance within the Northwest Transition have been identified as: • Rowley Shoals—Mermaid Reef Marine National Nature Reserve, Clerke and Imperieuse reefs and surrounding waters					

IMCRA Provincial Bioregion^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
• Fish communities associated with the continental slope Of these features and areas within the Northwest Transition, the demersal fish communities associated with the slope occurs within the Hydrocarbon EMBAs. Refer to Section 4.3.7.1 for further descriptions of these features.					
Central Western Province					✓
Characteristics of the geomorphology and biological communities of the Central Western Province include: • bioregion that is characterised by a narrow continental slope incised by many submarine canyons, including Australia Canyon, and the most extensive area of continental rise in any of Australia's bioregions • covers an area of 286,730 km^2 and forms part of the South-west Marine Region • water depths range from 33 to more than 6,000 m • the southern boundary of the bioregion is well defined by Australia Canyon, a significant geomorphic feature on the southern margin of the province Features and areas of ecological importance within the Central Western Province have been identified as: • several eddies form off the Leeuwin Current at predictable locations, including the Australia Canyon • unique sea floor features give rise to ecologically important events of localised productivity and aggregations of marine life • the Australia Canyon is significant as it includes habitats, species and ecological communities associated with 4 bioregions: Central Western Province, South Western Shelf Province, South Western Transition, and South Western Shelf Transition Of these features and areas within the Central Western Province only a portion of the Commonwealth waters offshore from Shark Bay, at the northern extent or the region, occur within the Hydrocarbon EMBAs. The OAs and Sound EMBAs are both >600 km north-east of the Central Western Province.					
Central Western Shelf Province					✓
Characteristics of the geomorphology and biological communities of the Central Western Shelf Province include: • a bioregion that consists of the continental shelf between Kalbarri and Coral Bay, comprising predominantly flat, sandy substrate in relatively shallow waters (0–100 m water depth) • covers an area of 50,516 km^2 (32,996 km^2 or 65.5% of which is Commonwealth waters). The Commonwealth waters of the bioregion represent 3% of the total NWMR • southern and south-western boundaries of the bioregion abut the South-west Marine Region with which it shares physical drivers and species • key topographic features include a deep hole and associated area of banks and shoals off Kalbarri. These features occur at latitudes significantly south of banks and shoals elsewhere in the NWMR Features and areas of ecological importance within the Central Western Shelf Province have been identified as: • Shark Bay, a declared World Heritage area, is an important resting area for migrating Humpback Whales, critical feeding habitat for Loggerhead and Green Turtles, and a breeding area for Wedge-tailed Shearwaters, Bridled Terns, Caspian Terns, Crested Terns and roseate Terns. The Dugong population in Shark Bay is the largest currently known in the world and estimated at ~10,000 individuals. • a large proportion of this bioregion is covered by the State Shark Bay Marine Park and Commonwealth Shark Bay and Marine Parks, which are one of the most significant hotspots of biodiversity within the NWMR • Dirk Hartog Island, situated within Shark Bay, provides critical nesting and internesting habitat for Loggerhead Turtles. Of these features and areas within the Central Western Shelf Province the Commonwealth waters adjacent to Shark, the Shark Bay World Heritage Area, the Shark Bay Marine Park and the Abrolhos Marine Park occur within the Hydrocarbon EMBAs. Both the Gorgon and Jansz OAs and Sound EMBAs are located >400 km north-east of the Central Western Shelf Province.					

IMCRA Provincial Bioregion^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Central Western Shelf Transition					✓
Characteristics of the geomorphology and biological communities of the Central Western Shelf Transition include: • bioregion is located entirely on the continental shelf and comprises mainly of sandy sediments • this bioregion includes both State and Commonwealth waters between water depths of 0 m to ~80 – Commonwealth waters in this bioregion represent <1% of the total area of the NWMR • the benthic ecological communities of the bioregion, include both tropical and temperate species transitioning along a north-south gradient • Ningaloo Reef[2] is the most significant geomorphic feature of this bioregion: – it extends along the Cape Range Peninsula for over 260 km, and is the only example in the world of an extensive fringing coral reef on the west coast of a continent – it is marked by a well-developed spur and groove system of fingers of coral formations penetrating into the ocean with coral sand channels in between – a lagoon on the inshore side separates Ningaloo Reef from the mainland – the biological communities of the Ningaloo Reef differ from the hard coral reefs located elsewhere in the NWMR • a large proportion of this bioregion is covered by the State and Commonwealth Ningaloo Marine Parks along with the Ningaloo Coast World Heritage Area, which are one of the most significant hotspots of biodiversity within the NWMR • the Ningaloo Marine Parks incorporate a diversity of habitats including the seabed of the continental slope and shelf that supports demersal and benthic plants and animals including fish, molluscs, algae, sponges, soft corals and burrowing bivalves; as well as coral reefs and intertidal areas such as rocky shores and mangroves in State waters. Features and areas of ecological importance within the Central Western Shelf Transition have been identified as: • Ningaloo Marine Park – North West Cape (State) • Ningaloo Marine Park (Commonwealth) • Ningaloo Coast World Heritage Area • Abrolhos Marine Park (Commonwealth) Of these features and areas within the Central Western Shelf Transition, the State and Commonwealth Ningaloo Marine Parks and the Ningaloo World Heritage Area occurs within the Hydrocarbon EMBAs Refer to Section 4.3.7.1 for further descriptions of these features.					
Central Western Transition					✓
Characteristics of the geomorphology and biological communities of the Central Western Transition include: • the bioregion is characterised by large areas of continental slope, with sediments dominated by muds and sands that decrease in grain size with increasing depth • about 40% of the bioregion occurs in water depths >4,000 m and the deepest areas of the bioregion occur within the Cuvier Abyssal Plain at ~5,330 m • the continental slope is incised by numerous topographic features such as terraces (e.g. Carnarvon Terrace), canyons (e.g. Cloates and Carnarvon canyons) and rises a large part of the bioregion comprises the Cuvier Abyssal Plain • Wallaby Saddle is another important topographic feature within this bioregion and is the most extensive area of this type of topographic feature in the NWMR • the benthic slope communities of this bioregion comprise both tropical and temperate species along a north-south gradient					

[2] *Ningaloo Reef also extends into the Northwest Province, Central Western Transition Province, and a small portion of the Northwest Shelf Province. The geomorphology and biological communities of Ningaloo Reef are discussed in this bioregion summary.*

IMCRA Provincial Bioregion^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
• the biological communities of the Central Western Transition are thought to be distinctive owing to the proximity of deep ocean areas to the continental slope and shelf, resulting in close interaction between pelagic species of the Cuvier Abyssal Plain and those of the slope and shelf • the harder substrate of the slope in waters of 200–2,000 m deep is likely to support populations of epibenthos such as bryozoans, sponges and encrusting coralline algae; these support larger infauna and benthic animals such as crabs, cephalopods, echinoderms and other suspension-feeding epibenthic organisms • in the deeper waters of the abyss, the benthic communities are likely to be sparse and include meiofauna (e.g. nematodes). • The Timor Province is on the continental slope and includes topographic features such as the Scott Plateau, Ashmore Terrace, and part of Rowley Terrace, as well as a portion of the Argo Abyssal Plain • Wallaby saddle • Cape Range Canyon and Cloates Canyon Of these features and areas within the Central Western Transition, the Cape Range Canyon and Cloates Canyon occur within the Hydrocarbon EMBA. Refer to Section 4.3.7.1 for further descriptions of these features.					
Timor Province					✓
Characteristics of the geomorphology and biological communities of the Timor Province include: • the Timor Province is on the continental slope and includes topographic features such as the Scott Plateau, Ashmore Terrace, and part of Rowley Terrace, as well as a portion of the Argo Abyssal Plain • the surface waters of this bioregion are again dominated by the Indonesian Throughflow and are warm and oligotrophic • the variety of geomorphic features in the Timor Province, together with its varying bathymetry, results in several distinct habitats and biological communities, many of which occur in close proximity • coral reefs in this bioregion support a high biomass of fish species, including tropical reef fish, small pelagic fish, parrotfish and groupers as well as larger species such as trevally, coral trout, emperors, snappers, dolphinfish, marlin and sailfish Features and areas of ecological importance within the Timor Province have been identified as: • Ashmore Reef National Nature Reserve and Cartier Island Marine Reserve and surrounding waters • Scott Reef and Seringapatam Reef and surrounding waters • Demersal fish communities associated with the upper and mid-slope • Canyons in the slope between the Argo Abyssal Plain and Scott Plateau and the north of Scott Reef Of these features and areas within the Timor Province, none occur within any of the OAs or the EMBA.					
Southwest Shelf Transition					✓
Characteristics of the geomorphology and biological communities of the Southwest Shelf Transition include: • biota in the zone are a mix of tropical, subtropical and temperate marine life resulting from the Southward transportation of species by the Leeuwin Current over thousands of years • the Houtman Abrolhos Islands and surrounding reefs are noted for their high biodiversity Features and areas of ecological importance within the Southwest Shelf Transition have been identified as: • Western rock lobster habitat area • Commonwealth marine environment surrounding the Houtman Abrolhos Islands • Ancient coastline at 90–120 m depth Of these features and areas within the Southwest Shelf Transition, none occur within either of the OAs or Sound EMBAs.					

^ *Source: Ref. 222, 304*

4.3.1.1 Operational Area

CAPL has conducted extensive surveys within Gorgon Project production licences to understand the nature and composition of benthic communities and habitats. These surveys comprise high-resolution geophysical surveys, predominantly supported by seabed sampling campaigns. Data from these surveys were interpreted to characterise benthic substrate. Benthic habitats within the Gorgon field, at ~200 m water depth, comprises soft bioturbated sediments. The benthos in this area is well below the photic zone so there are no marine macrophytes (Ref. 198).

The shelf of the North-west Marine Region contains several terraces and steps. The most prominent of these features occurs east of the Gorgon OA as an escarpment along the North West Shelf (NWS) and Sahul Shelf at a depth of 125 m, known as the ancient coastline. Parts of the ancient coastline, particularly where it exists as a rocky escarpment, are thought to provide biologically important habitats such as fish communities in areas otherwise dominated by soft sediments (Ref. 216).

Seagrasses and macroalgae, which are typically characteristic of sand habitats and reefs (Ref. 14), are unlikely to occur within the Commonwealth waters of the OAs. This is most likely due to low benthic light levels characteristic of deeper waters.

4.3.2 Coastal communities and habitats

Coastal communities are biological communities that inhabit the coastal zone. Coastal habitats are areas of shoreline types that do or can support these communities. Coastal communities are likely to play roles in maintaining the integrity and diversity of coastal ecosystems, and the supply of ecological services.

Both the Gorgon and Jansz OAs and Sound EMBAs, occur offshore and do not interface with the coast. The Hydrocarbon EMBAs do interface with the coast due to predicted shoreline loading associated with unplanned hydrocarbon release events; Table 4-1). The Hydrocarbon Ecological EMBA coastal interactions includes Barrow Island, the Montebello Islands, some Pilbara islands and some coastal areas between Exmouth and Coral Bay. The Hydrocarbon Social EMBA includes the above coastal areas, as well as isolated coastal areas between Onslow and Cape Preston, several of the Pilbara inshore islands (e.g. Potter, Fortescue, Cowel, Sandy, East, Middle Mary Anne, Large, West and Middle Mangrove Islands), Hermite, Alpha Islands and the Lowendal Islands (Figure 4-1). The coastal communities and habitats that may be present within the Hydrocarbon EMBAs are summarised below.

Based on Smartline (Ref. 232), a spatial database containing geomorphic classifications for Australia’s coasts, the types of shoreline present within the Hydrocarbon Ecological and Social EMBAs are predominantly rocky coasts and sandy shorelines, with some mudflats areas on the North West Cape peninsula and coastal areas between Onslow and Cape Preston.

The Seamap Australia spatial database collates and classifies marine and coastal habitats on the Australian continental shelf (Ref. 234). Based on this dataset, isolated areas of saltmarsh and mangroves are present on Barrow Island; the Montebello Islands and the North-West Cape peninsula, and isolated areas of mangroves are present on the Pilbara islands.

Mangroves grow within the intertidal zone and are typically located within sheltered areas. The mangrove communities within the Montebello Islands are considered globally significant and occur in lagoons of offshore islands (Ref. 233). One species of mangrove, Avicennia marina, is known to occur in sparse stands on the north-east and southern coasts of Barrow Island (Ref. 235; Ref. 236). This includes mangroves strands within parts of Bandicoot Bay (southern Barrow Island).

Listed TECs and wetlands of international importance (Ramsar wetlands) are MNES under the EPBC Act, and a particular value and sensitivity under the OPGGS(E)R. There are no known TECs or Ramsar wetlands within the EMBA.

4.3.3 Marine fauna

Listed threatened or migratory species are MNES under the EPBC Act, and a particular value and sensitivity under the OPGGS(E)R. The following sections identify the presence of these species within the EMBA.

4.3.3.1 Marine mammals

Based on searches of the online PMST[3] (Ref. 15; Appendix C), the threatened and/or migratory marine mammal species shown in Table 4-5 may be present within the EMBA. Biologically important areas (BIAs) associated with regionally significant marine mammal species are listed in Table 4-6.

For the threatened and/or migratory species with BIAs within the OAs or Sound EMBAs (i.e. EMBAs associated with planned activities), additional information has been provided in the following subsections.

The threatened and/or migratory cetaceans that may be present within the OAs and Sound EMBAs are predominantly low-frequency cetaceans[4] (Blue Whale, Bryde's Whale, Fin Whale, Humpback Whale, Sei Whale) and mid-frequency cetaceans[5] (Sperm Whale, Australian Humpback Dolphin, Australian Snubfin Dolphin, Killer Whale, Spotted Bottlenose Dolphin). High-frequency cetaceans[6] (e.g. Dwarf Sperm Whale, Pygmy Sperm Whale) were also identified within the PMST (Ref. 15; Appendix C) as species or species habitat that may occur within the OAs and Sound EMBAs, these species are not listed as threatened and/or migratory under the EPBC Act. As shown in Table 4-5, except for Pygmy Blue Whales and Humpback Whales, there are no other known BIAs or aggregation areas for other cetacean species that intersect with the OAs or Sound EMBAs; as such, it is expected that any presence of other cetacean species within the OAs and Sound EMBAs would be of a transitory nature.

[3] There are a number of errors in the PMST Reports regarding BIAs intersecting the three spatial areas (OA, Sound EMBA and EMBA). These were confirmed by a review of the map feature within the PMST tool and dataset, and separately through a GIS system. Errors in the reports are marked within Appendix C.

[4] Low-frequency cetaceans are the functional cetacean hearing group that are specialised for hearing low frequencies (e.g. baleen whales).

[5] Mid-frequency cetaceans are the functional cetacean hearing group that are specialised for hearing mid frequencies (e.g. toothed whales, beaked whales, dolphins).

[6] High-frequency cetaceans are the functional cetacean hearing group that are specialised for hearing high frequencies (e.g. Kogia *spp).*

Table 4-5 : Presence of listed threatened and/or migratory marine mammals

Common name (EPBC protected status)	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBAs
Cetaceans (whales)					
Antarctic Minke Whale *(Migratory)*	✓		✓	✓	✓
Sperm Whale (Migratory)	✓	✓	✓	✓	✓
Blue Whale *(Endangered, migratory)*	✓	✓	✓	✓	✓
Bryde's Whale *(Migratory)*	✓	✓	✓	✓	✓
Fin Whale *(Vulnerable, migratory)*	✓	✓	✓	✓	✓
Humpback Whale *(Migratory)*	✓	✓	✓	✓	✓
Sei Whale *(Vulnerable, migratory)*	✓	✓	✓	✓	✓
Southern Right Whale *(Endangered, migratory)*					✓
Cetaceans (dolphins)					
Australian Humpback Dolphin *(Migratory)*					✓
Australian Snubfin Dolphin *(Migratory)*					✓
Killer Whale *(Migratory)*	✓	✓	✓	✓	✓
Spotted Bottlenose Dolphin *(Migratory)*	✓		✓		✓
Serenia					
Dugong (Migratory)					✓

Table 4-6: Presence of BIAs for marine mammals

Name	BIA behaviour	Seasonal presence	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Dugong	Breeding	Year-round					✓
	Calving	Year-round					✓
	Foraging (high-density seagrass beds)	Year-round					✓
	Nursing	Year-round					✓
Humpback Whale	Migration (north and south)	Northern migration, late July to September	✓		✓		✓
	Resting	Winter					✓
Pygmy Blue Whale	Distribution	(Not defined in database)	✓	✓	✓	✓	✓
	Foraging	(Not defined in database)					✓

Name	BIA behaviour	Seasonal presence	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
	Migration	Northern migration (enter Australia Canyon January to May; pass Exmouth April to August; continue north to Indonesia). Southern migration (follow WA coastline from October to late December)	✓	✓	✓	✓	✓

4.3.3.1.1 Humpback Whale

The migration (north and south) BIA for Humpback Whales intersects the south-eastern edge of the Gorgon OA and Gorgon Sound EMBA, but does not intersect either the Jansz OA or Sound EMBA.

Humpback Whales migrate north annually (from June to October) between their feeding grounds in Antarctic waters and their calving grounds in Kimberley waters (Ref. 306). Northbound Humpback Whales tend to remain around the 200 m water depth contour, while southbound Humpback Whales tend to travel closer to Barrow Island and generally occur between 50 m and 200 m water depths (Ref. 306). The migration (north and south) BIA corridor extends from the coast to out to ~100 km offshore in the Kimberley and Pilbara regions; reducing to ~50 km offshore south of North West Cape (see Figure 4-2).

The Humpback Whale breeding and calving grounds in the southern Kimberley region extend from Broome to the northern end of Camden Sound, particularly between Lacepede Islands and Camden Sound (Ref. 306). Breeding and calving occurs in the region between mid-August and early September (Ref. 306), followed by the start of the southern migration. Exmouth Gulf and Shark Bay are both important resting areas for migrating Humpback Whales, particularly for cow-calf pairs on the southern migration (Ref. 306). The southerly migration, from around the Lacepede Islands (north of Broome) extends parallel to the coast on approximately the 20–30 m depth contour (Ref. 306; Ref. 307). Southbound migration is more diffuse and irregular, lacking an obvious peak. An increase in southerly migrating individuals may be observed between the North West Cape and the Montebello Islands between August to early September (Ref. 306; Ref. 305). Females and calves are known to stop and rest in Exmouth Gulf and Shark Bay (Ref. 306).

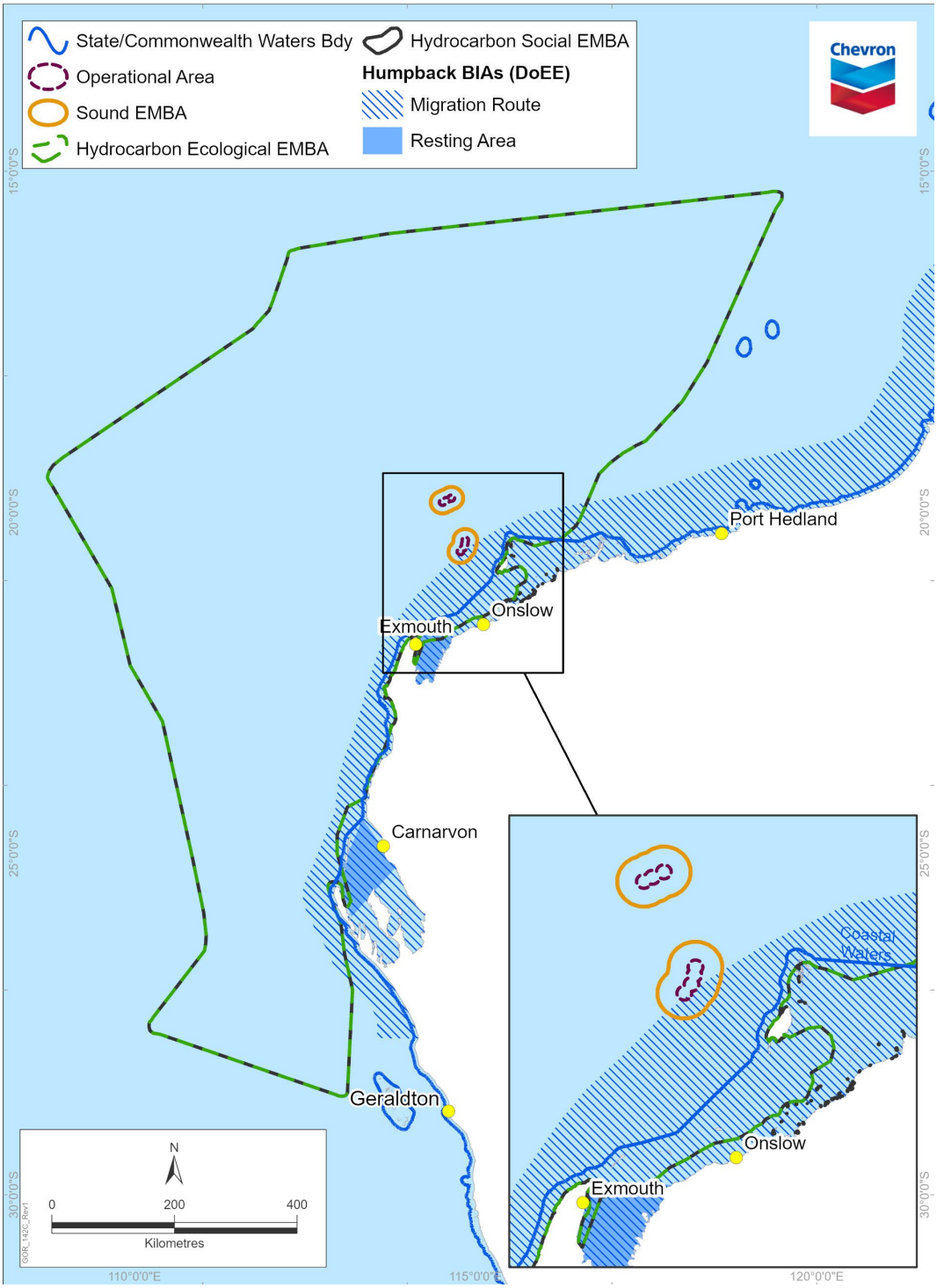


Figure 4-2: Biologically important areas for Humpback Whales

4.3.3.1.2 Pygmy Blue Whale

Pygmy Blue Whales migrate along the west coast of Australia in the northern direction to their breeding grounds near the Indonesian Archipelago from mid-February to early-June, and in the southern direction to the feeding grounds in the Southern Ocean from mid-November to early January (Ref. 55). Recent information collected from satellite tags shows that the Banda and Molucca seas in Indonesia are the likely destination for the northern migration of whales that

feed off the Australia Canyon (Ref. 221; Ref. 178; Ref. 179). These seas are considered the northern terminus of the migration and potentially the breeding and calving ground, but may also act as a feeding area (Ref. 180; Ref. 181).

Acoustic monitoring conducted by McCauley and Jenner (Ref. 182) in the Exmouth and northern Montebello Islands region identified a peak period in the northern migration of Pygmy Blue Whales from April to August, and from November through to late December during the southern migration. It was estimated by McCauley and Jenner (Ref. 182) that between 700 and 1,500 Pygmy Blue Whales migrated southward past Exmouth in 2004.

It is known the Pygmy Blue Whales tend to follow the WA continental shelf edge between their feeding grounds at the Australia Canyon and the North West Cape. However, the migratory pathway of whales north of the North West Cape is less defined.

The migration BIA for Pygmy Blue Whales has been historically described as occurring along the continental shelf edge between 500 m and 1,000 m water depths (Ref. 60; Ref. 50). However, more recent studies (e.g. Ref. 221; Ref. 55) suggest that Pygmy Blue Whales are likely to transit through deeper and further offshore waters north of the North West Cape. Satellite tracking data showed Pygmy Blue Whales on their northern migration travelled relatively near to the Australian coast (100±1.7 km) in water depths of 1,369.5±47.4 m, until reaching the North West Cape, after which they travelled further offshore (238±14 km) into progressively deeper water (2,617±143.5 m) (Ref. 221). Data from tagged Pygmy Blue Whales also indicates that during their northern migration, the width of the migration path increases north of Montebello Islands, from ~175 km to ~690 km at its widest point (Ref. 172). Gavrilov et al. (Ref. 55) conducted a study using an array of ocean bottom seismographs to detect Pygmy Blue Whales traversing the area to the north-west of the North West Cape during their southern migration. This study found that Pygmy Blue Whales migrated southward much further from the WA coast compared to the northbound migration, at distances of up to 400 km from shore (Ref. 55). Pygmy Blue Whales have demonstrated extensive use of continental slope habitat off WA and only limited use of shelf waters (Ref. 172). This contrasts with southern Australia, where use of the shelf and shelf break by Pygmy Blue Whales is more common.

McCauley and Jenner (Ref. 182) recorded 24-hour average counts of Pygmy Blue Whales along the WA coast during their migrations periods and found that the migratory habits are short and sharp pulses for the southbound Pygmy Blue Whales and a more protracted pulse of northbound Pygmy Blue Whales. This suggests that the southern migration Pygmy Blue Whales are swimming purposefully through the area to reach their southern feeding grounds, thus resulting in the data collected for Pygmy Blue Whales migrating through the area is not confounded by lingering Pygmy Blue Whales but they are swimming steadily past. A difference in travel speed was also reported by Thums et al. (Ref. 172), where median speed during northward migration was 2.4 km/h (<0.1–15.4 km/h, n=22), and southward migration was 4.0–5.0 km/h (n=2).

A recent study incorporating data collected from both passive acoustic monitoring and satellite telemetry data, was analysed and determined the ‘most important areas’ for migration[7] along the WA coast as an almost continuous stretch from southern WA to around the latitude of Rowley Shoals, and thereafter was more

[7] *Grid cells with overlap between two metrics: largest percentage of whales and high move persistence, were designated as the ‘most important areas’ for migration (Ref. 172).*

dispersed (Ref. 172). The south-western section of the Gorgon OA and Sound EMBA, and most of the Jansz OA and Sound EMBA do intersect with this most important area for migration (Figure 4-3).

Ferreira et. al (Ref. 386) compiled satellite tracking data for 38 Pygmy Blue Whales and used movement models to distinguish between low and high move persistence and correlated the data with environmental variables. Typically high move persistence is indicative of migration, while low move persistence is generally indicative of foraging or reproduction (Ref. 172). In alignment with other studies, the continental slope off the north- west Australian coast was predicted to be suitable habitat for migration (Ref. 386).

Predictions from modelling based on passive acoustic data indicate greatest numbers of Pygmy Blue Whales during April and June/July (northern migration), and November and December (southern migration) (Ref. 172). Monthly spatial predictions indicated higher densities around the Montebello Island region during May and June (northern migration) and November and December (southern migration) (Ref. 172). The drilling, well intervention and/or well abandonment activities within scope of this EP are yet to be scheduled, therefore the activity could overlap with the timing of predicted higher densities of Pygmy Blue Whales.

Pygmy Blue Whales aggregate in the Austral summer to feed at known locations on or adjacent to the continental shelf including the Australia Canyon, Great Southern Australian Coastal Upwelling System, and the subtropical convergence zone (Ref. 172). The areas around the Australia Canyon and Australian Coastal Upwelling System correspond to ‘Foraging Areas’ and ‘Known Foraging Areas’ within the *Conservation Management Plan for the Blue Whale* (Ref. 50). This plan also identifies ‘Possible Foraging Areas’[8], including 2 in WA, one off the Ningaloo coast, and another around Scott Reef. These ‘Possible Foraging Areas’ have been characterised as foraging BIAs and occur ~155 km south-west of the Gorgon OA and ~890 km north-east of the Jansz OA.

Thums et al. (Ref. 172) determined that Pygmy Blue Whale movement off north-west WA was predominantly relatively fast, directed travel (high move persistence) interspersed with relatively short (median 28 h) periods of low move persistence (Ref. 172).

The satellite tracking data reviewed in the recent study by Ferreira et. al., indicates 17 out of 38 tracked whales (~45%) displayed foraging movement behaviour in north-west WA (Ref. 386). Suitable foraging habitat was identified as a large semi-continuous area from the southern extent (28°S) to the northeastern edge of the modelled region (11.5°S) (Ref. 386). This area occurred almost exclusively on slope (91%), with a small amount of suitable habitat in deep ocean floor (7%) and on the shelf (2%) (Ref. 361). The OA and Sound EMBA are located within the area identified as suitable for foraging.

Owen et. al. (Ref. 387) deployed a multi-sensor tag on a single Pygmy Blue Whale, tracked its movement from the Perth Canyon region to Geraldton, and examined its dive behaviour. The whale completed a total of 1,677 dives over the duration the tag was attached (7.6 days). A total of 21 feeding dives were identified, with a mean maximum depth of 129 ± 183 m (range 13–505 m). Feeding behaviour appears to be largely a function of prey availability (krill) and

[8] *‘Evidence of feeding is based on limited direct observations or through indirect evidence, such as occurrence of krill in close proximity to whales, or satellite tagged whales showing circling tracks. Blue whales travel through on a seasonal basis, possibly as part of their migratory route’ (Ref. 51).*

their associated oceanographic drivers (i.e. surface currents, light attenuation, upwellings and seabed features) (Ref. 388, Ref. 386).

Data collected from both passive acoustic monitoring and satellite telemetry data, was analysed and determined the 'most important areas' for foraging[9] along the WA coast included the Australia Canyon and vicinity, the shelf edge off Geraldton, and discontinuous use of the shelf edge from Ningaloo Reef to Rowley Shoals (Ref. 172). Although foraging areas are described as static, they are likely to be dynamic given their dependence on presence of prey (Ref. 172; Ref. 183).

Studies (Ref. 388, Ref. 389, Ref. 386) have identified that variability in chlorophyll-a and oceanographic conditions (e.g. sea surface temperature, surface height anomaly) had a moderate to strong influence on probability of occurrence of whales suggesting suitable habitats and migratory occurrence may vary.Neither OAs intersect with this most important area for foraging; however, both Sound EMBAs do intersect with this most important area for foraging (Source: as determined by Thums et al. (Ref. 172)

Figure 4-4).

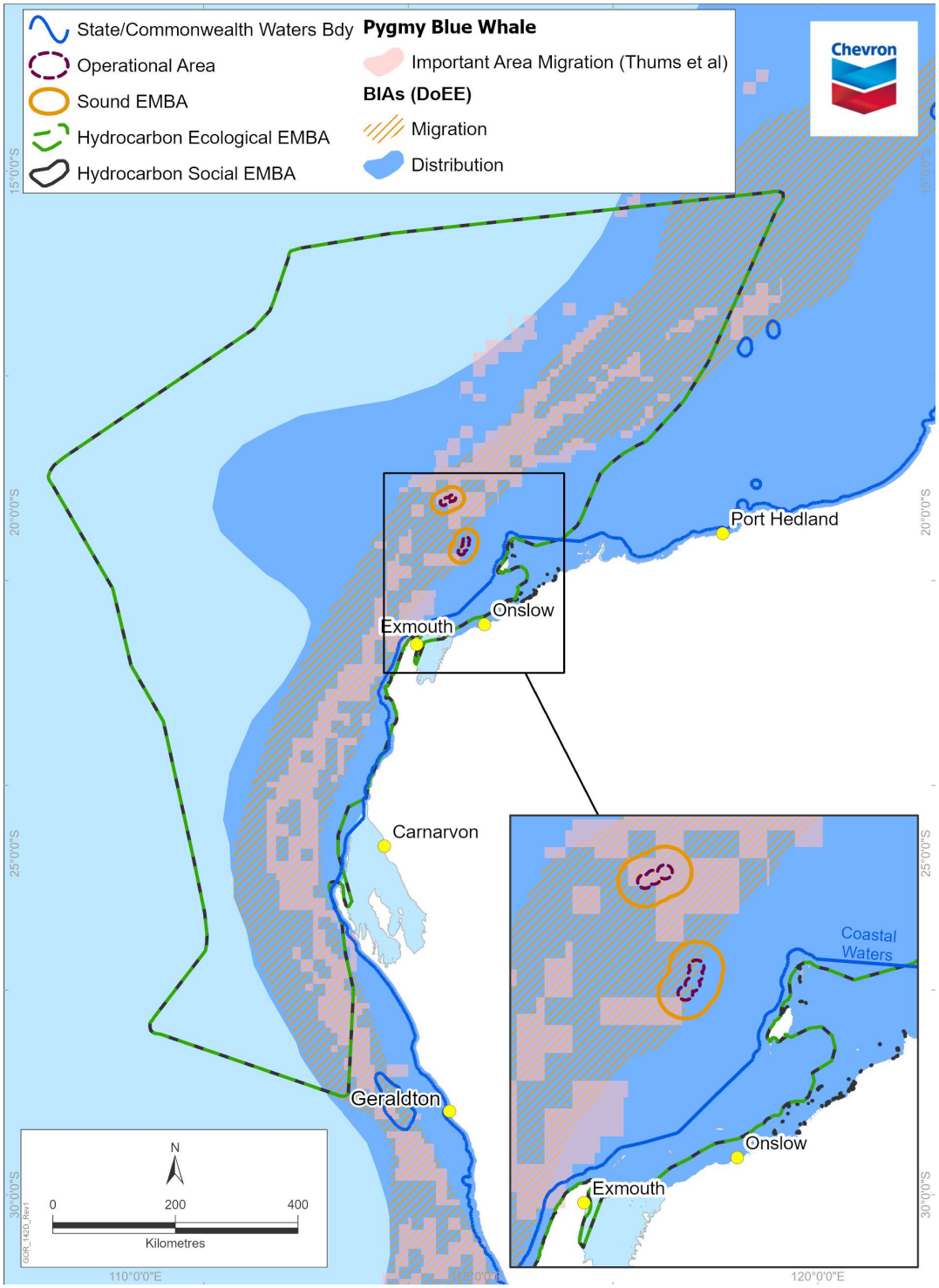
Data from a tagged Pygmy Blue Whale off Exmouth (Ref. 390) suggests that Pygmy Blue Whales within the waters off the North West Cape (i.e. within the EMBA) demonstrate preferential surface foraging in response to the vertical distribution of krill within these waters, primarily within the upper 100 m of the water column. Thums et al. (Ref. 172) states that ten of the 24 Pygmy Blue Whales that were encountered during the 2020 field trip were observed to be surface feeding (implied by the visible baleen and pleats on the surface).

Biologically, surface feeding is an optimal behavioural response for Pygmy Blue Whales, given the significantly reduced energetic costs associated with this strategy over lunge feeding at depth, which requires a significant oxygen and energetic demand (Ref. 387). Studies in several locations where Pygmy Blue Whales are known to aggregate (New Zealand [Ref. 391]; California [Ref. 392], South Australia [Ref. 393]; Canada [Ref. 394]; Chile [Ref. 395]) have demonstrated evidence of surface or sub-surface (<100 m) foraging, determined through visual observations of lunge feeding and/or analysis of tagged data. In these instances, surface foraging was driven by the aggregation of krill at the surface (or sub-surface). Torres et al. (Ref. 391) noted that surface foraging adheres to the principles of the 'optimal foraging theory', which states that to maximise fitness, an animal adopts a foraging strategy that provides the most benefit (i.e. energy) for the lowest cost, thereby maximising the net energy gained

The Gorgon OA is located in water depths of ~199–250 m and is ~120 km from the mainland coast. The OA at Jansz is ~1,314–1,349 m and is ~200 km from the mainland coast. The defined migratory BIA for Pygmy Blue Whales overlaps with the western half of the Gorgon OA and Sound EMBA and the entire Jansz OA and Sound EMBA; however, it is expected based on satellite tracking and acoustic detection studies that Pygmy Blue Whales are likely to travel predominantly to the north-west of both OAs in deeper waters, particularly on their southern migration (November to December), but also during the northern migration (April to August), where data has shown that after passing the North West Cape they travel further offshore (238±14 km) into progressively deeper waters (2,617±143.5 m) (Ref. 221). While foraging BIAs have not been identified along the NWS, recent

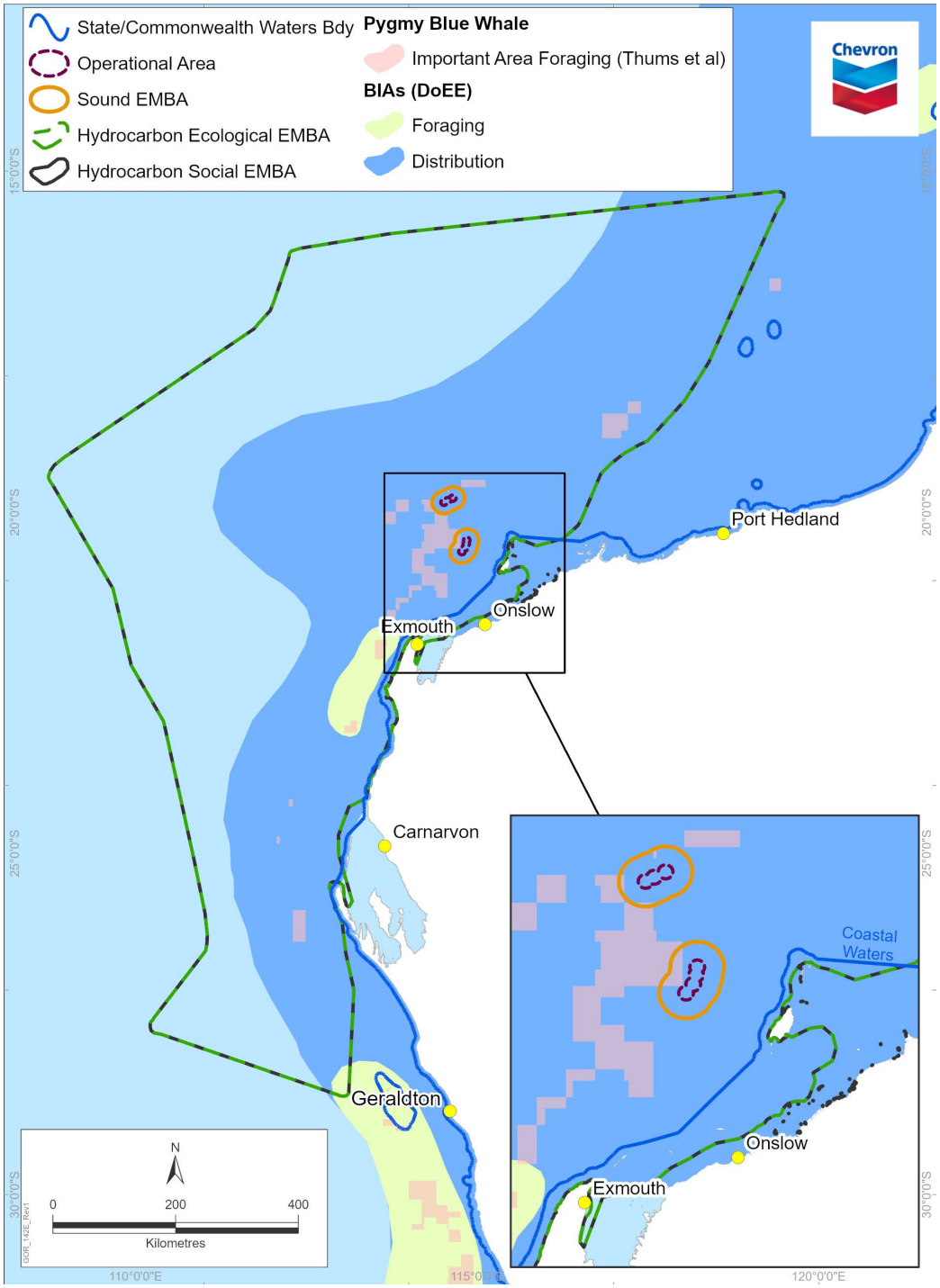
[9] *Grid cells with overlap between three metrics: greatest time spent, largest percentage of whales, and lowest move persistence, were designated as the 'most important areas' for foraging (and/or resting/breeding) (Ref. 172).*

analysis indicates that there may be short interspersed periods of foraging occurring along the shelf edge during migration (Ref. 172).



Source: as determined by Thums et al. (Ref. 172)

Figure 4-3: Most important areas for migration along WA coast



Source: as determined by Thums et al. (Ref. 172)

Figure 4-4: Most important areas for foraging along WA coast

4.3.3.2 Reptiles

Based on searches of the online PMST[10] (Ref. 15; Appendix C), the threatened and/or migratory reptile species shown in Table 4-7 may be present within the EMBA. Habitat critical to survival of marine turtle species, or BIAs associated with

[10] *There are a number of errors in the PMST Reports regarding BIAs intersecting the three spatial areas (OA, Sound EMBA and EMBA). These were confirmed by a review of the map feature within the PMST tool and dataset, and separately through a GIS system. Errors in the reports are marked within Appendix C.*

regionally significant marine reptile species, are listed in Table 4-7 and Table 4-8 respectively.

For the threatened and/or migratory species with habitat critical to survival or BIAs within the OAs or Sound EMBAs (i.e. EMBAs associated with planned activities), additional information has been provided in the following subsections.

Table 4-7: Presence of listed threatened and/or migratory reptiles

Common name (EPBC protected status)	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Turtles					
Flatback Turtle *(Vulnerable, migratory)*	✓	✓	✓	✓	✓
Green Turtle *(Vulnerable, migratory)*	✓	✓	✓	✓	✓
Hawksbill Turtle *(Vulnerable, migratory)*	✓	✓	✓	✓	✓
Leatherback Turtle (*Endangered, migratory)*	✓	✓	✓	✓	✓
Loggerhead Turtle *(Endangered, migratory)*	✓	✓	✓	✓	✓
Seasnakes					
Leaf-scaled Seasnake *(Critically Endangered)*					✓
Short-nosed Seasnake *(Critically Endangered)*					✓

Table 4-8: Habitat critical to the survival of marine turtles

Common name	Nesting location^	Internesting buffer^	Seasonal presence^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Flatback Turtle	Barrow Island, Montebello Islands	60 km	October to March	✓		✓		✓
	Thevenard Island					✓		✓
	Dampier Archipelago, including Delambre Island and Hauy Island, coastal islands from Cape Preston to Locker Island							✓
Green Turtle	Barrow Island, Montebello Islands, Muiron Islands, North West Cape	20 km	November to March					✓

Common name	Nesting location^	Internesting buffer^	Seasonal presence^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Hawksbill Turtle	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands	20 km	October to February					✓
Loggerhead Turtle	Montebello Islands, Lowenthal Island, Muiron Islands, Ningaloo and Jurabi Coasts, Gnaraloo Bay and Dirk Hartog Island	20 km	December to March					✓

Table 4-9: Presence of BIAs for reptiles

Name	BIA behaviour	Seasonal presence^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Flatback Turtle	Aggregation	(Not defined in database)					✓
	Foraging	Year-round, early summer, summer					✓
	Internesting	Summer					✓
	Internesting buffer	Early summer, summer	✓		✓		✓
	Mating	(Not defined in database)					✓
	Nesting	Summer					✓
Green Turtle	Aggregation	Early summer, (not defined in database)					✓
	Basking	Summer					✓
	Foraging	Year-round, early summer, summer					✓
	Internesting	Year-round, summer					✓
	Internesting buffer	Year-round, early summer, summer					✓
	Mating	Early summer, summer					✓
	Nesting	Summer					✓

Name	BIA behaviour	Seasonal presence^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Hawksbill Turtle	Foraging	Year-round, July, spring, early summer, summer					✓
	Internesting	Spring, early summer, summer					✓
	Internesting buffer	Year-round, spring, early summer, summer					✓
	Mating	Year-round, spring, early summer, summer					✓
	Nesting	Year-round, spring, early summer, summer					✓
Loggerhead Turtle	Internesting buffer	Summer, (not defined in database)					✓
	Nesting	(not defined in database)					✓

^ *Ref: 237*

4.3.3.2.1 Flatback Turtle

The Montebello Islands and Barrow Island supports Flatback Turtle nesting, occurring from October to March, with a peak in December to January. The Montebello Islands are identified as nesting habitat critical to the survival of the species, as is the 60 km internesting buffer around the Montebello Islands (Ref. 46). The Gorgon OA does intersect the nesting habitat critical to the survival of the species for Flatback Turtles and the internesting BIA for Flatback Turtles (Figure 4-5).

During internesting, turtles remain close to the nesting beach or rookery (Ref. 46). The 60 km internesting buffer defined within the Recovery Plan for Marine Turtles in Australia (Ref. 46) is based primarily on the movements of tagged internesting Flatback Turtles in WA (Ref. 68). The study tracked 56 turtles from 4 different rookeries, which demonstrated varying internesting movements, with distances ranging from 3–62 km, with some turtles at all 4 rookeries remaining within 10 km of their nesting beaches. However, tracking data showed these movements were largely longshore movements in nearshore coastal waters or travel between island rookeries and the adjacent mainland, which represent the greater distances (Ref. 68). There is no evidence to suggest that Flatback Turtles move to deep offshore waters during internesting periods.

A habitat suitability modelling study for internesting Flatback Turtles in the NWS region of WA (Ref. 184) was conducted to identify areas of suitable Flatback Turtle internesting habitat and determine overlap with identified industrial hazards. The study used a turtle tracking dataset of 47 nesting female turtles from 5 important rookeries in the NWS study area, including Barrow Island, located ~55 km from the Gorgon OA. The results showed internesting Flatback Turtles from all rookeries remained within water depths of <44 m, with a mean depth of

<10 m (Ref. 184). Results also showed internesting turtles from all rookeries remained within <28 km of the nearest coast, with a mean distance from the coast of <6.1 km. The habitat suitability modelling study defined suitable Flatback Turtle internesting habitat as water depths of 0–16 m within 5–10 km of the coast. Unsuitable Flatback Turtle internesting habitat was defined as waters >25 m deep and >27 km from the coast (Ref. 184; Source: Ref. 184

Figure 4-6). The OAs and Sound EMBAs are located in waters classified as unsuitable for internesting Flatback Turtles.

Another recent study involving satellite tracking data for 11 Flatback Turtles following nesting on the Lacepede Islands (Ref. 185) found that Flatback Turtles remained at an average distance of 15.75±12.25 km from the nesting beach in water depths of <20 m.

Other previous studies (e.g. Ref. 186; Ref. 187; Ref. 188) have also presented findings that internesting behaviour was only observed in water depths of <40 m. One of these studies (Ref. 188) further indicates that internesting Flatback Turtles have relatively shallow dives, with 85% of the time during spent in ≤20 m water depth, of which most was spent in 5–10 m (27±2.7%) and 10–15 m (22.3±3.5%) water depths.

Both the Gorgon and Jansz OAs are located in water depths of greater than 50 m, and are >43 km from the Montebello Islands, and as such they are located in deeper waters and are situated further offshore than locations where internesting behaviours were observed in any of the previous studies (Ref. 68; Ref. 184; Ref. 185; Ref. 186; Ref. 187; Ref. 188). Therefore, it is considered highly unlikely that internesting Flatback Turtles will occur within the OAs or Sound EMBAs.

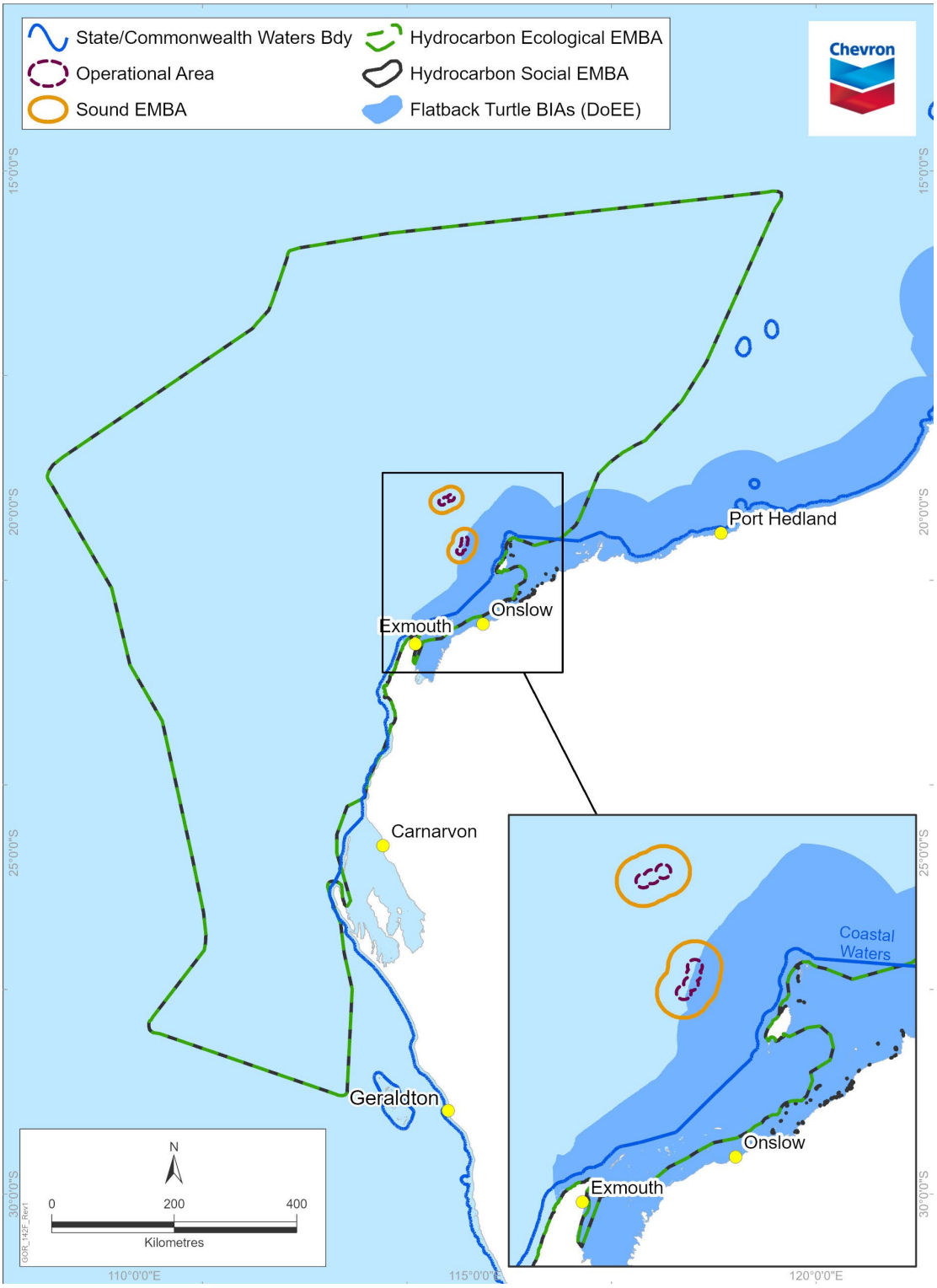
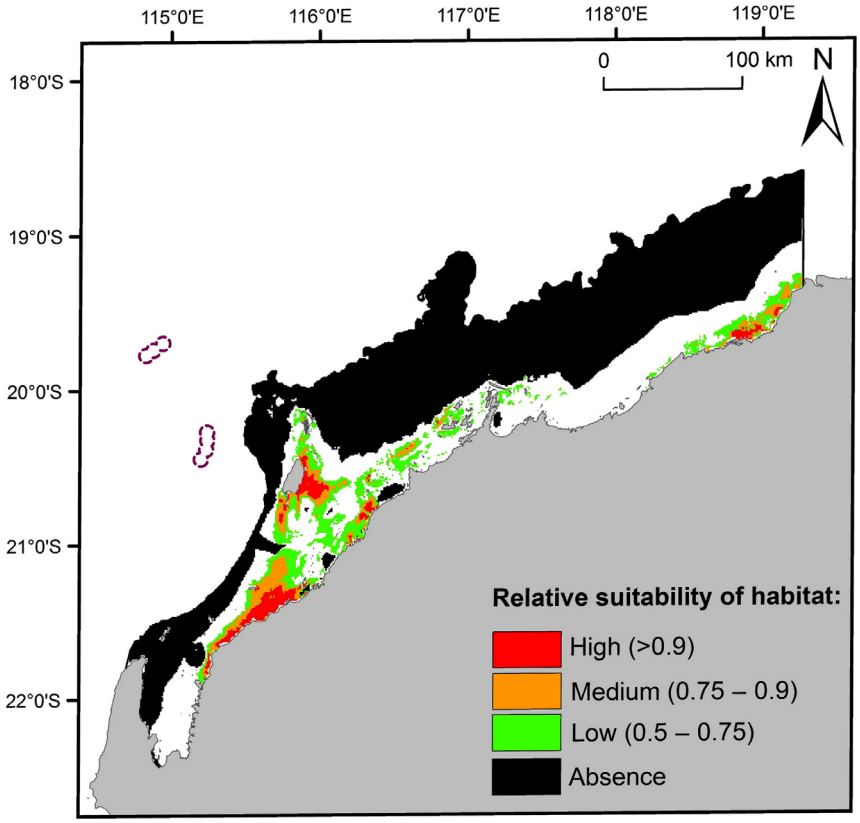


Figure 4-5: Flatback Turtle BIA within the vicinity of the OA, Sound EMBA and Hydrocarbon Ecological EMBA



Source: Ref. 184

Figure 4-6: Relative suitability of habitat for internesting Flatback Turtles

4.3.3.3 Fishes, including sharks and rays

Based on searches of the online PMST[11] (Ref. 15; Appendix C), the threatened and/or migratory fish species shown in Table 4-10 may be present within the EMBA. BIAs associated with regionally significant fish species are listed in Table 4-11.

For the threatened and/or migratory species with BIAs within the Gorgon or Jansz OAs or Sound EMBAs (i.e. EMBAs associated with planned activities), additional information has been provided in the following subsections.

Table 4-10: Presence of listed threatened and/or migratory fishes, incl. sharks and rays

Common name (EPBC protected status)	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon ecological and social EMBA
Fish					
Southern Bluefin Tuna *(Conservation dependent)*	✓	✓	✓	✓	✓

[11] *There are a number of errors in the PMST Reports regarding BIAs intersecting the three spatial areas (OA, Sound EMBA and EMBA). These were confirmed by a review of the map feature within the PMST tool and dataset, and separately through a GIS system. Errors in the reports are marked within Appendix C.*

Common name (EPBC protected status)	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon ecological and social EMBA
Sharks					
Dwarf Sawfish *(Vulnerable, migratory)*					✓
Freshwater Sawfish (*Vulnerable, migratory)*	✓		✓		✓
Green Sawfish *(Vulnerable, migratory)*	✓		✓		✓
Grey Nurse Shark (*Vulnerable*)	✓		✓		✓
Little Gulper Shark *(Conservation dependent)*					✓
Longfin Mako (*Migratory*)	✓	✓	✓	✓	✓
Mackerel Shark (*Migratory*)					✓
Narrow Sawfish (*Migratory*)	✓		✓		✓
Oceanic Whitetip Shark (*Migratory*)	✓		✓		✓
Scalloped Hammerhead *(Conservation dependent)*	✓		✓		✓
Shortfin Mako (*Migratory*)	✓	✓	✓	✓	✓
Whale Shark (*Vulnerable*)	✓	✓			✓
White Shark (*Vulnerable, migratory)*	✓	✓	✓	✓	✓
Rays					
Giant Manta Ray *(Migratory)*	✓	✓	✓	✓	✓
Reef Manta Ray *(Migratory)*	✓	✓	✓	✓	✓

Table 4-11: Presence of BIAs for fishes, including sharks and rays

Common name	BIA behaviour	Seasonal presence^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Whale Shark	Foraging	Spring	✓		✓		✓
	Foraging (high-density prey)	April–June, Autumn					✓

4.3.3.3.1 Whale Shark

The foraging BIA for Whale Sharks overlaps with the eastern half of the Gorgon OA and Sound EMBA (Figure 4-7). It does not overlap with the Jansz OA or Sound EMBA. The BIA is associated with foraging behaviours during northward migration from Ningaloo Reef / North West Cape along the 200 m isobath during July to November (Ref. 47).

Whale Sharks have a global distribution in tropical and warm temperate waters, including within Australian waters (mainly Northern Territory, Queensland and northern WA) (Ref. 189; Ref. 47). Within Australia, Whale Sharks form seasonal aggregations at Ningaloo Reef (March to July), Christmas Island (December to

January), and in the Coral Sea (November to December) (Ref. 47). Ningaloo Reef is considered the main known seasonal aggregation area (Ref. 62). Whale Sharks aggregate off Ningaloo Reef between March and July each year to feed (Ref. 196; Ref. 190). Their presence off Ningaloo Reef has been linked to coral mass spawning timing (Ref. 189). The Whale Shark is a suction filter feeder, with a diet comprising planktonic and nektonic prey, and feeds at or close to the water's surface by swimming forward with mouth agape, sucking in prey (Ref. 189). While the species is generally encountered close to or at the surface, it will regularly dive and move through the water column. Following the aggregation period around Ningaloo Reef, their movements are largely unknown, although 3 migration routes from Ningaloo Reef have been identified through various surveys (Ref. 191):

- north-west, into the Indian Ocean
- directly north, towards Sumatra and Java
- north-west, passing through the NWS region, travelling along the shelf break and continental slope.

As the drilling, well intervention and/or well abandonment activities are yet to be scheduled, the activity could overlap with the seasonal presence (July to November) of Whale Sharks within the BIA.

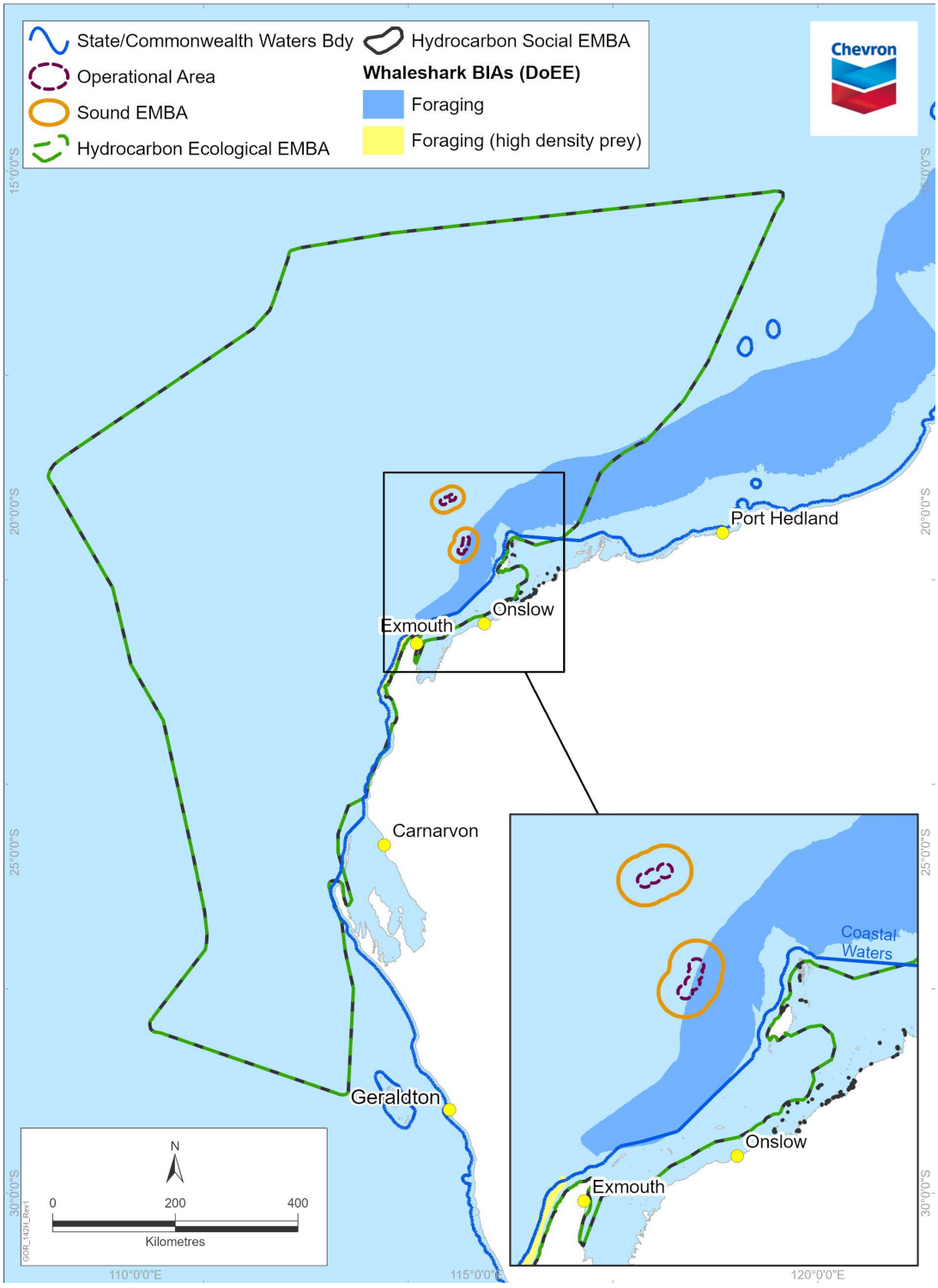


Figure 4-7: Whale Shark BIA within the vicinity of the OA, Sound EMBA and Hydrocarbon Ecological EMBA

4.3.3.3.2 Continental slope demersal fish communities

The Gorgon OA overlaps with small areas of the Continental Slope Demersal Fish Communities KEF (Section 4.3.7.1). The KEF supports 2 distinct fish communities, one associated with the upper slope (225–500 m depth), and the other with the mid-slope (750–1,000 m depth) (Ref. 264). The continental slope between North West Cape and the Montebello Trough display a high degree of

endemism, supporting more than 500 fish species, of which up to 76 are endemic (Ref. 264). The high number of species is believed to be associated with areas of enhanced biological productivity as a result of the interaction between seasonal currents and seabed topography (Ref. 264).

4.3.4 Seabirds and shorebirds

Based on searches of the online PMST[12] (Ref. 15; Appendix C), the threatened and/or migratory seabird and shorebird species shown in Table 4-12 may be present within the EMBA. BIAs associated with regionally significant seabird and shorebird species are listed in Table 4-13.

For the threatened and/or migratory species with BIAs within the OA, additional information has been provided in the following subsections.

Table 4-12: Presence of listed threatened and/or migratory seabirds and shorebirds

Common name (EPBC protected status)	Gorgon OA	Jansz OA	Hydrocarbon Ecological and Social EMBA
Abbott's Booby *(Endangered)*			✓
Amsterdam Albatross *(Endangered, migratory)*			✓
Asian Dowitcher *(Migratory)*			✓
Australian Fairy Tern *(Vulnerable)*	✓	✓	✓
Australian Lesser Noddy *(Vulnerable)*			✓
Australian Painted Snipe *(Endangered, migratory)*			✓
Bar-tailed Godwit *(Migratory)*			✓
Black-browed Albatross *(Vulnerable, migratory)*			✓
Bridled Tern *(Migratory)*			✓
Campbell Albatross *(Vulnerable, migratory)*			✓
Caspian Tern *(Migratory)*			✓
Christmas Island White-tailed Tropicbird *(Endangered)*	✓	✓	✓
Common Greenshank *(Migratory)*			✓
Common Noddy *(Migratory)*	✓	✓	✓
Common Sandpiper *(Migratory)*	✓	✓	✓
Curlew Sandpiper *(Critically endangered, migratory)*	✓		✓
Eastern Curlew *(Critically endangered, migratory)*	✓		✓
Flesh-footed Shearwater *(Migratory)*			✓
Fork-tailed Swift *(Migratory)*			✓
Great Frigatebird *(Migratory)*			✓
Great Knot			✓

[12] *There are a number of errors in the PMST Reports regarding BIAs intersecting the three spatial areas (OA, Sound EMBA and EMBA). These were confirmed by a review of the map feature within the PMST tool and dataset, and separately through a GIS system. Errors in the reports are marked within Appendix C.*

Common name (EPBC protected status)	Gorgon OA	Jansz OA	Hydrocarbon Ecological and Social EMBA
Greater Crested Tern *(Migratory)*			✓
Greater Sand Plover *(Vulnerable)*			✓
Grey Plover *(Migratory)*			✓
Grey-tailed Tattler *(Migratory)*			✓
Indian Yellow-nosed Albatross *(Vulnerable, migratory)*			✓
Lesser Frigatebird *(Migratory)*	✓	✓	✓
Little Tern *(Migratory)*			✓
Northern Giant-Petrel *(Vulnerable, migratory)*			✓
Northern Siberian Bar-tailed Godwit *(Critically endangered)*			✓
Oriental Plover *(Migratory)*			✓
Oriental Pratincole *(Migratory)*			✓
Osprey *(Migratory)*			✓
Pectoral Sandpiper *(Migratory)*			✓
Red Knot *(Endangered, migratory)*	✓	✓	✓
Red-necked Stint *(Migratory)*			✓
Roseate Tern *(Migratory)*			✓
Ruddy Turnstone *(Migratory)*			✓
Sanderling *(Migratory)*			✓
Sharp-tailed Sandpiper *(Migratory)*	✓	✓	✓
Shy Albatross *(Endangered, migratory)*			✓
Soft-plumaged Petrel *(Vulnerable)*			✓
Southern Giant-Petrel *(Endangered, migratory)*	✓		✓
Southern Royal Albatross *(Vulnerable, migratory)*			✓
Streaked Shearwater *(Migratory)*	✓		✓
Terek Sandpiper *(Migratory)*			✓
Wandering Albatross *(Vulnerable, migratory)*			✓
Wedge-tailed Shearwater *(Migratory)*			✓
Whimbrel *(Migratory)*			✓
White-capped Albatross *(Vulnerable, migratory)*			✓
White-tailed Tropicbird *(Migratory)*		✓	✓
White-winged Fairy-wren (Barrow Island) *(Vulnerable)*			✓

Table 4-13: Presence of BIAs for seabirds and shorebirds

Common name	BIA Behaviour	Seasonal presence^	Gorgon OA	Jansz OA	Hydrocarbon Ecological and Social EMBA
Bridled Tern	Foraging (in high numbers)	Late-September to early-May			✓
Fairy Tern	Breeding	July to late-September			✓
Lesser Crested Tern	Breeding	March to June			✓
Little Shearwater	Foraging (in high numbers)	Early January to early December, mainly April to November			✓
Roseate Tern	Breeding	Mid-March to July			✓
	Foraging (provisioning young)	Winter			✓
Sooty Tern	Foraging	Late-August to early-May			✓
Wedge-tailed Shearwater	Breeding	Mid-August to April (Pilbara) or mid-May (Shark Bay)	✓		✓
	Foraging (in high numbers)	Mid-August to May			✓
White-faced Storm Petrel	Foraging (in high numbers)	Unknown			✓
White-tailed Tropicbird	Breeding	May and October			✓

4.3.4.1 Wedge-tailed Shearwater

Behaviours used to define BIAs for seabirds in Commonwealth marine areas include breeding with a foraging buffer, and roosting (Ref. 192). The Wedge-tailed Shearwater has a ‘breeding with a foraging buffer’ BIA that intersects with the OAs (Table 4-13; Figure 4-8). The BIAs for this species are buffers around islands that this species is known to nest on. Bird species may forage in the waters surrounding the islands during nesting seasons. The Wedge-tailed Shearwater ‘foraging in high numbers BIA’ is much further south (>600 km from the Gorgon OA), near Carnarvon.

Wedge-tailed Shearwaters are a pelagic, migratory visitor to WA; estimates indicate more than one million shearwaters migrate to the Pilbara islands each year (Ref. 193); out of an estimated global population of 5 million (Ref. 194). The Wedge-tailed Shearwaters typically begin arriving at their WA colonies around August each year and will excavate burrows on vegetated islands for nesting; peak egg laying typically occurs during November; and they will typically leave nests in early-April to early-May and travel north to the Indian Ocean (Ref. 195; Ref. 196). As the drilling, well intervention and/or well abandonment activities are yet to be scheduled, the activity could overlap with the timing of the departure

(early-April to early-May) and/or arrival (around August) of Wedge-tailed Shearwaters to WA.

Known breeding locations in the NWMR include Forestier Island (Sable Island), Bedout Island, Dampier Archipelago, Passage Island, Lowendal Island, islands off Barrow Island (Mushroom, Double and Boodie islands), islands in the Onslow area (including Airlie, Bessieres, Serrurier, North and South Muiron and Locker islands), islands in Freycinet Estuary, and south Shark Bay (Slope, Friday, Lefebre, Charlie, Freycinet, Double and Baudin islands) (Ref. 194).

One of the closest colonies to either of the OAs is Double Island (south of Barrow Island). Baseline monitoring (pre-construction of the Gorgon Gas Development) recorded ~20–50 Wedge-tailed Shearwater nesting burrows on North Double Island and ~300 on South Double Island (Ref. 197; Ref. 200). CAPL (Ref. 198; Ref. 200) provided an estimate of 500 burrows over a 2 ha portion of the north-eastern corner of South Double Island, supporting 5,000–10,000 pairs of Wedge-tailed Shearwaters.

This species forages relatively close to breeding islands and its diet comprises squid, fish, and crustaceans (Ref. 194). However, more recent studies have indicated bimodal foraging. A study on foraging behaviour of the Wedge-tailed Shearwaters during the 2018 nesting season on the Muiron Islands showed a bimodal foraging strategy that incorporated both short (<4 days) and long (>7-day) trips (Ref. 196). The foraging trips of the Wedge-tailed Shearwaters from the Muiron Islands were recorded over a large area, extending from the Cape Range Canyon to the Indonesian Archipelago; and a consistent pattern of foraging near seamounts was observed (Ref. 196). It is noted that this same area is part of the foraging extent used by the Wedge-tailed Shearwaters from both Pelsaert and Houtman Abrolhos islands) (Ref. 196; Ref. 199). Using a bimodal foraging strategy suggests that prey availability close to the colony (i.e. areas that would be used on short trips) is inadequate for the large numbers of breeding shearwaters (Ref. 196).

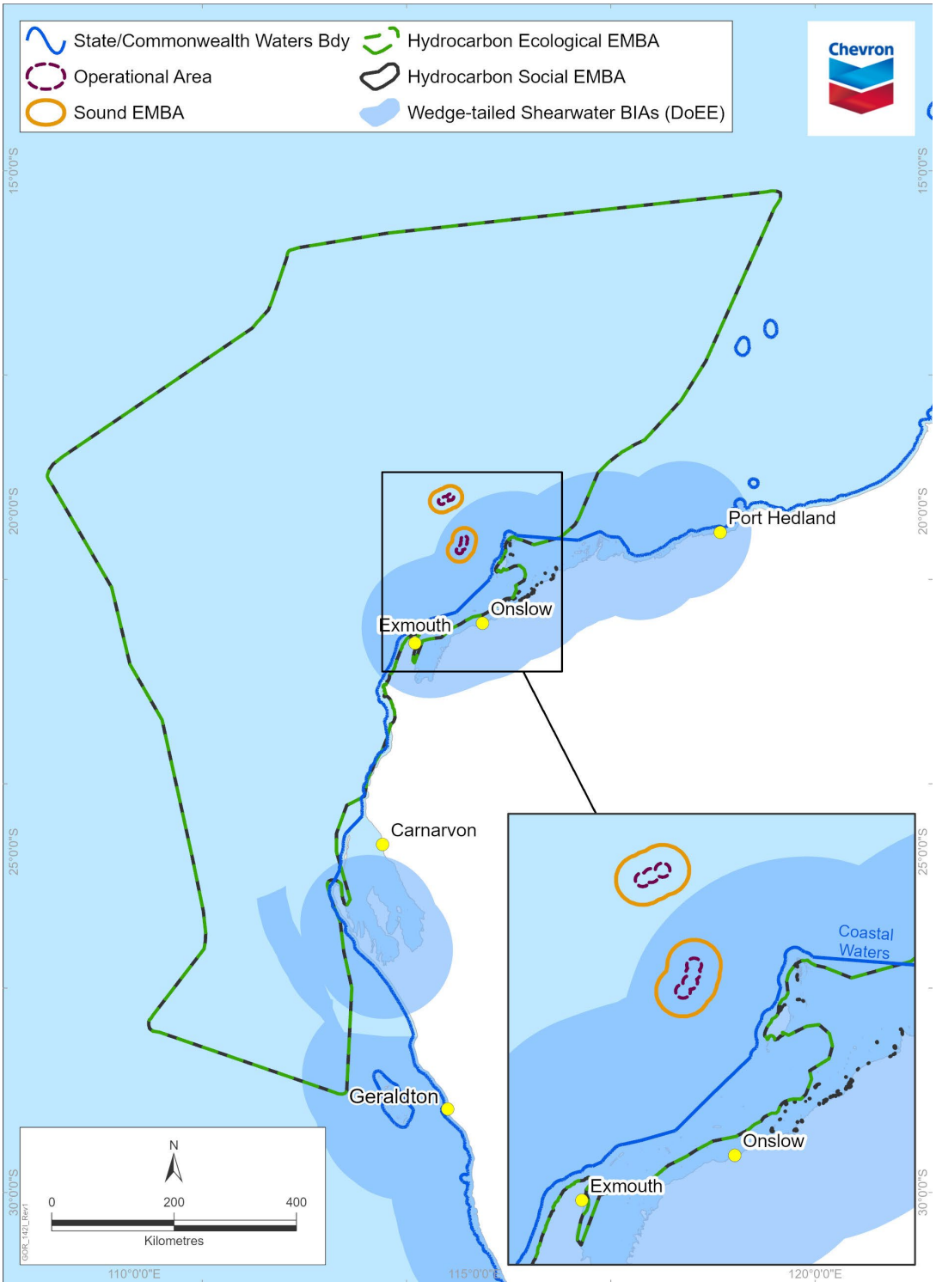


Figure 4-8: Wedge-tailed Shearwater BIA within the vicinity of the OA and Sound EMBA

4.3.5 Marine environmental quality

The term ‘environmental quality’ refers to the level of contaminants, or changes to the physical or chemical properties relative to a natural state (Ref. 238)

4.3.5.1 Water quality

Marine water quality within the EMBA is expected to be representative of typically high water quality found in offshore waters.

The NWS is characterised by a relatively clear water column; however, these waters sometimes have naturally higher levels of turbidity as a result of local current and tidal-induced resuspension of fine sediments and seasonal fluvial inputs (Ref. 239).

Previous water quality data indicated that the coastal waters of the NWS (based on sampling from around the Dampier Archipelago) generally have very low levels of anthropogenic contamination (Ref. 240) The Wenziker et al. (Ref. 240) study found no detectable levels of the sampled organic chemicals, and metals were below Australian and New Zealand guidelines for fresh and marine water quality (ANZG) guidelines in the waters of the Dampier Archipelago. However, natural oil seeps are known to occur on the NWS (Ref. 239). While this study is based on sampling outside the EMBA, it is expected that these low levels of contamination would continue into the offshore region (unless within the immediate vicinity of an offshore point source).

4.3.5.2 Sediment quality

Marine sediment quality within the EMBA is expected to be representative of high-sediment quality typically found in offshore waters away from anthropogenic sources of contamination.

Sediment quality sampling during 2014 and 2015 off the east coast of Barrow Island[13] showed that except for nickel in one reference site sample, total metal concentrations of all sediment samples were below respective laboratory limit of reporting (LoR) and/or Interim Sediment Quality Guideline (ISQG)-Low trigger values (Ref. 385). Sediment tributyltin (TBT) concentrations were all below the laboratory LoR and the ISQG-Low trigger value, except for one sample in each of the 2014 and 2015 surveys (Ref. 385). Total petroleum hydrocarbons (TPH) and Total polycylic aromatic hydrocarbon (PAH) concentrations were all below the LoR in 2014 and at very low concentrations in 2015 samples (with a much lower LoR). Once normalised for (very low) organic carbon content, six samples from 2015 were above ISQG-Low concentrations for benzo(a)pyrene, but well below the ISQG-High concentrations (Ref. 385).

It is expected that these low levels of contamination would continue throughout the EMBA (unless within the immediate vicinity of an offshore point source).

4.3.5.3 Air quality

Air quality within the EMBA is expected to be representative of typically pristine and high quality found in offshore areas.

CSIRO's Pilbara regional air quality study indicated that ambient atmospheric concentrations of CO, O_3, SO_2, $PM_{2.5}$, and NO_2 (as measured at the Dampier/Karratha and Boodarie regional industrial areas) were very low and well below National Environment Protection Measure (NEPM) for Ambient Air Quality standards (Ref. 242; Ref. 239). While this study is based on sampling outside the EMBA, it is expected that these low levels of contamination would continue into

[13] *The operational area is ~65 km northwest from Barrow Island.*

the offshore region (unless within the immediate vicinity of an offshore point source).

4.3.6 People and communities

People and communities, and specifically their social, economic, and cultural features, are included in the definition of environment within the OPGGS(E)R. People and communities have been identified and described to the extent that they are directly affected, or are affected by, the existing physical and biological environments.

The NWMR supports a range of economic, social, and cultural activities. At present, industries within the NWMR include petroleum exploration and production, commercial and recreational fishing, tourism, ports and shipping (Ref. 60). These uses of the NWMR make an important economic and social contribution to settlements along the coast (Ref. 60). Industry activities present with the EMBA are identified and described in Section 4.4.6.

4.3.6.1 Land use

The OAs and Sound EMBAs occur offshore and do not have any interface with the coast. The Hydrocarbon EMBAs do interface with the coast, specifically the west coast of Barrow Island, the Montebello Islands, some Pilbara inshore islands, some coastal areas along the mainland coast between Cape Preston and Onslow and between the Cape Range National Park coast and Coral Bay (Figure 4-1). Noting that the Hydrocarbon EMBAs typically only extends landward to the high water mark (HWM).

The land uses that may be present within the EMBA are summarised below.

The Montebello Islands are designated as a state Conservation Park (IUCN II) (Section 4.5.3), and are surrounded by the state Montebello Islands Marine Park (IUCN II) and Commonwealth Montebello Marine Park (Section 4.5.1). The Conservation Park is gazetted to the HWM. Given the natural values of the islands and surrounding waters, recreational activities may occur. Shore-based fishing, beach walks, picnics and wildlife viewing are types of activities that may occur (Ref. 243). Camping is permitted on some of the islands (with some restrictions during turtle nesting season) (Ref. 243; Ref. 244).

Barrow, Double, Middle, and Boodie islands are protected under WA jurisdiction; the islands are Nature Reserves (IUCN Ia) (Section 4.5.3), and are surrounded by the Barrow Island Marine Park (IUCN Ia) and Barrow Island Marine Management Area (IUCN VI) (Section 4.5). The Nature Reserves are gazetted to the low water mark (LWM). Access to Barrow, Double, Middle, and Boodie islands is not encouraged due to numerous natural and artificial hazards, including the operation of an oilfield and the Gorgon Gas Project Ref. 243). Camping is not permitted on any of these islands (Ref. 243).

The Pilbara islands are a group of >170 islands, islets, rocks and cays that lie between the bottom of Exmouth Gulf and the Regnard Islands near Cape Preston (Ref. 235). Some islands that interact with the Hydrocarbon EMBAs are classified as nature reserves (Section 4.5.3). The islands are gazetted to both the LWM and HWM. The Pilbara Inshore Islands Nature Reserves are known as important breeding and resting places for migratory and resident shorebirds, seabirds and marine turtles (Ref. 235). Fishing, beach walks and wildlife viewing are types of activities that may occur in the Pilbara Inshore Islands Nature Reserve (Ref. 235). Camping is only permitted on certain islands and may require a permit (Ref. 235).

The Cape Range is protected under WA jurisdiction; the Cape Range is a National Park (classified as IUCN II) (Section 4.5.3) and it is part of the Ningaloo Coast World Heritage Area. The National Park is gazetted to the HWM. Given the natural and heritage values of the coast, recreational activities may occur. Shore-based fishing, beach walks, and wildlife viewing are types of activities that may occur (Ref. 245; Ref. 246).

Three Native Title determinations (WCD2019/016, WCD2018/012 and WCD2018/006) extend over the EMBA (Section 4.6.3). The determination area contains places of special significance, such as mythological and ceremonial sites and natural resources (Section 4.6.3). Only one of these areas of special significance—Robe River (Gadjiwura)—intersect with the small coastal area of Hydrocarbon Social EMBA. There are no major settlements located within the Hydrocarbon Social EMBA.

4.3.6.2 Heritage

Heritage includes places, values, traditions, events, and experiences that capture where we have come from, where we are now, and gives context to where we are headed as a community (Ref. 247).

Where known heritage sites and/or artefacts are formally protected under specific heritage legislations, these are described within Section 4.6. The following sections summarise other known heritage values identified within the EMBA.

4.3.6.2.1 First Nations cultural activities, connections, and obligations

The land adjacent to the NWMR has been inhabited by First Nations people for at least 50,000 years, and they continue to use the NWMR and adjacent coastal resources, with an ongoing connection to these areas (Ref. 60).

While outside the EMBA, Australia's first confirmed First Nations underwater archaeological sites were identified in 2020 in waters offshore from Murujuga (Burrup Peninsula) during the Deep History of Sea Country Project (Ref. 345). These findings confirmed an understanding that First Nations people would have lived on lands that are now submerged in water from rising seas after the last glacial maximum (LGM)[14]. At the LGM sea level was ~125 m below present (Ref. 346); this coincides with the ancient coastline at 125 m depth KEF (see Section 4.3.7.1 for a description of this KEF). Therefore, both of the OA's, which occur in water depths of ~200 - 250 m (at Gorgon) and ~1,315 – 1,350m (at Jansz), would not have been emergent land during the history of First Nations occupation.

Recent studies at Murujuga have demonstrated that archaeological material remains on the seabed, predating inundation by rising seas (Ref. 345; Ref. 348). Previous geomorphological work (which was based on the analysis of available 3D seismic data) on the mid to outer shelf regions proximal to Barrow Island, demonstrated the presence of a highly complex and geomorphically mature coastal landscape preserved at depths of 70–75 m below sea level, including coastal barrier dunes, lagoonal systems, tidal flats, and estuarine channels. (Ref. 346). Such feature preservation has significant geoheritage value (Ref. 346). However, as described above, the OA (which occurs in water depths >200m) would be located further offshore than these features of potential geoheritage

[14] *The period of the LGM in Australia is described as 24 to 18 ka (Ref. 325)*

value, and would not have been emergent land during the history of First Nations occupation.

Archaeological deposits from Boodie Cave on Barrow Island, reveal some of the oldest evidence for First Nations occupation of Australia, as well as illustrating the early use of marine resources (Ref. 347). First occupation on Barrow Island has been dated as occurring between 51.1 and 46.2 ka, overlapping with earliest dates for occupation of Australia (Ref. 347). There is evidence of marine resources (e.g. shellfish, fish) being incorporated into dietary assemblages by 42.5 ka on Barrow Island; which continued through all periods of occupation, despite fluctuating sea levels and associated extensions of the coastal plain (Ref. 347). The caves on Barrow Island (including Boodie Cave), and others on nearby Montebello Islands, were abandoned by 6.8 ka when rising sea levels reached their present levels, and the islands had become increasingly distant from the mainland coast (Ref. 347).

First Nations people have a culture that relates to a connectedness of land and sea in a holistic way (Ref. 349). The term ‘Country’ refers to more than just a geographical area, and includes values, places, resources, stories, and cultural obligations associated with that geographical area (Ref. 248). For First Nations peoples the term ‘Country’ includes both land and sea and the coastal areas are connected with the traditional country of group or clan. Both Country and Sea Country, contain evidence of the ancient events by which all geographic features, animals, plants and people were created (Ref. 349). For example, Thalanyji knowledge holders reference Sea Country “between the islands of the shelf”, and “see the artifacts as an important manifestation of their ancestral use of, and connection to, the now-drowned coastal plain” (Ref. 379)

Cultural heritage is not only comprised of tangible values; it also includes intangible values. Tangible values are those with a physical nature (such as artefacts and engravings); while intangible values are those that do not have a physical component (such as songlines and dances). Songlines are a feature of First Nations culture, linking people, places, and practices (Ref. 350). Certain songlines are referred to as ‘Dreaming pathways’ because of the tracks forged by Creator Spirits during the Dreaming; these Dreaming songlines have specific ancestral stories attached to them (Ref. 351). Nunn and Reid (Ref. 352) discuss how First Nations oral traditions have documented sea level rise over the last 7,000 years. Kearney et al. (Ref. 353) also discusses how seabed mapping near Murujuga (Burrup Peninsula) identified 2 submerged waterholes that were identified by local senior elders as belonging to the Kangaroo songline. A song line from the mainland to Barrow Island has been referenced during studies involving Thalanyji knowledge holders (Ref. 379) and also identified by representatives of Mardathoonera Cultural Heritage Pty Ltd (MCH) during consultation (Table 4-14).

The cultural, customary, and spiritual significance of species and the ecological communities they form are diverse and varied for First Nations people and their stewardship of Country (Ref. 354). For example, some First Nations people have a strong connection to whales, which has significance as totemic ancestors to some groups (Ref. 354). The arrival of whales along Australia’s coast marked the arrival of the ‘elders of the sea’, which follows a songline that traces the journeys of ancestral spirits as they created the land, animals, and lore (Ref. 354).

First Nations people in north-west WA continue to rely on coastal and marine environments and resources of the region for their cultural identity, health and wellbeing, and their domestic and commercial economies (Ref. 248). Their

commitment to their Sea Country is demonstrated through their Native Title claims and their many initiatives to regain their role as managers of the cultural and natural values of north-west WA (Ref. 248).

First Nations peoples of north-west WA engage in a diverse range of marine resource use activities, including hunting, egg collecting, fishing and gathering shellfish. Activities also continue on lands and waters where they have a ceremonial and spiritual connections (Ref. 248).

Consultation with First Nations groups and individuals on previous EPs (during 2022 - 2024) has identified that Sea Country is of importance to their people (Table 4-14). These values include coastal areas, offshore islands, marine fauna, and traditional stories (e.g. it is believed that the Dreamtime serpent, which created the rivers and inland springs is now in its resting place off the Pilbara coast; and as such, if the sea is protected, then the serpent is also being protected). It is acknowledged that First Nations people who are the custodians of this knowledge have the rights to decide how it is shared and used.

Underwater cultural heritage (including First Nations heritage), as protected under the Commonwealth *Underwater Cultural Heritage Act 2018* (UCH Act) is discussed in Section 4.6.3.

Table 4-14: Cultural values or features identified through consultation

Source	Cultural value or feature
Baiyungu Aboriginal Corporation (BAC)	• Protecting land and Sea Country is a significant focus of the BAC • The Baiyungu coastal area, Sea Country, and adjacent islands are highly valuable to the Baiyungu people.
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	• The Thalanyji people have a deep connection to Sea Country north of Onslow, extending out into the islands off the coast of the Pilbara including: – Montebello Islands – Barrow Island – Mackerel Islands – Direction Island – Airlie Island – Weld Island – North and South Islands – Ashburton Island – Twin Islands – any island or atoll proximate to the above islands – a general radius of 150 km from Onslow.
Mardathoonera Cultural Heritage Pty Ltd (MCH)	• Identified a connection with Barrow Island and surrounding waters; specific values described include: – the creation story starts on Barrow Island – Barrow Island is a place that connects saltwater and freshwater together – Barrow Island is connected to Murujuga; both are considered by MCH as women's places – Biggada Creek is significant and connected to the Fortescue River; and that the rock formations in the creek are protectors – women's sites and ancestor spirits are present on Barrow Island • Identified that Barrow Island was a hill in ancient times and is a sister hill to 2 hills on the mainland, and old people would walk across before the sea levels rose and the island drifted; because of this, there will be artefacts and stories underwater

Source	Cultural value or feature
	• Identified cultural importance of traditional stories, songlines ocean, and marine fauna – the sea is the source of energy for all life, it holds the codes that are encrypted in each person's body, the songlines, and is the lifeforce for the world – the places where the saltwater from the sea and the freshwater from the land connect are where the biggest energy lines are, and that connection is a force of creation relevant to a Dreaming story – songlines extend out from the land, through the sea, and around the globe – songlines connect places, people, and animals to each other, creating migratory patterns for animals and telling animals of the right time to birth and eat – freshwater that flows underneath the seabed carries the songlines – there is a large energy line that exists off the coast of Murujuga and runs through the area that CAPL operates in – there are songlines that go through Barrow Island and offshore and connect Barrow Island to the mainland; this includes a whale songline – Mardathoonera people are connected to songlines—if the songlines are disrupted, their widdart (heart) is disconnected, like the whales, their feet get lost and they don't know where to go anymore. • Country owns people and we are all connected by energy – different frequencies connect all beings on earth and everything on earth is connected – if you protect country, it will protect you – women hold the energy connected to water.
Murujuga Aboriginal Corporation (MAC)	MAC has noted the cultural importance of Sea Country and that offshore islands are culturally significant. .
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	• No specific areas have been identified through consultation; however, NTGAC has noted the cultural importance of Sea Country and the need to ensure it is protected • In addition CAPL understands the Ningaloo Coast is culturally significant to the groups NTGAC represents.
Ngarluma Aboriginal Corporation (NAC)	NAC has noted that offshore islands and dugongs are culturally significant.
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	• The people from the land speak for and care about the marine animals, even if they are far out to sea • Identified that marine fauna, specifically whales, dugongs, and turtles are species of importance • The nature of many traditional narratives have origins and connection to the seascape, and that impacts to the seascape can have cultural repercussions • Presence and importance of intangible values, such as Barrimirndi (the serpent), which is an important part of dreaming for Ngarluma and Yindyibarndi people • Identified the interconnectedness of the cultural landscape, whereby Traditional Owners from the western Pilbara are held to account by other Nyambali (cultural bosses) when proponents impact land and sea • Cultural responsibilities transcend Native Title and other boundaries.
Robe River Kuruma Aboriginal Corporation (RRKAC)	• None identified within the EMBA • Values beyond the EMBA boundary included: – the area within their Kuruma Marthudunera native title claim, Jajiwurra (Robe River) and the waters extending seaward from the river mouth

Source	Cultural value or feature
	– ecological integrity of Jajiwurra.
Wirrawandi Aboriginal Corporation (WAC)	• The coastal area, Sea Country, and adjacent islands are highly valuable to the Yaburara and Mardudhunera people • Identified a connection to Barrow Island.
Yinggarda Aboriginal Corporation (YAC)	• Bernier Island, Dorre Island and associated Sea Country have been identified as significant to the Yinggarda people.

4.3.6.2.2 European heritage

Early European exploration of the NWMR and adjacent coast occurred in the 1600s; however, it was concluded at the time that resources and conditions were not appropriate for settlement (Ref. 60). British colonisation did not begin in the Pilbara until 1860s, with pastoralism as the first major industry, followed by small ports and service centres (Ref. 60). The pearling industry began in the late-1800s, and remains a significant contributor to the economy of north-west WA (Ref. 60). Similarly, small fishing fleets were common from the 1860s onwards, and the commercial fishing industry also remains a significant economic input for north-west WA, particularly from prawn and demersal finfish fisheries (Ref. 60). Petroleum discovery and development commenced from the 1950s, with both onshore and offshore discoveries (Ref. 60).

The marine and coastal industries that still exist and operate within the NWMR are further described in Section 4.4.6.

4.3.7 Commonwealth marine area

The Commonwealth marine area is a MNES under the EPBC Act, and a particular value and sensitivity under the OPGGS(E)R. The EMBA for this activity is within state and Commonwealth waters that are part of the NWMR.

The NWMR comprises the Commonwealth waters and seabed from the WA—Northern Territory border south to Kalbarri (Ref. 60). The NWMR is characterised by shallow-water tropical marine ecosystems with high species richness. Most of the region's species are tropical and are also found in other parts of the Indian and western Pacific oceans (Ref. 60).The region is a tropical carbonate margin that comprises an extensive area of shelf, slope, and abyssal plain/deep ocean floor, as well as complex areas of bathymetry such as plateau, terraces and major canyons (Ref. 223). The region experiences a tropical monsoonal climate towards the northern extent of the region, transitioning to tropical arid and subtropical arid within the central and southern areas of the region (Ref. 60).

Conservation values of the Commonwealth marine area include:

- protected species and/or their habitat (Section 4.3.3)
- protected places including Australian Marine Parks (Section 4.5.1) and heritage places (Section 4.6)
- Key Ecological Features (KEFs) (Section 4.3.7.1).

4.3.7.1 Key ecological features

KEFs are elements of the Commonwealth marine environment that are considered to be of regional importance for a region's biodiversity or its ecosystem function and integrity. KEFs are not MNES and have no legal status in their own

right; however, they may be considered as components of the Commonwealth marine area.

KEFs meet one or more of these criteria (Ref. 249):

- a species, group of species, or a community with a regionally important ecological role (e.g. a predator, or prey that affects a large biomass or number of other marine species)
- a species, group of species, or a community that is nationally or regionally important for biodiversity
- an area or habitat that is nationally or regionally important for:
  - enhanced or high productivity (such as predictable upwellings—an upwelling occurs when cold nutrient-rich waters from the bottom of the ocean rise to the surface)
  - aggregations of marine life (such as feeding, resting, breeding or nursery areas)
  - biodiversity and endemism (species that only occur in a specific area)
- a unique sea floor feature, with known or presumed ecological properties of regional significance.

KEFs have been identified by the Australian Government on the basis of advice from scientists about the ecological processes and characteristics of the area (Ref. 249).

The presence of KEFs within the EMBA, and a description of the KEFs values, are shown in Table 4-15 and Figure 4-9.

Table 4-15: Presence of KEFs

Key ecological feature	Gorgon OA	Jansz OA	Hydrocarbon Ecological and Social EMBA
Ancient coastline at 125 m depth contour			✓
Parts of the ancient coastline, particularly where it exists as a rocky escarpment, are thought to provide biologically important habitats in areas otherwise dominated by soft sediments. The topographic complexity of these escarpments may also facilitate vertical mixing of the water column, providing relatively nutrient-rich local environments (Ref. 60). The ancient submerged coastline provides areas of hard substrate and therefore may provide sites for higher diversity and enhanced species richness relative to surrounding areas of predominantly soft sediment. Little is known about fauna associated with the hard substrate of the escarpment but it is likely to include sponges, corals, crinoids, molluscs, echinoderms and other benthic invertebrates representative of hard substrate fauna in the North West Shelf bioregion (Ref. 60). **Values:** Unique sea floor feature with ecological properties of regional significance.			

Key ecological feature	Gorgon OA	Jansz OA	Hydrocarbon Ecological and Social EMBA
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula			✓
The canyons are associated with upwelling as they channel deep water from the Cuvier Abyssal Plain up onto the slope. This nutrient-rich water interacts with the Leeuwin Current at the canyon heads. Aggregations of Whale Sharks, Manta Rays, sea snakes, sharks, large predatory fish and seabirds are known to occur in this area (Ref. 60). The canyons on the slope of the Cuvier Abyssal Plain and Cape Range Peninsula are connected to the Commonwealth waters adjacent to Ningaloo Reef and may also have connections to Exmouth Plateau. The narrow shelf width (about 10 km) near the canyons facilitates nutrient upwelling. Thus the canyons probably play a part in the enhanced productivity of the Ningaloo Reef system (Ref. 60). The canyons are also repositories for organic and inorganic particulate matter from the shelf and serve as conduits for its transfer from the surface and shelf to greater depths. The hard substrates of canyons provide habitat for deepwater snapper and other species (Ref. 224) **Values:** Unique sea floor features with ecological properties of regional significance.			
Commonwealth waters adjacent to Ningaloo Reef			✓
The Commonwealth waters adjacent to Ningaloo Reef include Ningaloo Marine Park (Commonwealth waters) and encompass an area of 243 km^2. This feature lies adjacent to the Ningaloo Reef state water margin at the 3 nautical mile limit. Ningaloo Reef is globally significant as the only extensive coral reef in the world that fringes the west coast of a continent. Upwellings associated with canyons on the adjacent slope and interactions between the Ningaloo and Leeuwin currents are thought to support the rich aggregations of large marine species present at Ningaloo Reef (Ref. 60). Aggregations of Whale Sharks, Manta Rays, Humpback Whales, sea snakes, sharks, large predatory fish and seabirds are known to occur in this area (Ref. 60). **Values** High productivity and aggregations of marine life			
Continental slope demersal fish communities	✓		✓
The diversity of demersal fish assemblages on the continental slope in the Timor Province, the Northwest Transition and the Northwest Province is high compared to elsewhere along the continental slope. The continental slope between North West Cape and the Montebello Trough has more than 500 fish species, 76 of which are endemic, which makes it the most diverse slope bioregion in Australia (Ref. 217). The demersal fish species occupy 2 distinct demersal community types associated with the upper slope (water depth of 225–500 m) and the mid-slope (750–1,000 m). Bacteria and fauna present on the continental slope are the basis of the food web for demersal fish and higher-order consumers in this system (Ref. 60). **Values:** High levels of endemism.			
Exmouth Plateau			✓
The Exmouth Plateau is a regionally and nationally unique deep-sea plateau (water depths of 800-4,000 m) in tropical waters. The plateau is a very large topographic obstacle that may modify the flow of deep waters, generating internal tides and may contribute to upwelling of deeper water nutrients closer to the surface, thus serving an important ecological role (Ref. 60). The topography of the plateau (with valleys and channels), in addition to potentially constituting a range of benthic environments, may provide conduits for moving sediment and other material from the plateau surface through the deeper slope to the abyss. The Exmouth Plateau is generally an area of low habitat heterogeneity; however, it is likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to depths of around 1,000 m. Sediments on the plateau suggest that biological communities include scavengers, benthic filter feeders and epifauna (Ref. 60). Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton (Ref. 224). **Values:** Unique sea floor feature with ecological properties of regional significance			

Key ecological feature	Gorgon OA	Jansz OA	Hydrocarbon Ecological and Social EMBA
Glomar Shoals			✓
The Glomar Shoals are regionally important for their high biological diversity and high localised productivity. The shoals are a submerged littoral feature located ~150 km north of Dampier on the Rowley shelf at water depths of 33-77 m. Situated within a high-energy environment that is subject to strong sea floor current and frequent cyclone activity, the substrate features a large percentage of marine-derived sediments with high carbonate content and gravels of weathered coralline algae and shells (Ref. 60). Biological data specific to Glomar Shoals is limited; however, the fish of Glomar Shoals are likely a subset of reef-dependent species and anecdotal and fishing industry evidence suggest they are particularly abundant (Ref. 60). The shoals are known to be an important area for several commercial and recreational fish species including ranking cod, brown-striped snapper, red emperor, crimson snapper, bream and yellow-spotted triggerfish (Ref. 60). **Values:** High productivity and aggregations of marine life			
Australia Canyon and adjacent shelf break, and other west coast canyons			✓
The Australia Canyon is the largest known undersea canyon in Australian waters. It is part of a larger system of underwater canyons that spans an extensive area (8,744 km^2) of continental slope offshore from Kalbarri to south of Australia. The system includes Geographe Canyon, Busselton Canyon, Pelsaert Canyon, Geraldton Canyon, Wallaby Canyon, Houtman Canyon, Murchison Canyon, and most notably, Australia Canyon. The Australia Canyon is prominent among the west coast canyons because of its size and ecological importance; however, the sheer abundance of canyons spread over a broad latitudinal range makes this feature important as a whole (Ref. 263). The west coast canyons are believed to be associated with small, periodic upwellings that locally enhance productivity and attract aggregations of marine life. In the Australia Canyon, the upwelling of deep ocean currents creates a nutrient-rich cold-water habitat that attracts feeding aggregations of deep-diving mammals, such as Pygmy Blue Whales and large predatory fish that feed on aggregations of small fish, krill and squid. Cetacean species, predominantly Pygmy Blue Whales, aggregate in the canyon from November to May. The Australia Canyon also marks the southern boundary for numerous tropical species groups on the shelf, including sponges, corals, decapods and xanthid crabs (Ref. 263). **Values:** High biological productivity and aggregations of marine life, and unique sea floor features with ecological properties of regional significance			
Western demersal slope and associated fish communities			✓
The western demersal slope provides important habitat for demersal fish communities, with a high level of diversity and endemism. Demersal fish on the slope in the Central Western Province bioregion have high species diversity compared with other more intensively sampled oceanic regions of the world. Demersal fish communities occurring at depths greater than 400 m are characterised by a diverse assemblage, dominated by relatively small benthic species such as grenadiers, dogfish and cucumber fish. Unlike other slope fish communities in Australia, many of these species display unique physical adaptations to feed on the sea floor (such as a mouth position adapted to bottom feeding), and many do not appear to migrate vertically in their daily feeding habits (Ref. 263). **Values:** Species groups that are nationally or regionally important to biodiversity. High level of endemism.			

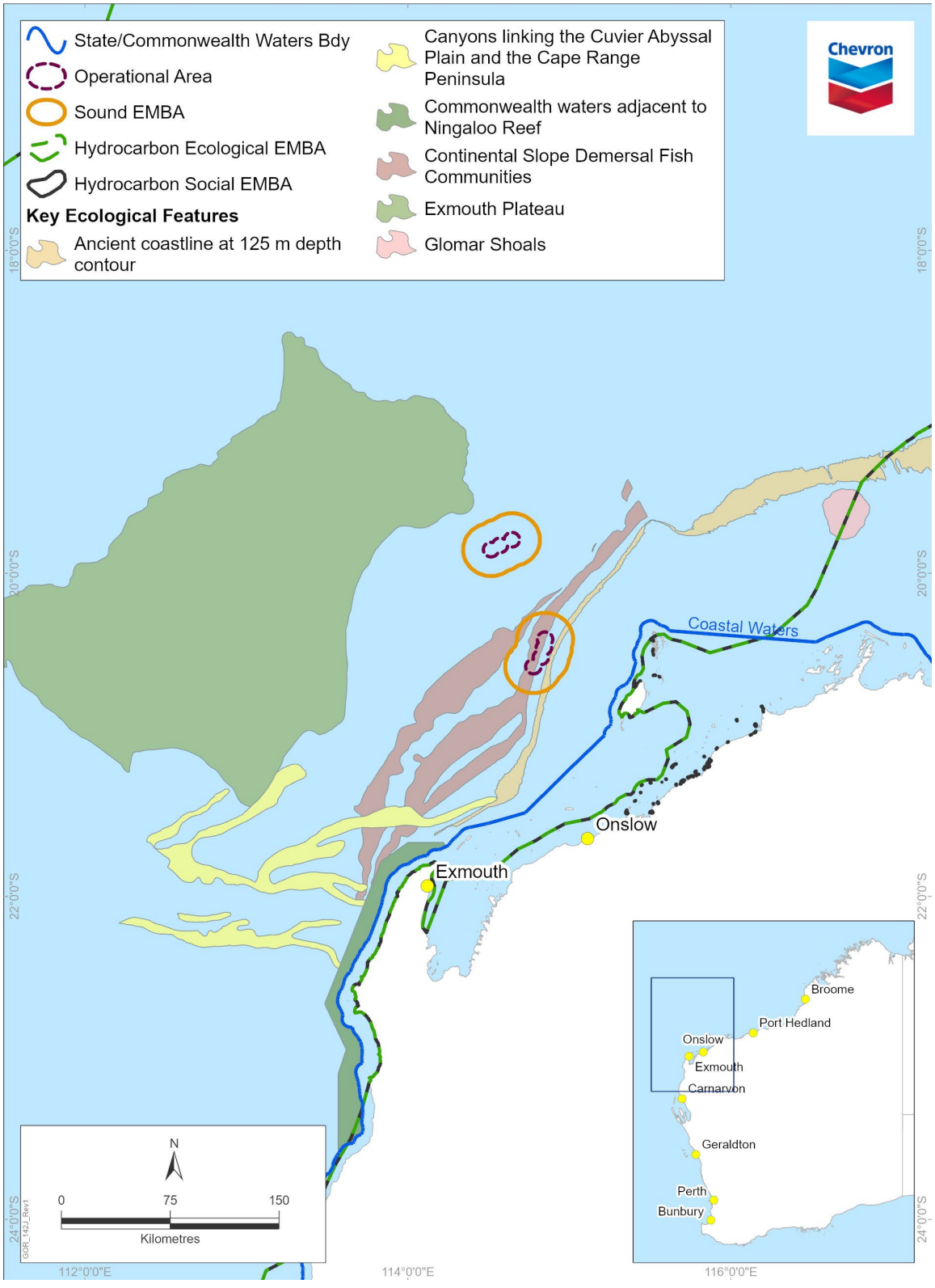


Figure 4-9: Key ecological features within the vicinity of the EMBA

4.3.8 Commonwealth land area

Commonwealth land[15] is a particular value and sensitivity under the OPGGS(E)R. Based on spatial review and searches of the online PMST (Ref. 15; Appendix C) there is Commonwealth land associated with Defence facilities that intersects with the EMBA. These facilities are further described in Section 4.4.6.

4.4 Natural and physical resources

Natural and physical resources are described as substances occurring in nature that can be exploited for economic gain, and may include such resources as fishing stocks, petroleum reservoirs, or values of the Commonwealth marine area. Marine and coastal industries have been developed based on natural and physical resources, and where these industries may interest with the EMBA they have been identified and described in the following sections.

4.4.1 Commercial fisheries

4.4.1.1 Commonwealth-managed fisheries

Table 4-16 lists Australia Commonwealth-managed commercial fisheries with fishery management areas that intersect the EMBA, and for which fishing effort was recorded during 2015–2020 (Ref. 19).

For the fisheries with fishing effort recorded within the OAs or Sound EMBAs (i.e. EMBAs associated with planned activities), additional information has been provided below.

Table 4-16: Presence of recent (2015–2020) fishing effort recorded within Commonwealth-managed commercial fisheries

Fishery	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
North West Slope Trawl Fishery	✓	✓	✓	✓	✓
Western Deepwater Trawl Fishery			✓		✓
Western Tuna and Billfish Fishery					✓

Commonwealth fisheries with fishing effort recorded within the OAs are limited to the North West Slope Trawl Fishery (NWSTF), as shown in Figure 4-10. Relative fishing intensity data are not available for the NWSTF due to low vessel numbers and confidentiality.

The NWSTF use bottom (or demersal) trawl methods to target deepwater prawn and scampi that live on or near the sea floor (depths of 350–600 m).

The primary species landed in the NWSTF is the Australian scampi (*Metanephrops australiensis*), with smaller quantities of Velvet Scampi (*M. velutinus*) and Boschma's Scampi (*M. boschmai*). A quantity of prawns is also harvested each season, and squids are becoming an increasingly significant component of the catch. Mixed snappers (*Lutjanidae*) and Redspot Emperor

[15] *Commonwealth land includes land owned or leased by the Commonwealth or a Commonwealth agency, land in the Jervis Bay Territory, land in the Christmas Island, Ashmore and Cartier Islands, Coral Sea Islands, Cocos (Keeling) Islands, Australian Antarctic territory and Heard and McDonald Islands external territories, and any other area of land that is included in a Commonwealth reserve.*

(*Lethrinus lentjan*) have historically been an important component of the NWSTF catch. Fishing for scampi occurs over soft, muddy sediments or sandy habitats, using demersal trawl gear on the continental slope.

Fishing efforts have decreased over the last 3 fishing seasons, from 306 days, 5,903 trawl-hours and 7 fishing permits in the 2019–2020 fishing season to 233 days, 4,420 trawl-hours and 6 fishing permits in 2020–2021 season, and a further decrease to 196 days, 3,950 trawl-hours and 7 fishing permits in the 2021–2022 season. Three vessels operated in the 2021–2022 season, down from 4 in the 2020–2021 season. Scampi stock are classified as not overfished and not subject to overfishing.

While the NWSTF was active within its management area and did record fishing effort during all (2015–2020) years, active fishing effort only occurred within the Gorgon OA during 2010 and 2020, and the Jansz OA during 2015 (Ref. 265).

The Southern Bluefin Tuna Fishery is active within waters in the Great Australian Bight and south-eastern Australia (i.e. not within either of the OAs and Sound EMBAs); however, the spawning grounds for Southern Bluefin Tuna are located in the north-east Indian Ocean south of Java (Ref. 265). This indicative spawning area does not overlap with the OAs or Sound EMBAs, but partially overlaps the Hydrocarbon EMBAs.

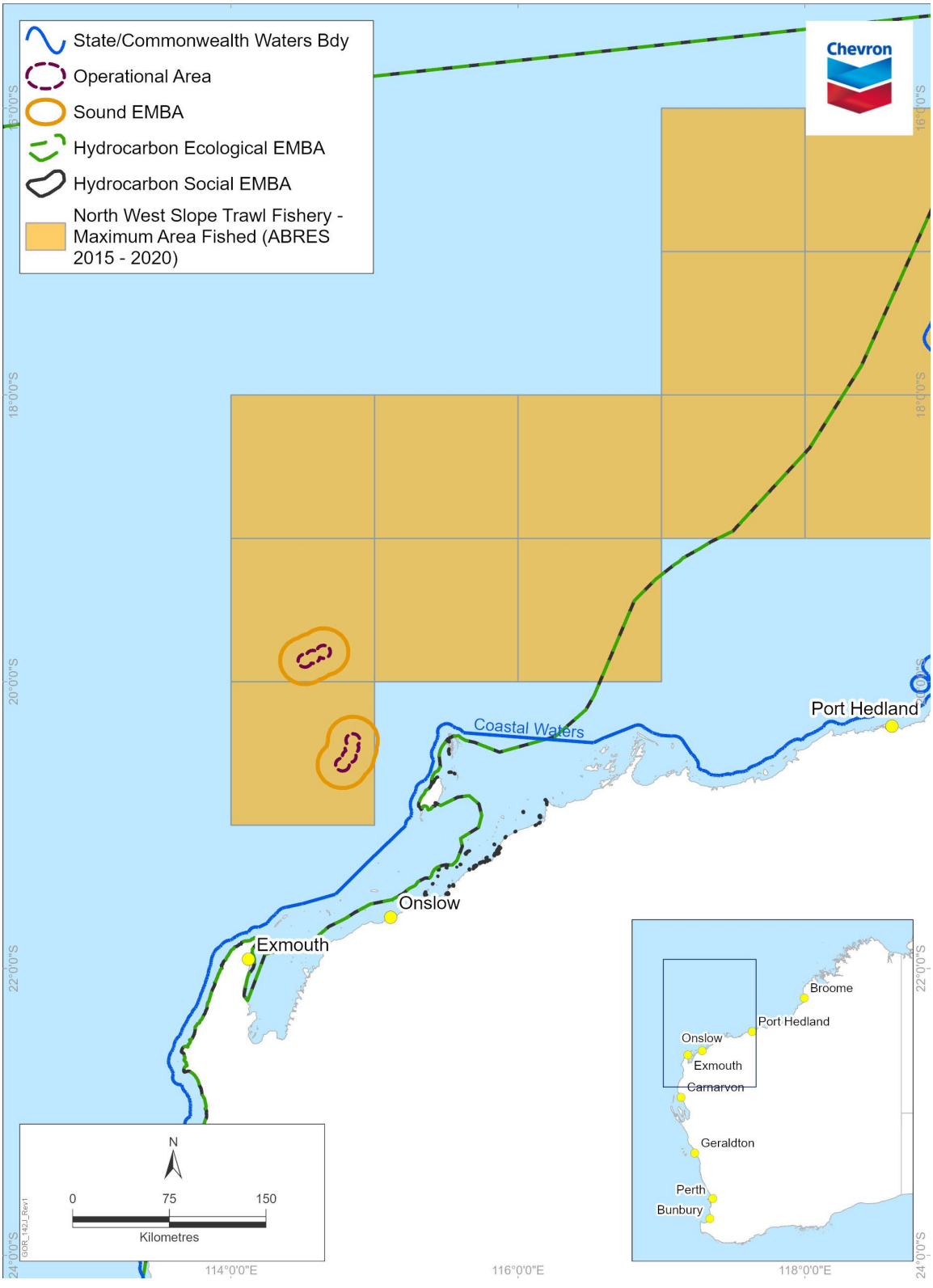


Figure 4-10: Presence of fishing activity (2015–2020) for the North West Slope Trawl Fishery within the vicinity of the EMBA

4.4.1.2 State-managed fisheries

Table 4-17 lists the State-managed commercial fisheries with fishery management areas that intersect the EMBA, and that have fishing effort recorded over a 10-year period (2012–2021) (Ref. 16).

For the fisheries with fishing effort recorded within the OAs or Sound EMBAs (i.e. EMBAs associated with planned activities), additional information has been provided below.

Table 4-17: Presence of fishing effort recorded over the 2012–2021 period within State-managed commercial fisheries

Fishery	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
North Coast Bioregion					
Mackerel Managed Fishery	✓		✓	✓	✓
Nickol Bay Prawn Managed Fishery					✓
Onslow Prawn Managed Fishery					✓
Pilbara Crab Managed Fishery			✓		✓
Pilbara Fish Trawl (Interim) Managed Fishery					✓
Pilbara Line Fishery	✓	✓	✓	✓	✓
Pilbara Trap Managed Fishery	✓		✓	✓	✓
West Australian Sea Cucumber (Beche-De-Mer) Fishery					✓
Gascoyne Bioregion					
Exmouth Gulf Prawn Managed Fishery					✓
Gascoyne Demersal Scalefish Fishery					✓
West Coast Deep Sea Crustacean Managed Fishery	✓		✓	✓	✓
Statewide					
Marine Aquarium Fish Managed Fishery					✓
Specimen Shell Managed Fishery					✓

Four State fisheries were identified as active within the Gorgon OA and one within the Jansz OA (Table 4-17).

The Mackerel Managed Fishery uses near-surface trolling or jig fishing methods, with vessels primarily active during May to November (Ref. 17), and with the bulk of the catch typically taken north of the OA within Kimberley waters (Ref. 17). The fishery targets are Spanish mackerel (*Scomberomorus commerson*), Grey mackerel (*S. semifasciatus*) and other species from the genus Scomberomorus.

The Mackerel Managed Fishery extends from the West Coast Bioregion to the WA/Northern Territory (NT) border. There are 3 managed fishing areas and during the 2020 season only 16 boats operated in these areas. The Pilbara catch is often below the tolerance range, and the Gascoyne Coast / West Coast Bioregions catch have been below the tolerance range for almost all years since 2006

(Ref. 17). The total catch of the Fishery in 2020–2021 was 246–430 t. Fishing effort reported during 2012–2021 is shown in Figure 4-11.

The Pilbara Line Fishery (line fishing methods) operates on an exemption basis which restricts vessels to operating within a nominated 5-month block period each year (typically May–September). The Pilbara Line Managed Fishery catch is made up around 45–50 different fish species. The main species targeted by the fisheries are Bluespotted Emperor (*Lethrinus punctulatus*), Red Emperor (*Lutjanus sebae*) and Rankin Cod (*Epinephelus multinotatus*), as well as some deeper offshore species such as Ruby Snapper and Eightbar Grouper. The total catch of the Fishery in 2021–2022 was 192 t, increasing ~15% on the total catch of the previous year (Ref. 18). Fishing effort reported during 2012–2021 is shown in Figure 4-12.

The Pilbara Trap Fishery (trap methods) is managed through area closures and effort allocations (Ref. 17). The main species targeted by the Pilbara Trap Managed Fishery are Bluespotted Emperor (*Lethrinus punctulatus*), Red Emperor (*Lutjanus sebae*) and Rankin Cod (*Epinephelus multinotatus*). The total catch of the Fishery in 2021–2022 was 662 t (Ref. 18). Fishing effort reported during 2012–2021 is shown in Figure 4-13.

The West Coast Deep Sea Crustacean Managed Fishery is a pot fishery using baited pots operated in a long-line formation in shelf edge waters (>150 m) of the West Coast and Gascoyne Bioregions. The fishery, which primarily targets Crystal (snow) (*Chaceon albus*), Champagne (spiny) (*Hypothalassia acerba*) and Giant (king) (*Pseudocarcinus gigas*) crabs, is primarily managed using a total allowable catch (Ref. 18).

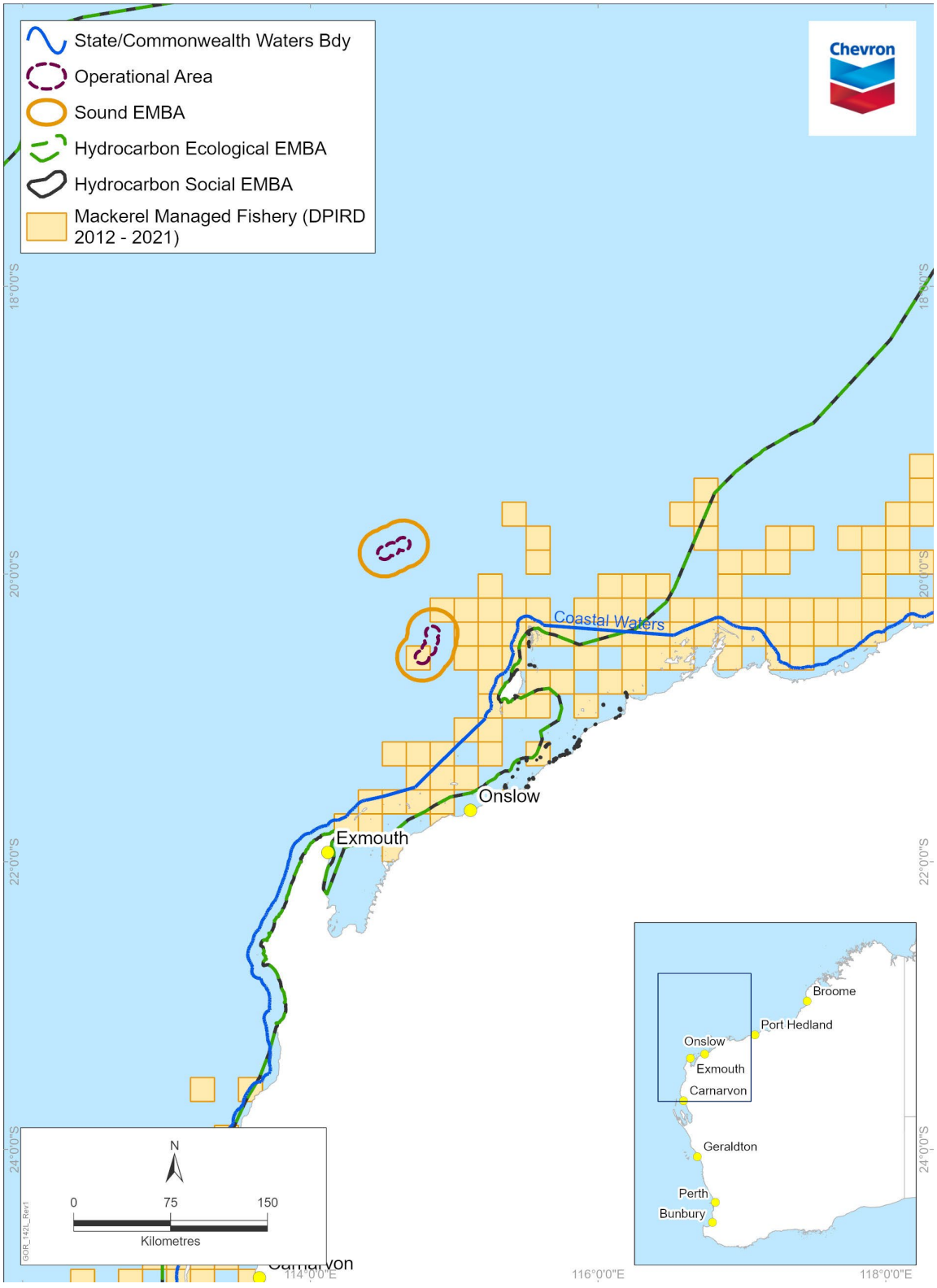


Figure 4-11: Recorded fishing effort (2012–2021) for the Mackerel Managed Fishery within the vicinity of the EMBA

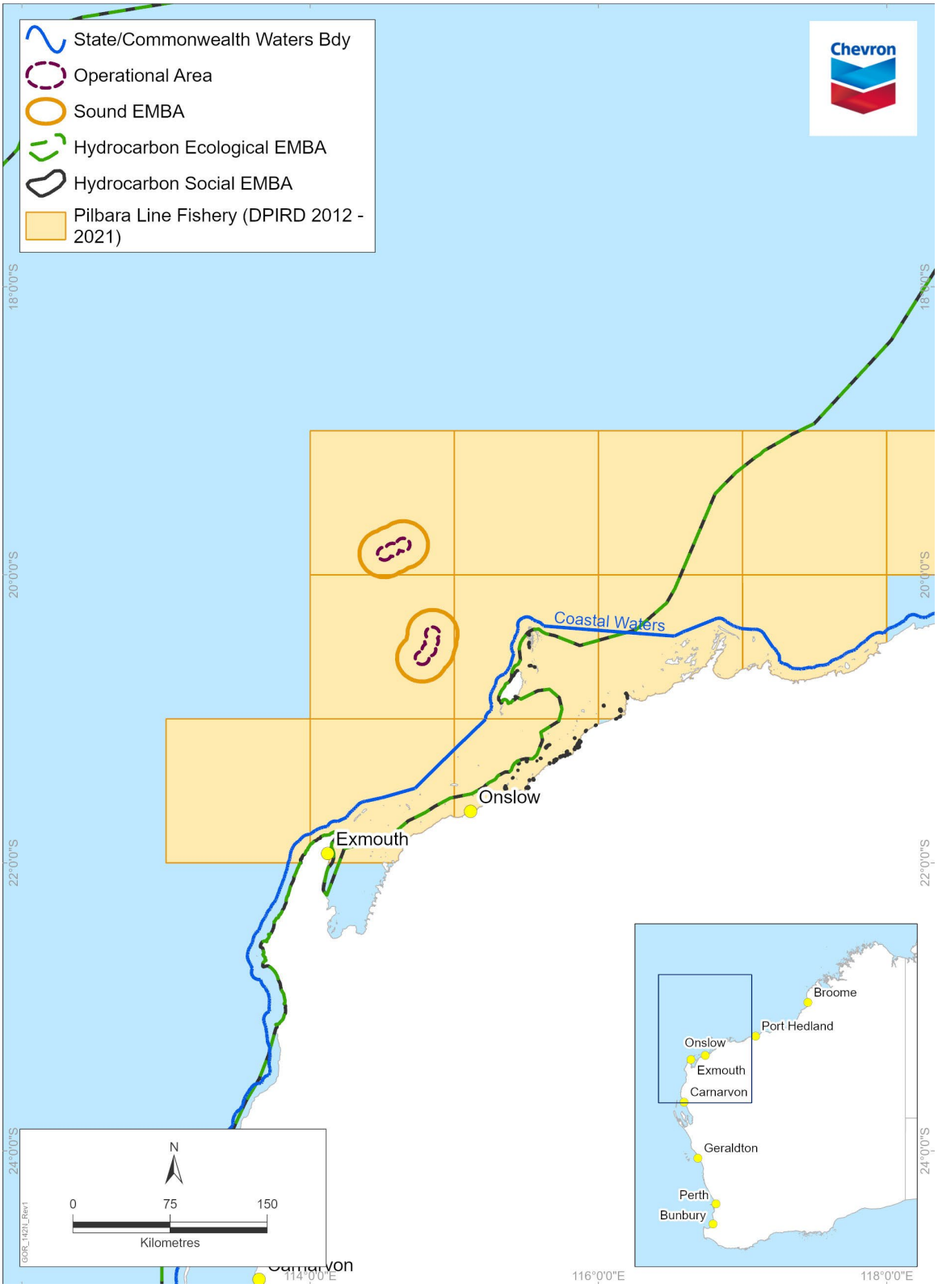


Figure 4-12: Recorded fishing effort (2012–2021) for the Pilbara Line Fishery within the vicinity of the EMBA

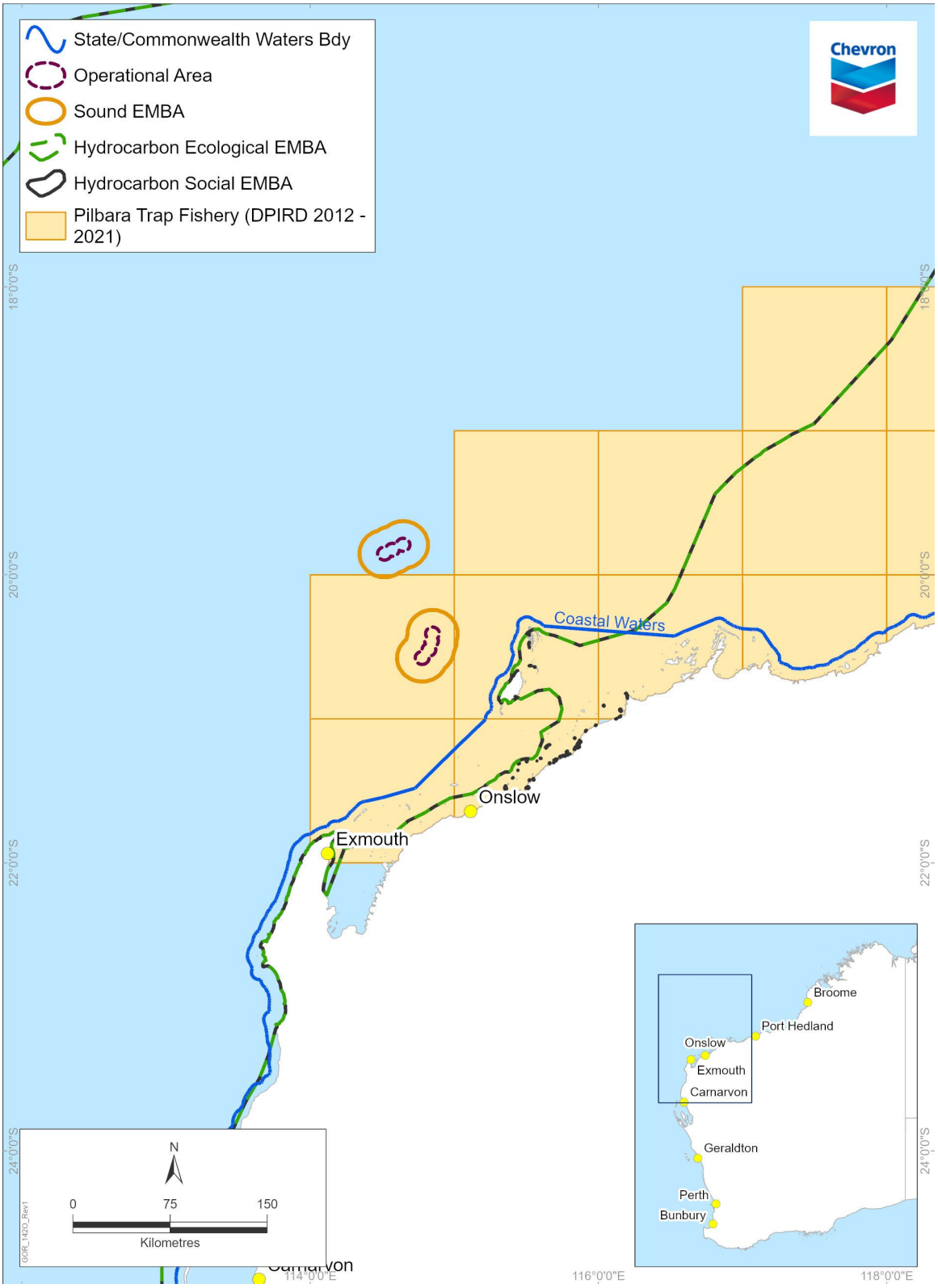


Figure 4-13: Recorded fishing effort (2012–2021) for the Pilbara Trap Managed Fishery within the vicinity of the EMBA

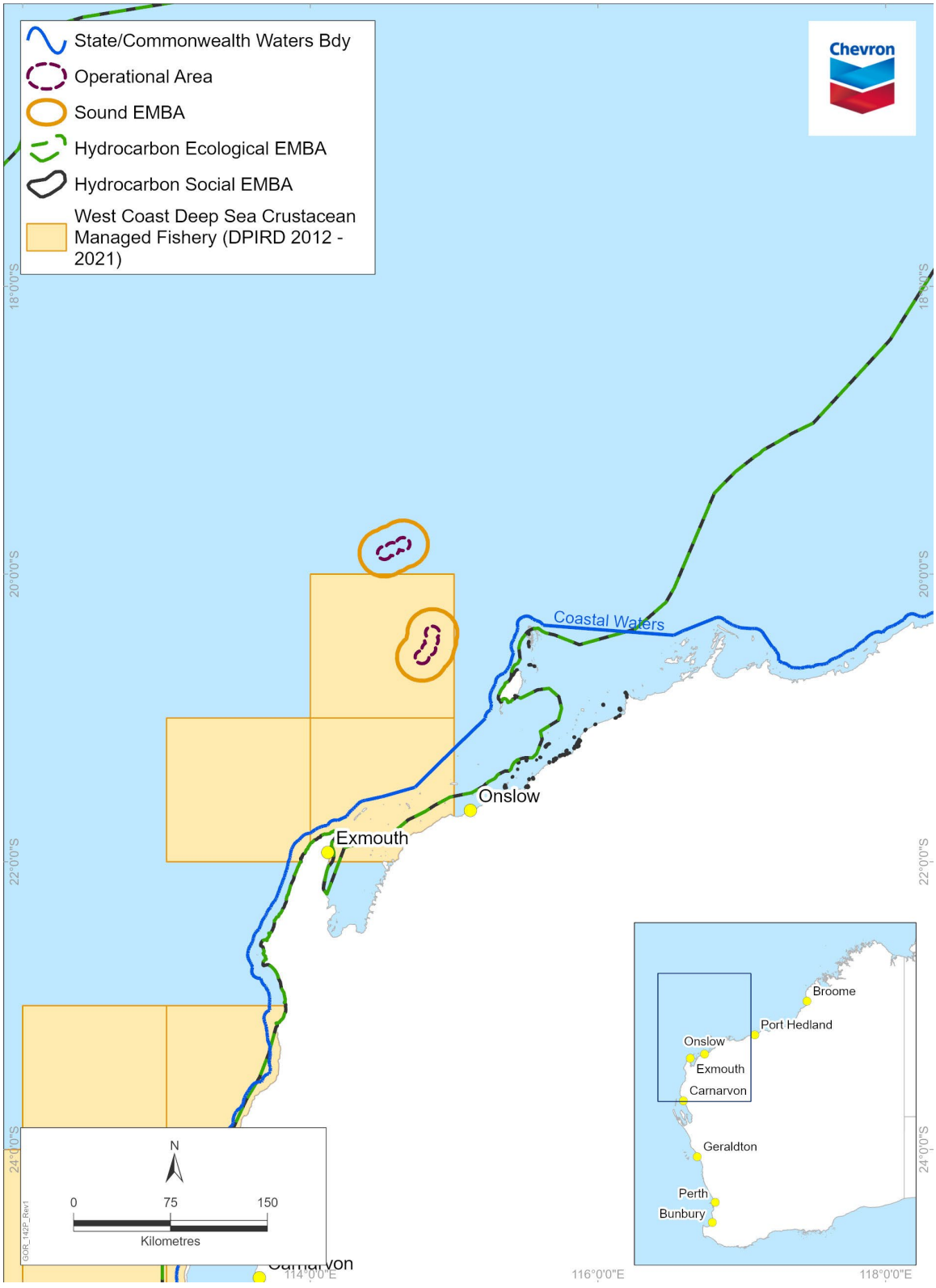


Figure 4-14: Recorded fishing effort (2012–2021) for the West Coast Deep Sea Crustacean Managed Fishery within the vicinity of the EMBA

4.4.1.3 Pearling and aquaculture

Pearling and aquaculture operations in the north-west are typically restricted to inland and shallow coastal waters.

The OAs and Sound EMBAs occur offshore and do not have any interface with the coast or shallow coastal waters, and therefore there is no overlap with any known licensed aquaculture or pearling operations.

The Hydrocarbon EMBAs do interface with the coast, specifically the west coast of Barrow Island, the Montebello Islands, some Pilbara islands and some coastal areas between the Cape Range National Park coast and Coral Bay (Figure 4-1). There are known pearl farm leases in nearshore waters around Montebello Island and 2 licensed aquaculture sites north-east of Thevenard Island which intersect with the Hydrocarbon EMBAs. In addition, 5 aquaculture site applications exist in the Bay of Rest within the Exmouth Gulf, at the southern extent of the Hydrocarbon Ecological EMBA (Ref. 344).

4.4.2 Recreational fisheries

Recreational fishing is one of the most popular activities in WA with an estimated third of the population fishing recreationally (Ref. 250). The WA Department of Primary Industries and Regional Development (DPIRD) conducts statewide recreational fishing surveys every 2 years, with the first survey completed in 2011. The survey collects information from more than 3,000 recreational fishers who record their catches in logbooks over a 12-month period with DPIRD also conducting interviews throughout the State and monitoring the number of boat launches and retrievals using cameras at various boat ramps.

The 2020–2021 survey report (Ref. 251) identified that most boat-based recreational fishing effort occurred in nearshore habitat (46% and 54% for North Coast and Gascoyne Coast respectively), followed by inshore demersal habitats (32% and 39% for North Coast and Gascoyne Coast respectively). Most fishing effort was attributed to line fishing (87% and 91% for North Coast and Gascoyne Coast respectively).

Tour operator fishing efforts recorded over a 10-year period (2012–2021) (Ref. 266) identified no operations within the OAs. There were <3 vessels operated within the Sound EMBA; however, fishing efforts have been reported in 2016 and 2021 during September and October only.

Some shore-based fishing may occur within the Hydrocarbon EMBAs (Section 4.3.6.1).

4.4.3 Traditional fisheries

Customary fishing applies to person who has a traditional connection with the area being fished, and is fishing for personal, domestic, ceremonial, educational or non-commercial needs (Ref. 252). A Customary Fishing Policy has been incorporated into the *Fish Resources Management Act 1994* (WA), which allows for customary fishing by applicable persons to occur within a sustainable fisheries management framework. Customary fishing does not apply to other species of marine fauna (e.g. crocodile, turtle, or Dugong).

Under amendments made in 2012 to the *Conservation and Land Management Act 1984* (WA) Aboriginal people can undertake customary activities which includes hunting (except in marine sanctuary zones or marine nature reserves) for Dugong, turtle, or crocodiles in WA.

As described in Section 4.3.6, ongoing use of marine and coastal resources, including customary fishing, is expected to occur in NWMR and adjacent coastal waters. However, it is expected that much of this activity will occur within shallow coastal waters and therefore would not intersect with the OAs, Sound EMBAs Where shore-based or nearshore fishing is undertaken, this may intersect with the Hydrocarbon EMBA.

None of the OAs or EMBAs intersect with the MoU Box that allows for traditional Indonesian fishers within Australian waters. The MoU Box is managed via a bilateral agreement between Australian and Indonesian governments.

4.4.4 Commercial shipping

AMSA collects vessel traffic data from various sources, including satellite shipborne automated identification system (AIS) data, across Australia's Search and Rescue region. This data has been used to develop Figure 4-15, which shows recent vessel traffic (February 2023) within the vicinity of the OAs.

The Gorgon OA is south of the nearest North West Shelf shipping fairways, while the Jansz OA is to the north-east (Figure 4-15).

Commercial vessels transiting the North West Shelf are expected to remain within the fairways and therefore will not typically coincide with the OAs. Vessel traffic within and around the OAs is most likely to comprise offshore support vessels for the petroleum activity.

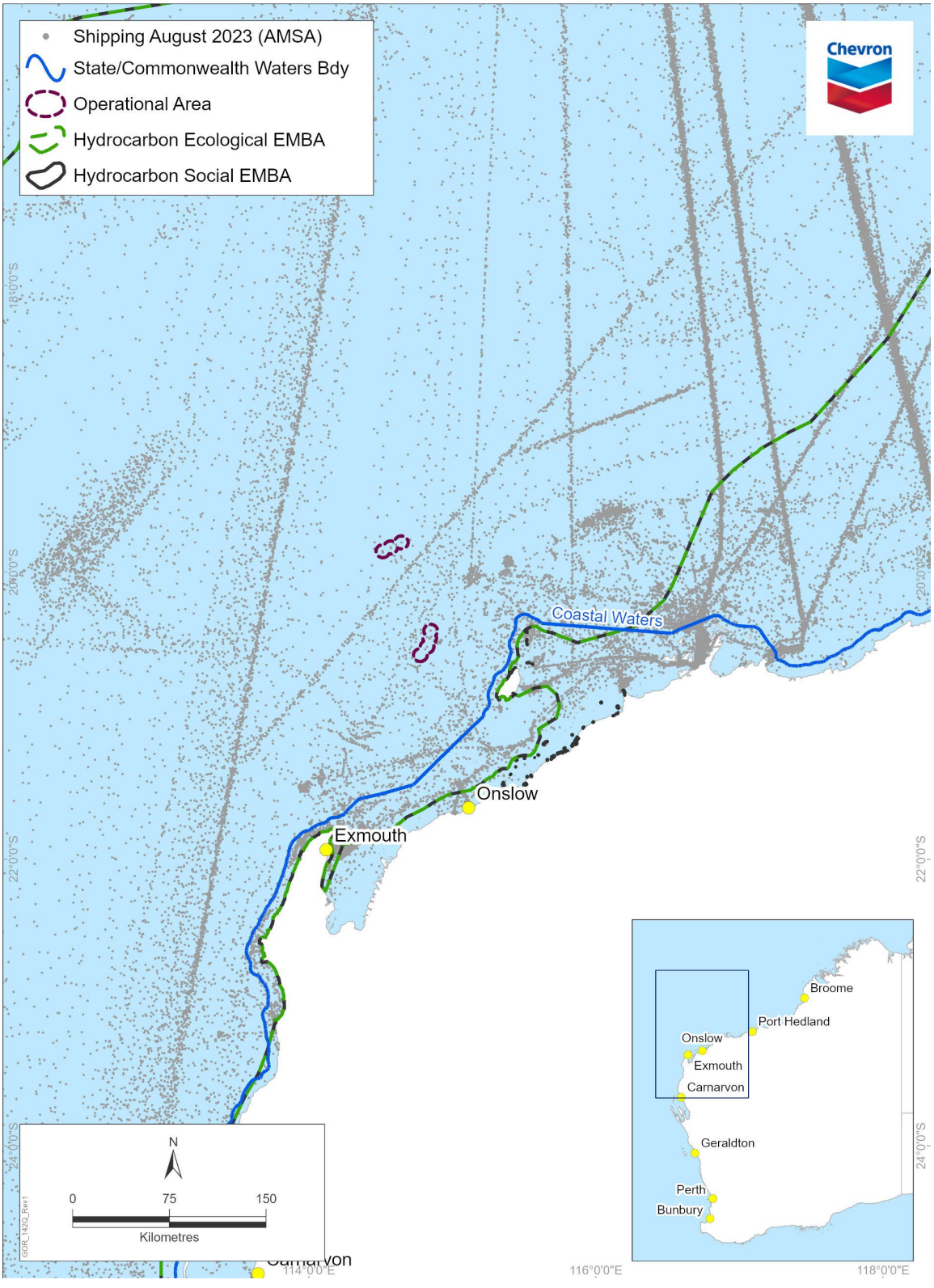


Figure 4-15: Vessel traffic within the vicinity of the EMBA

4.4.5 Tourism and recreation

Tourism is an important industry for WA, directly employing 56,300 people and indirectly employing a further 22,100 (Ref. 1). Charter fishing, diving, snorkelling, wildlife watching, and cruising are some of the commercial tourism activities in and adjacent to the NWMR (Ref. 60). Most marine tourism and recreational activities (except offshore fishing; Section 4.4.2) occur in the shallower State waters (Ref. 60).

The OAs occur offshore and do not have any interface with nearshore waters or the coast, and as such there is not expected to be any tourism and recreational activities within the OAs. The Hydrocarbon EMBAs do interface with the coast, and includes Barrow Island, the Montebello Islands, some Pilbara islands and some coastal areas between Exmouth and Coral Bay (Figure 4-1). As described in Section 4.3.6.1, tourism and recreational activities may occur around the Montebello Islands, Pilbara islands and some coastal areas between Exmouth and Coral Bay.

The Gascoyne and Pilbara regions are popular visitor destinations for both Australian and international tourists. The main marine nature-based tourist activities within the Gascoyne Region are concentrated around and within the Ningaloo Coast World Heritage property (~115 km south-west of the Gorgon OA; Section 4.6). Activities undertaken include recreational fishing, snorkelling and scuba diving, wildlife watching and encounters (including Whale Sharks, Manta Rays, Humpback Whales and turtles) (Ref. 253), as well as beach access, surfing and paddling sports. Recreational fishing within the Pilbara region tends to be concentrated in State waters adjacent to population centres. Charter vessels may also frequent the waters surrounding the Montebello Islands (Ref. 233).

4.4.6 Other marine and coastal industries

Several other marine and coastal industries may be present within the EMBA (Table 4-18). There were no offshore renewable energy facilities, salt mines, or onshore processing facilities identified within the EMBA.

Table 4-18: Presence of industries

Industry	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Petroleum exploration and production	✓	✓	✓	✓	✓
Ports (e.g. Port of Ashburton)					✓
Defence					✓
Submarine cable (Darwin–Jakarta–Singapore Cable)					✓

The Northern Carnarvon Basin is one of the most heavily explored and developed petroleum basins in Australia. The Northern Carnarvon, Browse and Bonaparte basins together comprise most of Australia's natural gas reserves (Ref. 222). The Carnarvon Basin supports >95% of WA's oil and gas production, and accounts for ~63% of Australia's total production of crude oil, condensate, and natural gas (Ref. 222).

The drilling activities will be within WA-36-L, WA-37-L and WA-39-L petroleum titles, that also include ongoing operational activities associated with the Gorgon

Project. Infrastructure from the Gorgon Project located in these petroleum title includes wells, trees, manifolds, flowlines, and umbilicals. With the exception of standard subsurface operations, no other petroleum activities have been identified within the OAs.

The Royal Australian Air Force has a base at Learmonth, and there is a designated maritime firing practices and exercise area associated with this base (Ref. 254). There are no known sites of unexploded ordnance within the OAs (Ref. 255). The Navy has 3 communication stations on the North West Cape peninsula. The Harold E Holt Area A is at the tip of the North West Cape, and includes a very low-frequency radio, towers and associated infrastructure, the Point Murat Navy Pier and the waters extending 400 m around the pier (Ref. 274).

Submarine telecommunications cables are underwater infrastructure linking Australia with other countries; the submarine communications cables carry the bulk of Australia's international voice and data traffic. Only one submarine cable intersects with the EMBA, the Darwin–Jakarta–Singapore Cable (Table 4-18), with landing port in Port Hedland.

Under Part 2 of the *Telecommunications Act 1997* (Cth), the Australian Communications and Media Authority can declare protection zones covering the cables to prohibit and/or restrict activities that may damage them. The protection zones are generally the area within 1.85 km (1 nm) either side of the cable and include both the waters and seabed within the area. No protection zone has been declared to the Darwin–Jakarta–Singapore Cable.

4.5 Qualities and characteristics of locations, places, and areas

The qualities and characteristics of the protected places present within the EMBA are described in the following sections.

4.5.1 Australian Marine Parks

Marine parks help conserve marine habitats and the marine species that live within and rely on these habitats. Marine parks also provide places for people to watch wildlife, dive, and go boating, snorkelling, or fishing (Ref. 256).

The North-west Marine Parks Network Management Plan (Ref. 256) defines the following types of values for the marine parks in the North-west Network:

- natural values—habitats, species and ecological communities, and the processes that support their connectivity, productivity and function
- cultural values—living and cultural heritage recognising Indigenous beliefs, practices and obligations for country, places of cultural significance and cultural heritage sites
- heritage values—non-Indigenous heritage that has aesthetic, historic, scientific or social significance
- socioeconomic values—the benefits for people, businesses and/or the economy.

The objectives of the North-west Marine Parks Network Management Plan (Ref. 256) are to provide for:

- the protection and conservation of biodiversity and other natural, cultural and heritage values of marine parks in the North-west Network

- ecologically sustainable use and enjoyment of the natural resources within marine parks in the North-west Network, where this is consistent with objective (a).

Australian Marine Parks (AMPs) occur within Commonwealth waters and have been proclaimed under the EPBC Act in 2007 and 2013. The presence of AMPs within the EMBA, and a summary of values, is described in Table 4-19. No AMPs overlap with either the Gorgon or Jansz OAs or Sound EMBAs.

Table 4-19: Presence of AMPs

Australian Marine Park^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Argo-Rowley Terrace (Multiple use zone [IUCN VI])] Special Purpose Zone (Trawl) [IUCN VI], National Park Zone [IUCN II])					✓
The Argo-Rowley Terrace Marine Park is ~270 km north-west of Broome, WA, and extends to the limit of Australia's exclusive economic zone. The Marine Park is adjacent to the Mermaid Reef Marine Park and the Western Australian Rowley Shoals Marine Park. The Marine Park covers an area of 146,003 km^2 and water depths range from 220–6,000 m. **Natural Values** The Marine Park includes habitats, species and ecological communities associated with: • the Northwest Transition – an area of shelf break, continental slope and most of the Argo Abyssal Plain. Key topographic features include Mermaid, Clerke and Imperieuse Reefs which collectively are a biodiversity hotspot • Timor Province – an area dominated by warm, nutrient-poor waters. Canyons are an important feature of the Marine Park and are generally associated with high productivity and aggregations of marine life The Marine Park supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. Biologically important areas within the Marine Park include resting and breeding habitat for seabirds and a migratory pathway for the Pygmy Blue Whale. **Cultural Values** Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. At the commencement of this plan, there is limited information about the cultural significance of this Marine Park **Heritage Values** No World, Commonwealth or National Heritage listings apply to the Marine Park. *Historic Shipwrecks* The Marine Park contains 2 known shipwrecks listed under the *Historic Shipwrecks Act 1976*: *Alfred* (wrecked in 1908) and *Pelsart* (wrecked in 1908). **Social and economic values** Commercial fishing and mining are important activities in the Marine Park. These activities contribute to the wellbeing of regional communities and the prosperity of the nation.					
Carnarvon Canyon (Habitat Protection Zone [IUCN IV])					✓
The Carnarvon Canyon Marine Park is ~300 km north-west of Carnarvon. It covers an area of 6,177 km^2 and a water depth range of 1,500–6,000 m. **Natural Values** The Marine Park includes examples of ecosystems representative of: • the Central Western Transition – a bioregion characterised by: – large areas of continental slope, – a range of topographic features such as terraces, rises and canyons, – seasonal and sporadic upwelling					

Australian Marine Park^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
• benthic slope communities comprising tropical and temperate species • deepwater ecosystems associated with the Carnarvon Canyon. The Marine Park lies within a transition zone between tropical and temperate species and is an aera of high biotic productivity. **Cultural Values** Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. At the commencement of this plan, there is limited information about the cultural significance of this Marine Park **Heritage Values** No World, Commonwealth or National Heritage listings apply to the Marine Park. **Social and economic values** Commercial fishing is an important activity in the Marine Park. These activities contribute to the wellbeing of regional communities and the prosperity of the nation.					
Gascoyne (Multiple use zone [IUCN VI])] Habitat Protection Zone [IUCN IV], National Park Zone [IUCN II])					✓
The Gascoyne Marine Park is located ~20 km off the west coast of the Cape Range Peninsula, adjacent to the Ningaloo Reef Marine Park and the Western Australian Ningaloo Marine Park, and extends to the limit of Australia's EEZ. The Marine Park covers an area of 81,766 km² and water depths between 15 m and 6,000 m. **Natural values** The Marine Park includes examples of ecosystems representative of: • Central Western Shelf Transition—continental shelf with water depths up to 100 m, and a significant transition zone between tropical and temperate species • Central Western Transition—characterised by large areas of continental slope; a range of topographic features such as terraces, rises, and canyons; seasonal and sporadic upwelling; and benthic slope communities comprising tropical and temperate species • Northwest Province—an area of continental slope comprising diverse and endemic fish communities. The marine park includes four KEFs characterised by seasonal and sporadic upwelling, nutrient-rich water and aggregations of marine life and high diversity of demersal fish assemblages. The Marine Park supports a range of species including species listed as threatened, migratory, marine, or cetacean under the EPBC Act. BIAs within the Marine Park include breeding habitat for seabirds; internesting habitat for marine turtles; a migratory pathway for Humpback Whales; and foraging habitat and migratory pathway for Pygmy Blue Whales. **Cultural values** Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. The Baiyungu, Thalanyji and Yinikurtura People have responsibilities for Sea Country in the marine park. **Heritage values** No World, Commonwealth or National Heritage listings apply to the Marine Park; however, the Marine Park is adjacent to the Ningaloo Coast World, Commonwealth and National Heritage areas. **Social and economic values** Commercial fishing, mining and recreation are important activities in the Marine Park. These activities contribute to the wellbeing of regional communities and the prosperity of the nation.					
Montebello (Multiple use zone [IUCN VI])]					✓
The Montebello Marine Park is located offshore of Barrow Island and 80 km west of Dampier extending from the WA state waters boundary, and is adjacent to the Barrow Island and Montebello Islands Marine Parks. The Marine Park covers an area of 3,413 km² and water depths from <15–150 m.					

Australian Marine Park^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Natural values The Marine Park includes examples of ecosystems representative of the Northwest Shelf Province—a dynamic environment influenced by strong tides, cyclonic storms, long-period swells, and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline. The ancient coastline at the 125 m depth contour KEF intersects the north-west boundary of the park, thought to be an important sea floor feature and migratory pathway for Humpback Whales (Section 4.3.7.1). The Marine Park supports a range of species including species listed as threatened, migratory, marine, or cetacean under the EPBC Act. BIAs within the Marine Park include breeding habitat for seabirds; internesting, foraging, mating, and nesting habitat for marine turtles; a migratory pathway for Humpback Whales; and foraging habitat for Whale Sharks. **Cultural values** Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. At the commencement of this plan, there is limited information about the cultural significance of this Marine Park. **Heritage values** No international, Commonwealth or National Heritage listings apply to the Marine Park; however, the Marine Park is adjacent to the WA Barrow Island and the Montebello– Barrow Island Marine Conservation Reserves which have been nominated for National Heritage listing. **Social and economic values** Tourism, commercial fishing, mining and recreation are important activities in the Marine Park. These activities contribute to the wellbeing of regional communities and the prosperity of the nation.					
Ningaloo (Commonwealth waters) (Recreational Use Zone [IUCN IV], National Park Zone [IUCN II])					✓
The Ningaloo Marine Park (Commonwealth waters) stretches ~300 km along the west coast of the Cape Range Peninsula, and is adjacent to the WA Ningaloo Marine Park and Gascoyne Marine Park. The Marine Park covers an area of 2,435 km^2 and a water depth range of 30 to >500 m. **Natural values** The Marine Park includes examples of ecosystems representative of: • Central Western Shelf Transition—continental shelf of water depths up to 100 m, and a significant transition zone between tropical and temperate species • Central Western Transition—characterised by large areas of continental slope; a range of topographic features such as terraces, rises, and canyons; seasonal and sporadic upwelling; and benthic slope communities comprising tropical and temperate species • Northwest Province—an area of continental slope comprising diverse and endemic fish communities • Northwest Shelf Province—a dynamic environment, influenced by strong tides, cyclonic storms, long-period swells, and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important sea floor feature and migratory pathway for Humpback Whales. Key ecological features of the Marine Park are: • Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula—an area resulting in upwelling of nutrient-rich water and aggregations of marine life • Commonwealth waters adjacent to Ningaloo Reef—an area where the Leeuwin and Ningaloo currents interact, resulting in enhanced productivity and aggregations of marine life • Continental slope demersal fish communities—an area of high diversity among demersal fish assemblages on the continental slope. • Ecosystems represented in the Marine Park are influenced by interaction of the Leeuwin Current, Leeuwin Undercurrent, and the Ningaloo Current. The Marine Park supports a range of species including species listed as threatened, migratory, marine, or cetacean under the EPBC Act. Biologically important areas within the Marine Park include breeding and or foraging habitat for seabirds; internesting habitat for marine turtles; a migratory pathway for Humpback Whales; foraging habitat and migratory pathway for Pygmy Blue Whales; breeding, calving, foraging, and nursing habitat for Dugong; and foraging habitat for Whale Sharks.					

Australian Marine Park^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Cultural values Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. The Gnulli people have responsibilities for Sea Country in the Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region. **Heritage values** ***World Heritage*** The Marine Park is within the Ningaloo Coast World Heritage property, recognised for its outstanding universal heritage values, meeting World Heritage listing Criteria vii and x. In addition to the Marine Park, the World Heritage area includes the WA Ningaloo Marine Park, the Muiron Islands, the Cape Range National Park and other terrestrial areas. The area is valued for high terrestrial species endemism, marine species diversity and abundance, and the interconnectedness of large-scale marine, coastal and terrestrial environments. The area connects the limestone karst system and fossil reefs of the ancient Cape Range to the nearshore reef system of Ningaloo Reef, to the continental slope and shelf in Commonwealth waters. ***National Heritage*** The Ningaloo Coast overlaps the Marine Park and was established on the National Heritage List in 2010, meeting the National Heritage listing criteria A, B, C, D, and F. ***Commonwealth Heritage*** The Ningaloo Marine Area (Commonwealth waters) was established on the Commonwealth Heritage List in 2004, meeting Commonwealth Heritage listing criteria A, B and C. The Ningaloo Marine Area overlaps the Marine Park. *Historic shipwrecks* The Marine Park contains more than 15 known shipwrecks listed under the *Historic Shipwrecks Act 1976*. **Social and economic values** Tourism and recreation, including fishing, are important activities in the Marine Park. These activities contribute to the wellbeing of regional communities and the prosperity of the nation.					
Shark Bay (Multiple use zone [IUCN VI])]					✓
The Shark Bay Marine Park is ~60 km offshore Carnarvon, adjacent to the Shark Bay World Heritage Property and National Heritage place. The Marine Park covers an area of 7,443 km^2, extending from the WA state boundary, and a water depth range between 15 and 220 m. **Natural values** The Marine Park includes examples of ecosystems representative of: • Central Western Shelf—a predominantly flat, sandy and low-nutrient area, in water depths 50–100 m. The bioregion is a transitional zone between tropical and temperate species • Central Western Transition—characterised by large areas of continental slope, a range of topographic features such as terraces, rises and canyons, seasonal and sporadic upwelling, and benthic slope communities comprising tropical and temperate species. Ecosystems represented in the Marine Park are influenced by the Leeuwin, Ningaloo and Capes currents. The Marine Park supports a range of species including species listed as threatened, migratory, marine or cetacean under the EPBC Act. Biologically important areas within the Marine Park include breeding habitat for seabirds, internesting habitat for marine turtles, and a migratory pathway for Humpback Whales. The Marine Park and adjacent coastal areas are also important for shallow-water snapper. **Cultural values** Sea Country is valued for Indigenous cultural identity, health and wellbeing. Across Australia, Indigenous people have been sustainably using and managing their Sea Country for tens of thousands of years. The Gnulli and Malgana people have responsibilities for Sea Country in the Marine Park. The Yamatji Marlpa Aboriginal Corporation is the Native Title Representative Body for the Yamatji region. **Heritage values** No international, Commonwealth or National Heritage listings apply to the Marine Park; however, the Marine Park is adjacent to the Shark Bay, World Heritage Area and Shark Bay, Western Australia National Heritage Place.					

Australian Marine Park^	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Historic shipwrecks The Marine Park contains ~20 known shipwrecks listed under the *Historic Shipwrecks Act* 1976. **Social and economic values** Tourism, commercial fishing, mining and recreation, including fishing, are important activities in the Marine Park. These activities contribute to the wellbeing of regional communities and the prosperity of the nation.					

^*Source: Ref. 256.*

4.5.2 State marine protected areas

State marine parks, management areas, and reserves are proclaimed under the *Conservation and Land Management Act 1984* (WA) (CALM Act), are located in State waters and are vested in the WA Conservation and Parks Commission.

There are no state marine parks, management areas or reserves within either the Gorgon or Jansz OAs or Sound EMBAs. The presence of marine parks, management areas and reserves within the EMBA is presented in Table 4-20.

Table 4-20: Presence of state marine parks, management areas and reserves

State marine protected areas	Zone type (IUCN category)	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Barrow Island – Marine Management Area	Unassigned (IUCN VI)					✓
Barrow Island – Marine Park	Unassigned (IUCN IA)					✓
Great Sandy Island – Nature Reserve	Unassigned (IUCN IA)					✓
Montebello Islands – Marine Park	General Use Zone (IUCN II)					✓
	Sanctuary zone (IUCN IA)					✓
	Special Purpose Zone – Pearling (IUCN VI)					✓
	Recreation Zone (IUCN II)					✓
	Sanctuary Zone (IUCN IA)					✓
	Unassigned (IUCN II)					✓
	Special Purpose Zone (Benthic Protection) (IUCN IV)					✓
Montebello Islands – Conservation Park	Unassigned (IUCN II)					✓
Muiron Islands – Marine Management Area	Conservation Area (IUCN IA)					✓
	Marine Management Area (MMA) (Unclassified) (IUCN VI)					✓
Ningaloo – Marine Park	Sanctuary Zone (IUCN IA)					✓
	General Use (IUCN II)					✓

State marine protected areas	Zone type (IUCN category)	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
	Recreation Area (IUCN II)					✓
	Special Purpose Zone (Shore-based Activities) (IUCN II)					✓
	Special Purpose Zone (Benthic Protection) (IUCN IV)					✓
	Unassigned (IUCN II)					✓
Thevenard Island – Nature Reserve	Unassigned (IUCN IA)					✓
Shark Bay – Marine Park	General Use Zone (IUCN II)					✓
	Sanctuary Zone (IUCN IA)					✓

4.5.3 State terrestrial protected areas

Terrestrial protected areas, proclaimed under the CALM Act, are on State lands and are vested in the WA Conservation and Parks Commission.

The Gorgon and Jansz OAs and Sound EMBAs occur offshore and do not have any interface with nearshore waters or the coast, and as such there is not expected to be any tourism and recreational activities within the OAs or Sound EMBAs. The Hydrocarbon EMBAs do interface with the coast, specifically the west coast of Barrow Island, the Montebello Islands, some Pilbara islands and some coastal areas between the Cape Range National Park coast and Coral Bay (Figure 4-1). The State terrestrial protected areas that intersect with the Hydrocarbon EMBAs are shown in Table 4-21.

Table 4-21: Presence of state terrestrial protected areas

Lands protected areas	Zone type (IUCN category)	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Barrow Island Nature Reserve*	Strict Nature Reserve (IUCN Ia)					✓
Boodie, Double Middle Islands Nature Reserve*	Nature Reserve (IUCN Ia)					✓
Montebello Islands Conservation Park^	Conservation Park (IUCN II)					✓
Nyinggulu National Park^	National Park (IUCN II)					✓
Pilbara Islands*^	Nature Reserve (IUCN Ia)					✓

** Protected area is landward of LWM.*

^ Protected area is landward of HWM.

4.6 Heritage value of places

Listed World Heritage properties, and National Heritage places, are MNES under the EPBC Act, and a particular value and sensitivity under the OPGGS(E)R. Table

4-22 identifies the presence of these, and other marine or coastal heritage protected places, within the Hydrocarbon EMBAs.

Table 4-22: Presence of heritage value

Feature	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
World Heritage property					
Ningaloo Coast					✓
Shark Bay					✓
National Heritage place					
Ningaloo Coast					✓
Shark Bay					✓
Commonwealth Heritage place					
N/A	(none identified within EMBA)				
Indigenous Protected Areas					
N/A	(none identified within EMBA)				
Sites or artefacts protected under the *Underwater Cultural Heritage Act 2018* (Cth)					
Historic shipwrecks (>75 years old)					✓
Shipwrecks					✓
Sunken aircraft	(none identified within EMBA)				
In situ artefacts	(none identified within EMBA)				
Sites or artefacts protected under the *Aboriginal Cultural Heritage Act 2021* (WA)[16]					
28 Mile Creek North 1 (artefacts / scatter, midden / scatter)					✓
28 Mile Creek North 2 (artefacts / scatter, midden / scatter)					✓
Baler Bluff (artefacts / scatter, midden / scatter, shell)					✓
Barrow Island (artefacts / scatter)					✓
Barrow Island 3 (artefacts / scatter)					✓
Barrow Island 12 (artefacts / scatter)					✓
Bauboodjoo Point (Bruboodjoo Midden Site) (artefacts / scatter, midden / scatter, camp, hunting place)					✓
Bloodwood Creek Midden 1 (artefacts / scatter, midden / scatter)					✓
Bloodwood Creek Midden 2 (artefacts / scatter, midden / scatter)					✓
Bloodwood Creek Midden 3 (artefacts / scatter, midden / scatter)					✓

[16] *Only Aboriginal Heritage places, which has been assessed as meeting Section 5 of the Aboriginal Cultural Heritage Act 2021 (WA), with a potential coastal and/or marine interface that intersect with the geographic extent of the EMBA and/or areas of predicted shoreline loading have been included. This is considered a conservative approach, as the heritage sites within the Department of Planning, Lands and Heritage spatial dataset (Ref. 261) include a buffer around sites to protect privacy regarding the location. As such, the identified heritage sites may not be present within the EMBA.*

Feature	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Bloodwood Creek Shoreline (artefacts / scatter, midden / scatter)					✓
Camp 17 North Middens (artefacts / scatter, midden / scatter)					✓
Camp 17 South Middens (artefacts / scatter, midden / scatter)					✓
Camp Thirteen Burial (skeletal material / burial)					✓
Chabjuwardoo Bay (hunting place)					✓
Coastal Midden, 5 Mile (artefacts / scatter, midden / scatter)					✓
Coral Bay Skeleton (skeletal material / burial)					✓
Gnaraloo Bay (skeletal material / burial)					✓
Greyling Cliffs (hunting place)					✓
John Wayne Country Rock Shelter (Artefacts / Scatter, Rockshelter)					✓
Lake Side View (artefacts / scatter, midden / scatter)					✓
Lake Side Coastal Plain (artefacts / scatter, midden / scatter)					✓
Low Point Midden (artefacts / scatter, midden / scatter)					✓
Mandu Mandu Ck Rockshelters (artefacts / scatter)					✓
Mandu Mandu Creek North (artefacts / scatter, midden / scatter)					✓
Mandu Mandu Creek South (artefacts / scatter, midden / scatter)					✓
Mangrove Bay. (artefacts / scatter, midden / scatter, skeletal material / burial, hunting place)					✓
Maud Landing. (skeletal material / burial, camp, meeting place, water source)					✓
Mesa Camp (artefacts / scatter, midden / scatter)					✓
Milyering Midden (artefacts / scatter, midden / scatter)					✓
Milyering Rocks (hunting place)					✓
Mulanda 1 (artefacts / scatter, midden / scatter)					✓
Mulanda 2 (artefacts / scatter, midden / scatter)					✓
Mulanda 3 (artefacts / scatter, midden / scatter)					✓
Mulanda 4 (midden / scatter)					✓
Ningaloo (near) (painting)					✓
Ningaloo Station (skeletal material / burial)					✓
North T-Bone Bay (artefacts / scatter, midden / scatter)					✓
Osprey Bay 1 (artefacts / scatter, midden / scatter)					✓
Osprey Bay 2 (artefacts / scatter, midden / scatter)					✓
Osprey Bay 3 (artefacts / scatter, midden / scatter)					✓

Feature	Gorgon OA	Jansz OA	Gorgon Sound EMBA	Jansz Sound EMBA	Hydrocarbon Ecological and Social EMBA
Osprey Bay 4 (artefacts / scatter, midden / scatter)					✓
Osprey Bay 5 (artefacts / scatter, midden / scatter)					✓
Osprey Bay 6 (artefacts / scatter, midden / scatter)					✓
Osprey Bay Interdunal 1 (artefacts / scatter, midden / scatter)					✓
Oyster Stacks Midden (artefacts / scatter, midden / scatter)					✓
Pilgramunna Bay Midden (artefacts / scatter, midden / scatter)					✓
Point Murat 01 (artefacts / scatter, midden / scatter)					✓
Point Murat 02 (artefacts / scatter, midden / scatter)					✓
Point Murat 03 (artefacts / scatter, midden / scatter)					✓
Point Murat. (artefacts / scatter, midden / scatter, skeletal material / burial, camp, other)					✓
Robe River (Jajiwurra) (artefacts / scatter, ceremonial, modified tree, mythological, camp, named place, other: sacred place)					✓
Sandy Bay North (artefacts / scatter, midden / scatter)					✓
Skeleton Bay (skeletal material / burial)					✓
Tantabiddi Midden 1 (null)					✓
Thevenard Island (midden / scatter)					✓
Tulki Well Midden (artefacts / scatter, midden / scatter)					✓
Twin Hill Fishing Place. (hunting place)					✓
Vlamingh Head (ceremonial, mythological)					✓
Warnangura (Cape Range) Cultural Precinct (artefacts / scatter, ceremonial, engraving, midden / scatter, mythological, rock shelter, named place, water source)					✓
Wealjugoo Midden. (artefacts / scatter, midden / scatter, camp, hunting place)					✓
Yardie Beach Midden (artefacts / scatter, midden / scatter)					✓
Yardie Creek (artefacts / scatter, midden / scatter)					✓
Yardie Creek South 1 (artefacts / scatter, midden / scatter)					✓
Determined areas under the *Native Title Act 1993* (Cth)					
Native Title determination WCD2019/016					✓
Native Title determination WCD2018/012					✓
Native Title determination WCD2018/006					✓
Claim areas under the *Native Title Act 1993* (Cth)					
Native Title	(none identified within EMBA)				

4.6.1 Ningaloo Coast

The Ningaloo Coast is located in WA adjacent to the East Indian Ocean. The area has a high level of terrestrial species endemism, and high marine species diversity and abundance (Ref. 257). The integration of the Ningaloo Reef and Exmouth Peninsula karst system as a cohesive limestone structure is at the heart of the natural heritage significance of the Ningaloo Coast (Ref. 258).

The marine portion of the World Heritage property contains a high diversity of habitats that includes lagoon, reef, open ocean, the continental slope, and the continental shelf (Ref. 257). Intertidal systems such as rocky shores, sandy beaches, estuaries, and mangroves are also present (Ref. 257). The most dominant marine habitat is Ningaloo Reef, which sustains both tropical and temperate marine fauna and flora, including marine reptiles and mammals (Ref. 257).

The main terrestrial feature of the Ningaloo Coast is the extensive karst system and network of underground caves and water courses of the Cape Range (Ref. 249). The karst system includes hundreds of separate features such as caves, dolines, and subterranean water bodies and supports a rich diversity of highly specialised subterranean species (Ref. 257). Above ground, the Cape Range Peninsula belongs to an arid ecoregion recognised for its high levels of species richness and endemism, particularly for birds and reptiles (Ref. 257).

In addition to the natural values of the Ningaloo Coast, Indigenous values are identified under the National Heritage listing (Ref. 258). Archaeological deposits in the rock shelters on Cape Range show First Nations people's sophisticated knowledge of marine resources between 35,000 and 17,000 years ago. The rock shelters are considered to provide the best evidence in Australia for the use of marine resources during the Pleistocene (Ref. 258).

4.6.2 Shark Bay

On the Indian Ocean coast at the most westerly point of Australia, Shark Bay's waters, islands and peninsulas covering an area of 2.2 million hectares (of which about 70% are marine waters) have a number of exceptional natural features, including one of the largest and most diverse seagrass beds in the world, stromatolites (colonies of microbial mats that form hard, dome-shaped deposits, which are said to be the oldest life forms on earth) and rich marine life including a large population of Dugongs (Ref: 339).

The Shark Bay World Heritage Property meets 4 of the 10 World Heritage criteria (Ref. 340), including:

- Criterion vii for superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance
- Criterion viii for representing outstanding examples of major stages of Earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features
- Criterion ix for representing outstanding examples of significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals

- Criterion x for containing the most important and significant natural habitats for in situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

4.6.3 Underwater cultural heritage

Australia's underwater cultural heritage is protected under the UCH Act; this legislation protects shipwrecks, sunken aircraft and other types of underwater heritage, including First Nations underwater cultural heritage in Australian waters[17].

Under section 15 of the UCH Act, underwater cultural heritage is defined as 'any trace of human existence that has a cultural, historical, or archaeological character, and is located under water'. The UCH Act protects physical sites and artefacts; intangible heritage values with no physical component are not protected under the Act (Ref. 300).

A desktop analysis was undertaken to determine the presence of underwater cultural heritage within the EMBA. This analysis included:

- searches of the online *Australasian Underwater Cultural Heritage Database* (Ref. 20) for known underwater cultural heritage
- consultation with First Nations people and/or representative bodies (relevant persons) for activities with a similar EMBA to identify presence of underwater cultural heritage artefacts.

Based on the database searches, both historic (>75 years old) shipwrecks and other shipwreck sites were identified in the EMBA (Table 4-22). No sunken aircraft, or other types or artefacts, were identified within the EMBA from the database searches.

The consultation undertaken when preparing this EP is summarised in Section 6. During consultation for activities with a similar EMBA, no specific First Nations underwater cultural heritage sites were identified.

4.6.4 Native Title

Native Title recognises the rights and interests of Aboriginal and Torres Strait Islander people in land and waters according to their traditional laws and customs, and is administered under the *Native Title Act 1993* (Cth).

4.6.4.1 Native Title WCD2019/016

A Native Title determination (WCD2019/016) extends over the Ningaloo Coast area. The Yinggarda, Baiyungu, and Thalanyji people received recognition as a Native Title holder over an area of 71,354 m^2. The determination area encompasses several pastoral leases, mining tenements, roads, and reserves, as well as portions of the Kennedy Range and Cape Range national parks, Ningaloo Marine Park, Lake MacLeod, and waters in the Exmouth Gulf and Ningaloo Marine Park (Ref. 259). The Yinggarda, Baiyungu and Thalanyji people have each maintained a physical presence in their respective part of the determination area and have a continuing physical or spiritual involvement in that area (Ref. 259).

[17] *The UCH Act applies to all Australian waters, including both State waters (coastal waters) and Commonwealth waters (extending from coastal waters to the edge of continental shelf).*

The determination area contains places of special significance, such as mythological and ceremonial sites and natural resources (Ref. 259)

The relevant Prescribed Bodies Corporate (PBC) are the Nganhurra Thanardi Garrbu Aboriginal Corporation (representing the Baiyungu and Thalanyji people) and the Yinggarda Aboriginal Corporation.

4.6.4.2 Native Title WCD2018/012

A Native Title determination (WCD2018/12) extends over the Shark Bay area and surrounding inland areas. The Malgana People received recognition as the Native Title Holders over the area on 4 December 2018. The determination area covers both land and Sea Country and encompasses pastoral leases, mining tenements, national and marine parks and reserves, as well as most of the Shark Bay World Heritage Area (Ref. 341)

The relevant PBC are the Malgana Aboriginal Corporation.

4.6.4.3 Native Title WCD2018/006

A Native Title determination (WCD2018/006) extends over the Mardie coast area. The Yaburara and Mardudhunera People received recognition as a Native Title holder over an area of 5,683 km^2. The determination area encompasses several pastoral leases, mining tenements, roads, reserves and unallocated Crown land.

The Yaburara and Mardudhunera People have maintained a physical presence in their respective part of the determination area and have a continuing physical or spiritual involvement in that area (Ref. 262). The determination area contains places of special significance, such as cultural, spiritual and ceremonial sites and natural resources.

The relevant PBC are the Wirrawandi Aboriginal Corporation.

5 Environmental impact and risk assessment methodology

This section describes the methods used to identify and evaluate the environmental impacts and risks associated with the petroleum activities (as described in Section 3) and any potential emergency conditions associated with these activities.

The impact and risk assessment for this EP was undertaken in accordance with the CAPL's *ABU Operational Excellence (OE) Risk Management Process* (Ref. 21) and using Chevron Corporation's Integrated Risk Prioritization Matrix (Table 5-1). This approach generally aligns with the processes outlined in ISO 31000:2018 *Risk management – Principles and guidelines* (Ref. 22) and the HB 203:2012 *Managing environment-related risk* (Ref. 23).

The impact and risk assessment process and evaluation involved consulting with environmental, health, safety, drilling, engineering, and emergency response personnel. The impacts and risks considered and covered in this EP were identified and informed by:

- expertise and experience of CAPL personnel involved in previous drilling campaigns
- stakeholder engagement (Section 6).

5.1 Identification and description of the petroleum activity

All components of the petroleum activity and potential emergency conditions relevant to the scope of this EP are described and evaluated during the impact and risk assessment. The petroleum activity is described in detail in Section 3.

5.2 Identification of particular values and sensitivities

The presence of environmental values and sensitivities within the OA and EMBA is documented in Section 4. In accordance with Regulation 21(3) of the OPGGS(E)R, the particular values and sensitivities were identified as:

- 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 the EPBC Act
- the ecological character of a declared Ramsar wetland within the meaning of the EPBC Act
- the presence of a listed threatened species or listed threatened ecological community within the meaning of the EPBC Act
- the presence of a listed migratory species within the meaning of the EPBC Act
- any values and sensitivities that exist in, or in relation to, part or all of:
  - a Commonwealth marine area within the meaning of the EPBC Act
  - Commonwealth land within the meaning of the EPBC Act.

Because many protected, rare, or endangered fauna have the potential to transit through the EMBA, CAPL considers that the habitat and/or temporal area that supports protected and endangered fauna (including areas defined as BIAs for these species) is considered the particular value or sensitivity.

5.3 Identification of relevant aspects

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 discharge, greenhouse gas [GHG] 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 is outside the scope of this EP.

Environmental aspects categorised for use in the impact and risk assessment of this petroleum activity include:

- physical presence
- seabed disturbance
- light emissions
- air emissions
- underwater sound emissions
- invasive marine pests
- planned discharges
- unplanned releases.

5.4 Identification of relevant environmental impacts and risks

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

5.5 Evaluation of impacts and risks

5.5.1 Consequence

After identifying the aspects, and associated potential impacts and risks, the potential consequences were evaluated using the Integrated Risk Prioritization Matrix (Table 5-1). The consequence level is determined by considering:

- the spatial scale or extent of potential interactions within the receiving environment
- the nature of the receiving environment (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 aspect 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 acceptability criteria.

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

Table 5-1: Chevron Corporation's Integrated Risk Prioritization Matrix

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				6	5	4	3	2	1
				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

5.5.2 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 identified environmental impact and risk.

The OPGGS(E)R defines a control measure as a system, an item of equipment, a person or a procedure, that is used to manage environmental impacts and risk.

5.5.2.1 ALARP decision context

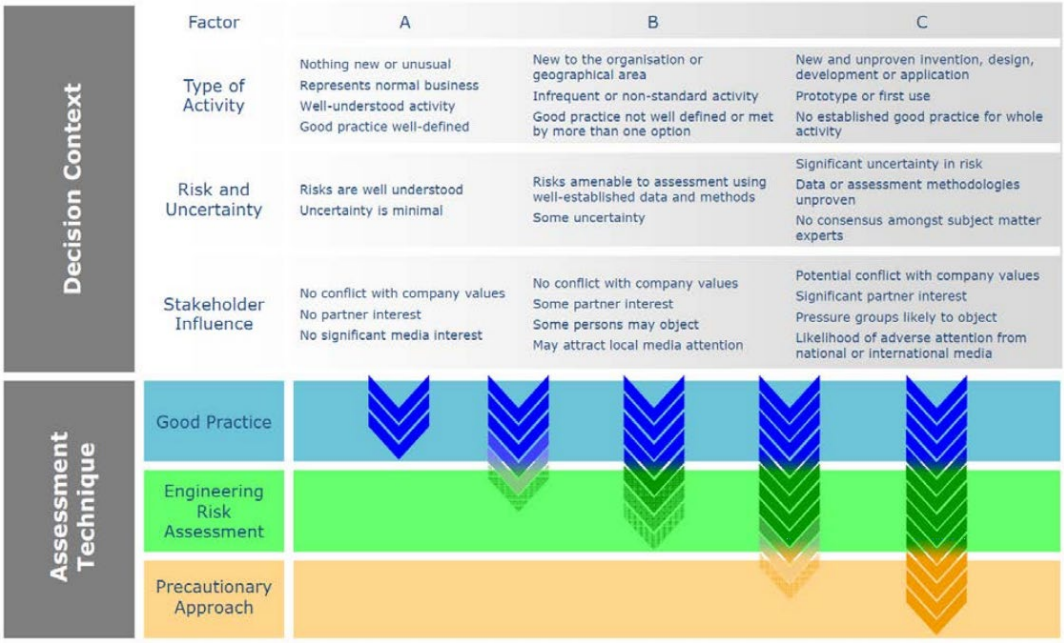
In alignment with NOPSEMA's ALARP guidance note (Ref. 24), CAPL has adapted the approach developed by Oil and Gas UK (OGUK) (Ref. 25) for use in an environmental context to determine the assessment technique required to demonstrate that impacts and risks are ALARP. Specifically, the framework considers the magnitude of impacts and risks and these guiding factors:

- activity type
- risk and uncertainty
- stakeholder influence.

A Type A decision (Figure 5-1) is made for lower-order impacts and risks (Table 5-3) 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, where an aspect associated with the activity is listed as either a key threat to a protected matter under a document made or implemented under the EPBC Act (such as recovery plans, conservation management plans, or a conservation advice), or identified as an aspect of concern to a listed conservation value under an EPBC Act marine bioregional plan, and can result in a credible impact or risk to these sensitivities, additional control consideration will be undertaken.

A Type B decision (Figure 5-1) is made for higher-order impacts and risks (Table 5-3) 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 (Figure 5-1) typically involves sufficient complexity, higher-order impact and risks (Table 5-3), 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.



(Source: Ref. 25)

Figure 5-1: ALARP decision support framework

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 6. The assessment techniques considered include:

- good practice
- engineering risk assessment
- precautionary approach.

5.5.2.2 Good practice

OGUK (Ref. 25) 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 (an 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.

5.5.2.3 Engineering risk assessment

All impacts and risks that require further assessment are subject to an engineering risk assessment. Based on the various approaches recommended by OGUK (Ref. 25), 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.

5.5.2.4 Precautionary approach

After considering all available engineering and scientific evidence, OGUK (Ref. 25) state that if the assessment 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.

5.5.3 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 6 likelihood categories shown in Table 5-1.

5.5.4 Quantification of the level of risk

The Integrated Risk Prioritization Matrix (Table 5-1) 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 assessment of risk to the environment (as defined under the OPGGS(E)R).

5.6 Impact and risk acceptance criteria

NOPSEMA provides guidance on demonstrating that impacts and risks will be of an ‘acceptable level’ (Ref. 10). 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, management plans, management principles etc.

- internal context (titleholder policy, culture, processes, standards and systems)
- external context (existing environment, stakeholder expectations).

5.6.1 Principles of ESD and precautionary principle

The principles of ESD are considered in Table 5-2 in relation to acceptability evaluations.

Under the EPBC Act, the Minister must also take into account the precautionary principle in determining whether 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 may be threats of serious or irreversible environmental damage.

Table 5-2: 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 (Table 5-1), which includes provision for understanding the long-term and short-term impacts associated with its activities, and the ALARP process, which balances the economic cost against environmental benefit. As this principle is inherently met by applying the EP assessment process, it 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 Major [3] and Catastrophic [1]). If so, assess whether there is significant uncertainty associated with the aspect.
Australia 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 impacts and risks are reduced to levels that are considered ALARP. If the impacts and risk are determined to be serious or irreversible, the precautionary principle is implemented to ensure that 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.
Australia improved valuation, pricing, and incentive mechanisms should be promoted	Not considered relevant for petroleum activity acceptability demonstrations.

5.6.2 Defining an acceptable level of impact and risk

In alignment with NOPSEMA's ALARP guidance note (Ref. 24), CAPL has applied the approach that lower-order environmental impacts or risks (Table 5-3) 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 alignment with NOPSEMA's decision-making guidance (Ref. 10) 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 threat to a protected matter under a document made or implemented under the EPBC Act, or identified as an aspect of concern to a listed conservation value under an EPBC Act Marine Bioregional Plans, and can result in a credible impact or risk, CAPL will define an acceptable level of impact and risk in accordance with a document made or implemented under the EPBC Act.

Table 5-3: CAPL definition of lower-order and higher-order impacts and risks

Magnitude	Impact	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 or C

CAPL will consider 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.

5.6.3 Summary of acceptance criteria

Table 5-4 outlines the criteria that CAPL used to demonstrate that impacts and risks from each identified aspect are acceptable.

Table 5-4: Acceptability criteria

Criteria	Test
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 to large scale, and/or moderate-high intensity environmental damage?
	If yes: Is there significant scientific uncertainty associated with the aspect?
	If yes: Are there additional measures to prevent degradation of the environment from this aspect?
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 were identified for this aspect through CAPL's management systems and that impact and risk management is consistent with company policy, culture, and standards.
External context	What objections and claims regarding this aspect were made, and how were they 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?

5.7 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 impacts and risks to ALARP. CAPL defines environmental performance outcomes, standards, and measurement criteria that relate to managing identified environmental risks as:

- **Environmental performance outcomes**—a measurable level of performance required for managing environmental aspects of an activity to ensure that environmental impacts and risks will be of an acceptable level
- **Environmental performance standards**—a statement of the performance required of a control measure

  These statements will consider the effectiveness of the control measures, and, in accordance with NOPSEMA's decision-making guidance (Ref. 10), 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 statement or records that detail how CAPL enacts the outlined performance standard; these are used to determine whether the environmental performance outcomes and standards were met and whether the implementation strategy was complied with. If no practicable quantitative target exists, a qualitative criterion is set.

6 Relevant persons consultation

This section describes the methods used, and status of, consultation with relevant authorities, persons, or organisations (*a relevant person*) undertaken when preparing this EP, as required under Regulation 25 of the OPGGS(E)R.

Ongoing consultation, as required under Regulation 22(15) of the OPGGS(E)R, is described in Section 8.3.4.1.

6.1 Purpose

Regulation 25 of the OPGGS(E)R allows the titleholder to properly understand all the environmental impacts and risks of the petroleum activity, and enables the titleholder to refine or change the control measures by taking into account the information acquired from relevant persons through consultations: Recent judicial consideration of Regulation 25 assists in understanding the purpose of the consultation required under the provision:

> *'[Regulation 25], like most statutory consultation provisions, imposes an obligation that must be capable of practicable and reasonable discharge by the person upon whom it is imposed. Consultation is a 'real world' activity, with specific purposes. Here, its purpose is to ensure that the titleholder has ascertained, understood and addressed all the environmental impacts and risks that might arise from its proposed activity. Consultation facilitates this outcome because it gives the titleholder an opportunity to receive information that it might not otherwise have received from others affected by its proposed activity. Consultation enables the titleholder to better understand how others with an objective stake in the environment in which it proposes to pursue the activity perceive those environmental impacts and risks. As the Regulations expressly contemplate, it enables the titleholder to refine or change the measures it proposes to address those impacts and risks by taking into account the information acquired through the consultations. Objectively, the scheme intends that this is likely to improve the minimisation of environmental impacts and risks from the activity.'*[18]

The consultation process should also inform the titleholder's understanding of the environment, including (among other things) people and communities, the heritage value of places, and their social and cultural features which may be affected by a titleholder's proposed activities (Ref. 287). The purpose of consultation is also to:

- identify the social and cultural features of communities within the ecosystem
- inform the control measures to eliminate, reduce and mitigate impacts and risks to those socio-cultural values and sensitivities in response to relevant persons concerns
- to inform NOPSEMA of relevant persons' identities, the nature of the consultation, and the control measures adopted (Ref. 289 at paragraphs 55–57).

Regulation 25 establishes a duty an obligation on titleholders to consult with relevant persons when preparing an EP, and this obligation must be discharged before submitting an EP to NOPSEMA (Ref. 287).

[18] *Paragraph 89 of* Santos NA Barossa Pty Ltd v Tipakalippa *[2022] FCAFC 193 (Ref. 289).*

6.2 Consultation design

The consultation design for preparation of this EP was undertaken in accordance with CAPL's *Stakeholder Engagement and Issues Management Process: ABU Standardised OE Process* (Ref. 35) and was further guided by:

- NOPSEMA's *Environment plan decision-making guideline* (Ref.10)
- NOPSEMA's *Environment plan content requirements guidance note* (Ref. 288)
- NOPSEMA's *Consultation in the course of preparing an environment plan guideline* (Ref. 287)
- NOPSEMA's *Consultation with Commonwealth agencies with responsibilities in the marine area guideline* (Ref. 290)
- NOPSEMA's *Petroleum activities and Australian Marine Parks guidance note* (Ref. 291)
- Full Court of the Federal Court of Australia's decision in *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Ref. 289)
- Commonwealth of Australia's *Engage Early-Guidance for proponents on best practice Indigenous engagement for environmental assessments under the Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (Ref. 292)
- Government of Western Australia's *Aboriginal Cultural Heritage Act 2021-Consultation Guidelines* (Ref. 293)
- Relevant requirements under Part 6 (managing activities that may harm Aboriginal cultural heritage) of the *Aboriginal Cultural Heritage Act 2021* (WA), including section 101 (consultation about proposed activities) and section 113 (notice of intention to carry out tier 2 activity)
- WA Department of Mines, Industry Regulation and Safety (DMIRS) *Guideline for the Development of Petroleum, Geothermal and Pipeline Environment Plans in Western (E)* (Ref. 294)
- Australian Fisheries Management Authority's (AFMA) Petroleum industry consultation with the commercial fishing industry (Ref. 295)
- Western Australian Fishing Industry Council's (WAFIC) *Oil & Gas Consultation Approach for Unplanned Events* (Ref. 296)
- DPIRD's *Guidance statement for oil and gas industry consultation with the Department of Fisheries* (Ref. 297)
- WA Department of Transport's (DoT) *Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements* (Ref. 298).

The consultation design is reviewed on a case-by-case basis to incorporate any feedback from relevant persons regarding the type of information or method of engagement that is preferred to ensure that the purpose of the consultation is achieved.

6.2.1 Relevant person

In accordance with Regulation 25(1) of the OPGGS(E)R, a relevant person is defined as:

- Regulation 25(1)(a)—each department or agency of the Commonwealth to which the activities to be carried out under the EP, or the revision of the EP, may be relevant;
- Regulation 25 (1)(b)—each department or agency of a State or the Northern Territory to which the activities to be carried out under the EP, or the revision of the EP, may be relevant;
- Regulation 25 (1)(c)—the department of the responsible State Minister, or the responsible Northern Territory Minister;
- Regulation 25 (1)(d)—person or organisation whose functions, interests, or activities may be affected by the activities to be carried out under the EP, or the revision of the EP;
- Regulation 25 (1)(e)—any other person or organisation that the titleholder considers relevant.

Following the direction given by the Full Court of the Federal Court in *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Ref. 289), and subsequent NOPSEMA guidance (Ref. 288), it is clear that the phrase 'functions, interests or activities' stated in Regulation 25(1)(d) should be broadly construed[19] on the basis that a broad construction best promotes the objects of the Regulations. In *Santos NA Barossa Pty Ltd v Tipakalippa*, the Court construed the following terms used in Regulation 25(1)(d) as follows:

- **functions**—a power or duty to do something[20]
- **interests**—in accordance with the accepted concept of 'interest' in other areas of public administrative law, and including 'any interest possessed by an individual whether or not the interest amounts to a legal right or is a proprietary or financial interest or relates to reputation'[21]
- **activities**—to be read broadly and is broader than the definition of 'activity' in Regulation 5 of the OPGGS(E)R and is likely directed to what the relevant person is already doing[22].

Persons or organisations are considered relevant persons under Regulation 25(1)(d) of the OPGGS(E)R if their functions, interests or activities may be affected by the petroleum activity to be carried out under the EP. CAPL's approach has been to take a broad interpretation of 'function, interest, and activity' and screen in relevant persons.

Where interests are held communally, CAPL has made a decisional choice to consult with representative bodies (Ref. 290 at paragraphs 96–102) and will do so through meetings (Ref. 290 at paragraph 104). CAPL will provide sufficient information to individuals who are relevant persons by providing information to representative bodies for dissemination with members and by attending meetings with group members (Ref. 290 at paragraph 47) and CAPL has also sought to identify those representative body organisations themselves as relevant persons (Ref. 290 at paragraph 48). CAPL will ask these representative bodies if there are persons or knowledge holders outside the individuals they represent who may be

[19] *Paragraph 51 of Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 (Ref. 289).*
[20] *Paragraph 60 of Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 (Ref. 289).*
[21] *Paragraphs 63 and 65 of Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 (Ref. 289).*
[22] *Paragraphs 58 and 59 of Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 (Ref. 289).*

relevant persons for the purposes of consultation to endeavour to make all necessary efforts to identify relevant persons.

6.2.2 Sufficient information

Under Regulation 25(2) of the OPGGS(E)R and NOPSEMA's guidelines (Ref. 19; Ref. 287), for the purpose of consultation, the titleholder must provide each relevant person with sufficient information to enable them to make an informed assessment of the possible consequences of the petroleum activity on their functions, interests, or activities.

The base level of information will be provided to all relevant persons includes:

- maps of the proposed petroleum activity location and the associated EMBA
- a summary of the petroleum activity, including indicative schedule and duration
- a summary of the potential impacts and risks as identified by CAPL
- a preliminary assessment of how the potential impacts and risks may impact the environmental and socio-cultural values and sensitivities
- a summary of the proposed control measures that CAPL has adopted to reduce the predicted consequence and/or likelihood of the potential impact or risk.

This base level of information is the minimum required for relevant persons to make an informed assessment of the potential consequences to the persons' functions, interest, or activity because it informs the relevant person of:

- the activity (including spatial and timing information that may intersect with their function, interest, or activity)
- the impacts and risks of the petroleum activity (including the spatial extent of the EMBA and intersection with BIAs) to allow an assessment of how that may impact or create a risk to the relevant persons' functions, interests, or activities
- the control measures to reduce the impacts or risks of the petroleum activity to environmental and socio-cultural values and sensitivities.

Additional information may be provided to reflect the information requested through co-design of consultation, to better enable them to provide feedback related to potential interactions with their function, interest, or activity, or in response to their objection or claim. This includes verbal information and answers to questions during consultation discussions.

The materials to be released as part of the consultation for this EP include:

- Factsheet including information about the proposed petroleum activity, potential impacts and risks, control measures, and included maps showing EMBA
- Information regarding the EP on the Online Consultation Hub (https://(E).chevron.com/our-businesses/upcoming-activities)
- CAPL will publish notices in the following publications: The Australian, The West Australian, the Pilbara News, Midwest Times, Northwest Telegraph, Business News and the National Indigenous Times

- CAPL will publish a LinkedIn post with a link to the Online Consultation Hub that has information regarding Gorgon and Jansz–Io drilling and well intervention works
- CAPL will develop posters, presentation materials, and handouts for use and distribution in face-to-face meetings
- CAPL will arrange various face-to-face meetings with relevant persons for early 2024.

A copy of the consultation material is included in Appendix D.

Table 6-1 summarises the consultation strategy and information provided (or to be provided) to each category of relevant persons.

Table 6-1: Consultation strategy and information provided to relevant persons

Category of persons or organisations	Consultation strategy and information provided
Commercial fishery licence holders and/or representative bodies	• initial correspondence with WAFIC to provide base level information on the petroleum activity and link to the CAPL Online Consultation Hub • follow-up correspondence with WAFIC to confirm the commercial fishery licence holders to be consulted • in consultation with WAFIC, determine the level of consultation required and whether tailored consultation material needs to be developed • provide consultation material to WAFIC for distribution to relevant commercial fishery licence holders • WAFIC provides any input received to CAPL, and CAPL provides information to respond to commercial fishery licence holders; any input received is considered in the development of the EP • where a commercial fishery that is not represented by WAFIC has been determined as relevant, the representative body is provided consultation material and feedback is requested • after a reasonable period has been provided to consider the consultation information, CAPL will confirm with WAFIC or the relevant industry body (as required) whether further consultation is required • ongoing consultation with follow-up correspondence, phone calls and meetings as required.
First Nations people and/or representative bodies	• initial correspondence with relevant First Nations representative bodies to request a meeting with the board, Elders, and other relevant persons • provide base level information on the petroleum activity and link to the CAPL Online Consultation Hub as a precursor to face-to-face meetings • initial face-to-face meeting held using bespoke consultation material, including posters, presentations and verbal discussions. CAPL attendees include Senior Management, Subject Matter Experts and Community Engagement and Partnerships Advisors. Key objectives of the initial meeting include: – purpose of consultation is to enhance Environment Plans through relevant person input – co-design of the consultation strategy going forward – determine if there are additional relevant persons or knowledge holders not present at the meeting who should be informed and consulted with – provide an explanation of the proposed activity – ensure relevant persons are aware of the potential impacts and risks associated with the activity (including the EMBA) – explain the process for providing input

Category of persons or organisations	Consultation strategy and information provided
	– determine the adequacy of consultation material provided and confirm if any additional information is required for relevant persons to provide input – confirm CAPL's commitment to ongoing consultation and relationship building • follow-up emails, phone calls and meetings, as required, to ensure the functions, interests and activities of First Nations peoples' have been identified and to gain an understanding of cultural values and sensitivities in the EMBA; any input received is considered in the development of the EP • site visits on country with First Nations people may be conducted as required • after a reasonable period has been provided to consider the consultation information, CAPL provides the First Nations people and/or representative bodies a summary of consultation undertaken to date and requests agreement on the summary • ongoing consultation with follow-up correspondence, phone calls and meetings as required.
ENGOs Government departments or agencies Other petroleum titleholders / commercial industries Tourism and recreation operators WA World Heritage advisory committees Self-identified and other relevant persons	• provide base level information on the petroleum activity and link to the CAPL Online Consultation Hub via email with a request for input and an offer to meet face-to-face • where consultation guidance material is available, CAPL tailors its consultation to meet the requirements of the guidance material • local community / town meetings may be held using presentations, posters and verbal discussions as required • any input received is responded to and considered in the development of the EP • after a reasonable period has been provided to consider the consultation information, CAPL will determine whether further consultation is required • ongoing consultation with follow-up correspondence, phone calls and meetings as required.

6.2.3 Reasonable period

Under Regulation 25(3) of the OPGGS(E)R and NOPSEMA's guidelines (Ref. 10; Ref. 287), relevant persons must be provided with a reasonable period for the consultation to occur, allowing the relevant person to make an informed assessment of the possible consequences of the proposed petroleum activity on their functions, interests, or activities and respond to the titleholder. 'Reasonable period' was not defined by the Full Federal Court in Tipakalippa (Ref. 288), however, consistent with the Court's analysis in the 'Native Title Act 1993 (NTA) authorities' section of the judgment, CAPL has sought to identify existing guidelines and practices to help inform what a 'reasonable period' may constitute for the relevant person.

Guidance on consultation with Commonwealth departments or agencies indicates that agencies will provide an initial response to consultation requests within 10 business days (Ref. 10) or up to 8 weeks (Ref. 291).

Available guidance regarding consultation with State departments or agencies indicates a reasonable period for standard activities is no less than 20 business days (Ref. 297), and up to 6 weeks (Ref. 298).

Guidance taken from the *Aboriginal Cultural Heritage Act 2021—Consultation Guidelines* (Ref. 293) suggests that up to 12 weeks may be a reasonable time to

allow identification, contact, and response, from First Nations peoples (subject to any alternative timeframe being agreed through co-design of consultation).

CAPL will provide all relevant persons an initial period following the issue of consultation materials to respond. If no response is received, CAPL will follow up with each relevant person (via phone, email, or in person) to enquire if there are any clarifications or additional information required to aid their assessment of any interactions with their functions, interests, or activities.

6.2.4 Sensitive information

Regulation 25(4) of the OPGGS(E)R requires that:

> *'[t]he titleholder must tell each relevant person the titleholder consults that:*
>
> *a) the relevant person may request that particular information the relevant person provides in the consultation not be published; and*
>
> *b) information subject to such a request is not to be published under this Part'.*

Under Regulation 26(8) of the OPGGS(E)R:

> *'all sensitive information (if any) in an environment plan, and the full text of any response by a relevant person to consultation under regulation 25 in the course of preparation of the plan, must be contained in the sensitive information part of the plan and not anywhere else in the plan'.*

In accordance with Regulation 26(8) of the OPGGS(E)R, the full text of all responses received from relevant persons, as well as sensitive information, are included in the sensitive information report provided separately to NOPSEMA to preserve the privacy of those persons or organisations consulted. Specifically, the sensitive information includes records and responses considered to contain personal information (as defined by the *Privacy Act 1988* (Cth)) or information given by a relevant person in consultation under Regulation 25 of the OPGGS(E)R in the course of preparing this EP that relevant persons requested not to be published.

6.2.5 Identification of relevant persons

In accordance with NOPSEMA's guideline for consultation (Ref. 287), titleholders must identify who is a relevant person and the rationale used to determine that identification as a relevant person.

Identifying relevant persons requires assessing:

- the petroleum activity (Section 3)
- the environment in which the petroleum activity is being undertaken, including:
- environmental, socioeconomic, and cultural values and sensitivities of the environment
- the spatial extent of the EMBA
- any intersection between the EMBA and BIAs
- the possible environmental impacts and risks of the petroleum activity and the possible consequences on the functions, interests, activities of relevant persons.

The process undertaken by CAPL for identifying relevant persons:

- identify what types of authorities, persons, or organisations may be relevant to the values and sensitivities present within the EMBA
- review the functions, interests, or activities of the types of authorities, persons, or organisations identified, and determine if the functions, interests, or activities of organisations or individuals may be affected by the petroleum activity through multiple lines of evidence:
  - existing industry guidance (e.g. Ref. 290; Ref. 291; Ref. 295; Ref. 296; Ref. 297; Ref. 298)
  - CAPL's previous consultation history for similar activities in the region
  - previous advice from representative industry and/or community bodies
  - online searches
  - reviewing of publicly available databases or registers (e.g. access and use authorisations within AMPs, DPIRD's register of fishery licence holders).

The outcomes of this process are detailed in Table 6-4, which lists the relevant persons identified for this EP, and CAPL's reasoning for determining their inclusion.

Table 6-2: Potential authority, persons, or organisations with have functions, interests, or activities associated with environmental values or sensitivities present within the EMBA

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
Physical presence – other marine users: • Temporary presence of the MODU within the OA during the drilling, well intervention and/or well abandonment activities • Temporary presence of vessels and/or ROV within the OA during the drilling, well intervention and/or well abandonment activities • Presence of subsea wellhead and tree at the well sites.	Commercial shipping	Interest and activity – Commercial shipping	Temporary presence of vessels has the potential to result in disruption to other marine users	The OA is predominantly outside major shipping fairways, and commercial vessel traffic density within the OA is low. Therefore, the temporary presence of the vessels within the OA is not expected to have consequences for the functions, interests or activities of commercial shipping. Notwithstanding, there may be an intersection with commercial shipping activities and the OA.	Commercial shipping industry Government departments or agencies
	Commercial fishing	Interest and activity – Commercial fishing	Temporary presence of vessels has the potential to result in disruption to other marine users	Although Commonwealth and State fisheries are present, the level of fishing effort within the OA is typically low. Fishing effort records obtained from DPIRD for State-managed commercial fisheries indicate that fishing effort within the OA varies each year, but that there may be up to >10 vessels operating some years. The temporary presence of vessels within the OA is not expected to significantly affect commercial fishers; however, it is acknowledged there may be an intersection with commercial fishing and the OA.	Commercial fishery licence holders and/or representative bodies Government departments or agencies
	Tourism Recreation	Interest and activity – Recreational fishing Marine recreation	Temporary presence of vessels has the potential to result in disruption to other marine users	Due to the distance from the mainland coast, tourism and recreational activities within the OA are expected to be low. The temporary presence of vessels within the OA is not expected to significantly affect tourism and recreational activities. However it is acknowledged that there is potential for an intersection with tourism and	Government departments or agencies Tourism and recreation operators

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
				recreational activities where the OA intersects the Montebello AMP.	
	Other commercial industries	Interest and activity – petroleum exploration / production	Temporary presence of vessels has the potential to result in disruption to other marine users	The OA intersects petroleum titles held by other petroleum titleholders and therefore the functions, interests and activities of other petroleum titleholders may be affected.	Other petroleum titleholders
Physical presence – marine fauna • MODU—presence within the OA during the drilling, well intervention and/or well abandonment activities • field support—presence of vessels within the OA during the drilling, well intervention and/or well abandonment activities.	Marine fauna Cultural values	Interest and activity – Environmental conservation Cultural connections	Unplanned interactions with marine fauna	Several BIAs or habitat critical to the survival of a species overlap with the OA, including: • Pygmy Blue Whale (migration and distribution BIAs) • Flatback Turtle (internesting buffer BIA) • Whale Shark (foraging BIA). As vessels will be slow moving while implementing the activities within the scope of this EP, incidences of fauna strike are not expected. If a fauna strike occurred and resulted in death, it is not expected to have a detrimental effect on the overall population of protected species; this event would result in a limited environmental impact. However, it is acknowledged that relevant persons may hold interests relating to the protection of marine fauna.	Government departments or agencies First Nations people and/or representative bodies ENGOs
Seabed disturbance – • MODU— installing and removing mooring anchors (8–12) within the OA during the drilling, well intervention and/or	Marine environmental quality Benthic habitat and communities Cultural values	Interest and activity – Environmental conservation Cultural connections	Localised and temporary reduction in water quality Alteration of benthic communities and habitats	The petroleum activities are expected to result in disturbance to the seabed within the vicinity of existing subsea infrastructure. Impacts to water quality from installation activities are expected to be localised and temporary and the presence of subsea infrastructure is not	Government departments or agencies First Nations people and/or representative bodies ENGOs

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
well abandonment activities • dragging of mooring wires/chain from the MODU mooring system • drilling, well intervention and/or abandonment activities—well-spudding and installing subsea equipment within the OA • well re-spud (contingency activity only) • field support—temporary wet parking of ROVs within the OA during the drilling, well intervention and/or well abandonment activities • field support—unplanned vessels anchoring (e.g. during an emergency) within the OA during the drilling, well intervention and/or well abandonment activities.			Changes to cultural heritage values	expected to significantly adversely impact benthic communities and habitats, and may potentially lead to the establishment of additional benthic communities (i.e. a change, albeit not considered a negative change). No protected underwater cultural heritage sites or artefacts have been identified within the OA. Notwithstanding it is acknowledged that that relevant persons may hold interests relating to marine environmental quality, benthic habitats and communities and cultural values, in particular with respect to the protection of Sea Country.	
Light emissions – • MODU—navigational and operational	Marine environmental quality	Interest and activity – Environmental conservation	A localised and temporary change in ambient light	The petroleum activities are expected to result in localised, temporary changes to	Government departments or agencies

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
lighting from the MODU within the OA during the drilling, well intervention and/or well abandonment activities • field support—navigational and operational lighting from vessels within the OA during the drilling, well intervention and/or well abandonment activities • wellbore clean-up and flowback (flaring activities)	Marine fauna Cultural values	Cultural connections	Change in fauna behaviour for light-sensitive species	ambient light no greater than a radius of ~1.4 km from the MODU and vessels. Flaring during drilling and well intervention operations will be an infrequent, short-term occurrence, for a duration of up to one day per well. Flaring is only undertaken from one well at a time, and during drilling is a one-time occurrence per well. CAPL expects that its activities could result in temporary changes to ambient light emissions extending to a radius of up to 42.1 km from each of the well location during flaring activities. Several BIAs and/or habitat critical to the survival of a species overlap with the OA, including: • Wedge-tailed Shearwater (breeding BIA) • Whale Shark (foraging BIA) • Flatback Turtle (internesting buffer BIA). Impacts associated with lighting are expected to be temporary and localised; however, it is acknowledged that relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	First Nations people and/or representative bodies ENGOs
Air emissions – • well intervention or clean-ups-venting of hydrocarbons within wellbore • well testing and flowback (contingency only)	Marine environmental quality Cultural values	Interest and activity – Environmental conservation	A localised and temporary reduction in air quality Contribution to the reduction of the global atmospheric carbon budget	As reduction in air quality will be temporary and highly localised and due to the overall *de minimis* contribution to the reduction of the global carbon budget from the activities under this EP, it is not expected that the functions, interests or activities of relevant persons will be affected. However it is acknowledged	Government departments or agencies First Nations people and/or representative bodies ENGOs

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
• MODU-combustion of fuel onboard the MODU within the OA during the drilling, well intervention and/or well abandonment activities • field support-combustion of fuels from vessels and helicopters within the OA during the drilling, well intervention and/or well abandonment activities				that relevant persons may hold interests relevant to this aspect.	
Underwater sound – • drilling, well intervention and/or well abandonment activities within the OA • field support—vessel or helicopter operations during the petroleum activity within the OA • well evaluations—VSP operations	Marine environmental quality Marine fauna Cultural values Commercial fishing Tourism and recreation	Interest and activity – Environmental conservation Cultural connections Commercial fishing Recreational fishing Marine recreation	Localised and temporary change in ambient underwater sound Behavioural disturbance Auditory impairment, temporary threshold shift (TTS), permanent threshold shift (PTS), recoverable or non-recoverable injury to marine fauna Impacts to marine recreational users Changes to values and sensitivities of marine protected areas	The petroleum activities are expected to result in localised and short-term changes to ambient acoustic levels. Acoustic modelling for vessels indicated that behavioural noise effect criteria for all cetaceans may be met within 13.6 km of the vessel. The animat exposure modelling (i.e. taking into account moving marine fauna) indicated that a Pygmy Blue Whale would need to be within ~4.23 km of the operating vessel, over a period of 24 hours, to be exposed to sound level above the noise effect criteria for behavioural disturbance. As a result, CAPL considered that operations causing a change in ambient underwater sound will result in a localised and short-term environmental impact. VSP operations generates higher-intensity noise than routine drilling,	Government departments or agencies First Nations people and/or representative bodies ENGOs Commercial fishery licence holders and/or representative bodies Tourism and recreation operators

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
				vessel and field support operations. Results from spherical modelling estimate that SPL would be below behavioural noise effect criteria for all cetaceans (within all hearing groups) within ~3 km of the VSP source. The impulsive sound PTS and TTS thresholds for marine mammals may be reached within ~0.05 km of the VSP source. Several BIAs overlap with the Sound EMBA, including: • Pygmy Blue Whale (migration and distribution BIA) • Flatback Turtle (internesting buffer BIA) • Whale Shark (foraging BIA). In addition, the Sound EMBA intersects the Montebello AMP and areas where commercial fisheries operate. CAPL has adopted control measures to reduce impacts and risks associated with underwater sound, including implementing: • EPBC Policy Statement 2.1 • EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans Notwithstanding, it is acknowledged that relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	
Invasive marine pests – • planned discharged of ballast water or the	Benthic habitat and communities	Interest and activity – Environmental conservation	Displacement of, or competition with, native species.	The OA is in water depths of ~115–240 m, is located offshore from the mainland coast and large ports, and the seabed is predominantly soft sediments.	Government departments or agencies

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
presence of biofouling on vessels undertaking well intervention and/or well abandonment activities within the OA	Cultural values	Cultural connections		Thus, the more favourable requirements of expansive hard substrate and sufficient light for invasive marine pest survival are not common within the OA. Although it is highly unlikely the activities in this EP would result in the introduction of invasive marine pests, once established, invasive marine pests can be difficult to eradicate and therefore there is the potential for a long-term change in habitat structure. As a result, relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	First Nations people and/or representative bodies ENGOs
Planned discharges – facility and vessel operations • facility and vessel operations during the well intervention and/or well abandonment activities within the OA	Marine environmental quality Marine fauna Cultural values	Interest and activity – Environmental conservation Cultural connections	Localised and temporary reduction in water quality Changes to predator–prey dynamics	Impacts and risks associated with planned discharges from vessels are expected to be limited to close to the release location and temporary in nature. It is unlikely the functions and activities of relevant persons would be impacted by planned discharges from vessels; however, relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	Government departments or agencies First Nations people and/or representative bodies
Planned discharges –drill cuttings and fluids • drilling and well interventions—planned and contingency activities (various discharges including drilling fluids and cuttings, spacer fluids, completions fluids and wellbore clean-up fluids)	Marine environmental quality Benthic habitat and communities Marine fauna Cultural values	Interest and activity – Environmental conservation Cultural connections	Localised and temporary reduction in water quality Alteration/smothering of benthic habitat Indirect impacts to fauna arising from chemical toxicity	Impacts and risks associated with planned discharges of drill cuttings and fluids are expected to be limited to within 250–500 m of the release location. The particular values and sensitivities within the OA with the potential to be impacted by seabed disturbance includes these KEFs: • Continental slope demersal fish communities	Government departments or agencies First Nations people and/or representative bodies ENGOs

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
• well abandonment—metal swarf cuttings, and wellbore content (comprising sea water and viscous sweeps, e.g. bentonite).				• Ancient coastline at 125 m depth contour. Although these 2 KEFs were identified as having the potential to be exposed, benthic habitat in these areas is expected to comprise soft sediment infauna communities that are widespread and homogenous in the region. As soft sediment benthic communities are known to recover over a longer time, the potential impacts associated with this program are considered to be localised long-term degradation of habitat. As a result, it is acknowledged that relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	
Planned discharges – cement • drilling—cementing operations • well abandonment—cement cuttings, contaminated cement discharge.	Marine environmental quality Benthic habitat and communities Cultural values	Interest and activity – Environmental conservation Cultural connections	Localised and temporary reduction in water quality Alteration/smothering of benthic habitat	Impacts and risks associated with planned discharges are expected to be limited to close to the release location and temporary in nature. It is unlikely the functions and activities of relevant persons would be impacted by planned subsea discharges; however, relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	Government departments or agencies First Nations people and/or representative bodies ENGOs
Planned discharges – BOP fluids	Marine environmental quality Cultural values	Interest and activity – Environmental conservation Cultural connections	Localised and temporary reduction in water quality	Impacts and risks associated with planned subsea discharges are expected to be limited to close to the release location and temporary in nature. It is unlikely the functions and activities of relevant persons would be impacted by planned subsea discharges; however, relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	Government departments or agencies First Nations people and/or representative bodies ENGOs

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
Unplanned release – waste • vessel operations during well intervention and/or well abandonment activities within the OA	Marine fauna Cultural values	Interest and activity – Environmental conservation Cultural connections	Marine pollution resulting in entanglement or injury/death of marine fauna.	Unplanned releases of waste may result in impacts to injury/death to individual marine fauna. It is unlikely the functions and activities of relevant persons would be impacted by an unplanned release of waste; however, relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	Government departments or agencies First Nations people and/or representative bodies
Unplanned release – loss of containment • using, handling, and transferring hazardous materials and chemicals onboard (<1 m^3) • transferring hazardous materials between vessels (50 m^3)	Marine environmental quality Marine fauna Cultural values	Interest and activity – Environmental conservation Cultural connections	Indirect impacts to fauna arising from chemical toxicity	Based on the nature of the unplanned release – loss of containment scenarios considered credible in this EP, the extent and severity of any potential impact is expected to be spatially and temporally limited. It is unlikely the functions and activities of relevant persons would be impacted by an unplanned release; however, relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	Government departments or agencies First Nations people and/or representative bodies ENGOs
Unplanned release – vessel collision • vessel operations within the OA	Marine environmental quality Benthic habitat and communities Coastal communities Marine fauna Marine protected areas World Heritage properties	Interest and activity – Environmental conservation Cultural connections Commercial fishing Commercial shipping Recreational fishing Marine recreation Petroleum exploration / production	Marine pollution resulting in sublethal or lethal effects to marine fauna Smothering of subtidal and intertidal habitats Indirect impacts to commercial fisheries and other industries Reduction in amenity resulting in impacts to tourism and recreation Changes to cultural heritage values	Although highly unlikely, an unplanned emergency event resulting in a hydrocarbon spill may affect the functions, interests and activities of relevant persons within the spatial extent of the EMBA. Refer to Section 4.1 for information on the EMBA for the activity.	Government departments or agencies First Nations people and/or representative bodies WA World Heritage advisory committees ENGOs Commercial fishery licence holders and/or representative bodies Commercial shipping industry

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
	National Heritage places Cultural values Tourism Recreation Commercial fishing Commercial shipping Scientific research Other commercial industries		Changes to values and sensitivities of marine protected areas		Tourism and recreation operators Other petroleum titleholders Submarine cable operators Research organisations
Ground disturbance – shoreline spill response	Marine fauna Coastal communities Cultural values	Interest and activity – Environmental conservation Cultural connections	Potential to damage terrestrial habitats (including nests), with subsequent impacts to fauna such as turtles and birds.	Shoreline protection and deflection and clean-up activities have the potential to result in short-term and localised damage to or alteration of habitats and ecological communities. Shoreline activities will only be undertaken where there is likely to be a net benefit and therefore the functions, interests and activities of relevant persons are unlikely to be affected.	Government departments or agencies First Nations people and/or representative bodies
Physical presence – oiled wildlife response	Marine fauna Coastal communities Cultural values	Interest and activity – Environmental conservation Cultural connections	Potential to cause further harm to oiled fauna due to hazing, barriers, deterrents, and cleaning activities, and has the potential to cause injury/death.	Oiled wildlife response has the potential to result in injury/death to fauna; however, will only be undertaken where there is likely to be a net benefit and therefore the functions, interests and activities of relevant persons are unlikely to be affected.	Government departments or agencies First Nations people and/or representative bodies

6.2.5.1 Self-identification

As part of the consultation process, CAPL will publicly advertise the petroleum activities to allow for any authorities, persons, or organisations not already identified through the identification process to review information about the petroleum activity, self-identify as a relevant person, and register as a relevant person with CAPL.

This self-identification pathway is included in the consultation process to facilitate a sufficiently broad capture of ascertainable persons and allow for feedback that CAPL may not have otherwise received.

If an authority, person, or organisation does self-identify, CAPL will assess their merits and claims.

6.3 Consultation process

The consultation undertaken when preparing this EP used this process:

- describe the petroleum activity
- identify environmental aspects
- define the EMBA and identify environmental values and sensitivities
- evaluate environmental impacts and risks and demonstrate these are reduced to ALARP and acceptable levels
- identify functions, interests, or activities that may be affected
- identify relevant persons
- commence consultation.

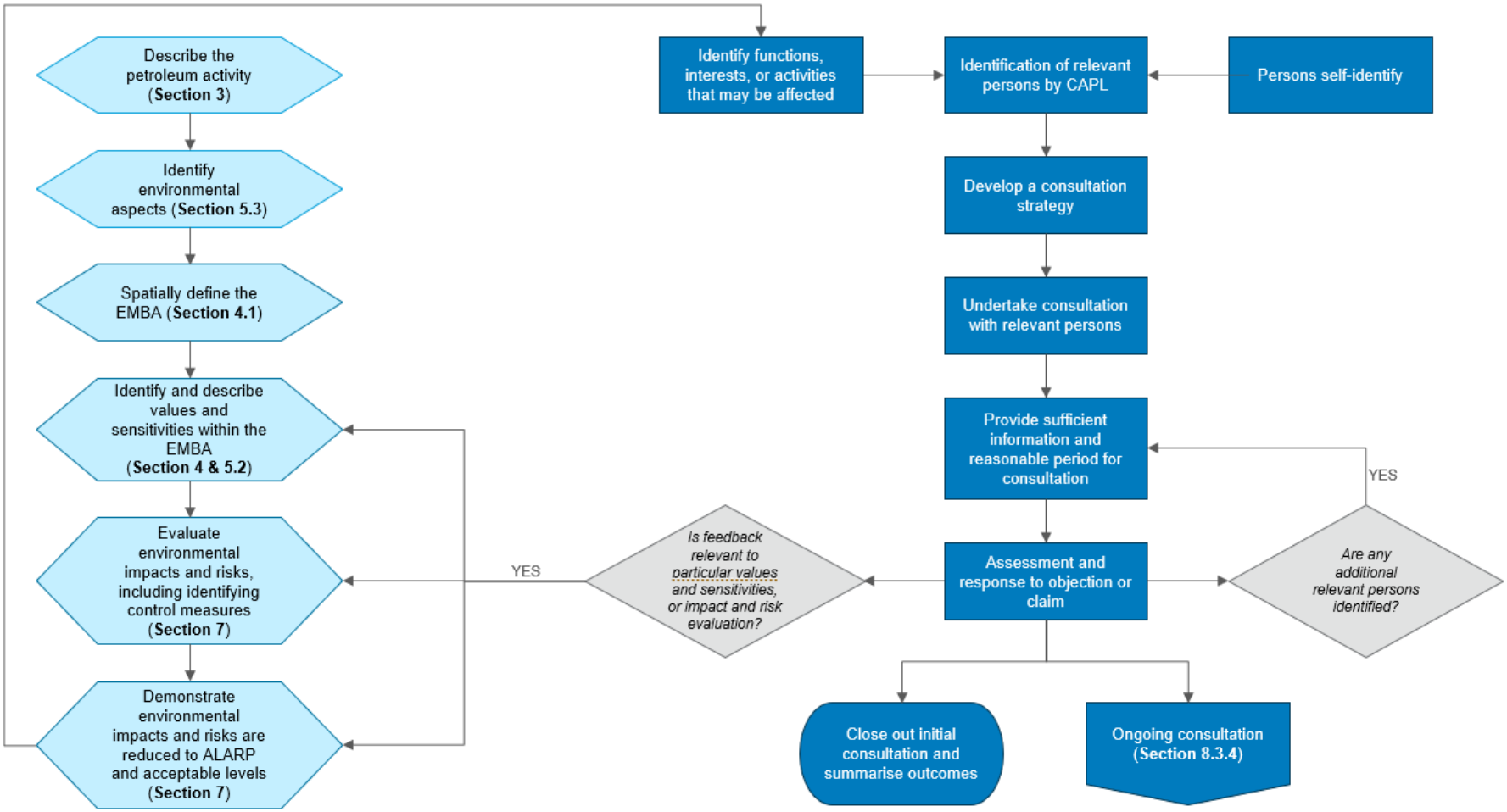


Figure 6-1: Relevant persons consultation process

6.3.1 Relevant persons under Regulation 25(1)(b)

In accordance with the OPGGS(E)R, relevant persons include the Commonwealth and State departments or agencies to which activities under this EP may be relevant (Section 6.2.1).

CAPL determined relevant persons under these regulations by considering:

- the spatial extent of the EMBA
- the environmental aspects, and potential environmental impacts and risks associated with the petroleum activity
- the responsibilities of the Commonwealth or State department or agency, which was determined by:
  - CAPL's previous consultation history for similar petroleum activities in the region
  - online searches
  - published guidance, including NOPSEMA's Consultation with Commonwealth agencies with responsibilities in the marine area guideline (Ref. 290).

Table 6-4 list the Commonwealth and State departments or agencies that were identified as a relevant person for consultation when preparing this EP.

6.3.2 Relevant persons under Regulation 25(1)

In accordance with the OPGGS(E)R, the department or agency of the responsible State Minister is a relevant person (Section 6.2.1).

The petroleum activity within scope of this EP occurs in Commonwealth waters, off the coast of WA. As such, the Department of Energy, Mines, Industry, Regulation and Safety (DEMIRS) was identified as a relevant person for consultation during the preparation of this EP (Table 6-4).

6.3.3 Relevant persons under Regulation 25(1)(d)

In accordance with the OPGGS(E)R, relevant persons include a person or organisation whose functions, interests or activities may be affected by the activities under this EP (Section 6.2.1).

Table 6-4 lists the persons or organisations that were identified as a relevant person for consultation when preparing this EP.

Table 6-3: Considerations for determining relevance of a person or organisation

Category of persons or organisations	Considerations for determining a relevant person
Commercial fishery licence holders and/or representative bodies	Commonwealth commercial fisheries: • fishery management area intersects with the Hydrocarbon EMBAs, and a record of recent active fishing effort (based on annual data from the Australian Bureau of Agricultural and Resource Economics and Sciences [ABARES]) occurring within the Hydrocarbon EMBAs • fishing method, preferred locations or water depths, fishing season • key target species, distribution, and behaviour • potential for temporal and/or spatial interaction between petroleum activity and the commercial fishery

Category of persons or organisations	Considerations for determining a relevant person
	State commercial fisheries: • guidance from WAFIC (Ref. 296) regarding separate consultation strategies for unplanned events such as oil spills, where the titleholder can demonstrate likelihood of an event is 'extremely low' • fishery management area intersects with the OA, and a record of recent active fishing effort (based on DPIRD FishCube data) occurring within the OA • fishing method, preferred locations or water depths, fishing season • key target species, distribution, and behaviour • potential for temporal and/or spatial interaction between petroleum activity and the commercial fishery Peak industry bodies: • where a fishery has been determined as relevant, the representative body is also considered relevant.
ENGOs	• CAPL's operating experience in the NWS and pre-existing knowledge of local ENGOs • potential for temporal and/or spatial interaction between petroleum activity and the ENGO's interests
First Nations people and/or representative bodies	First Nations people use the coast and marine areas for their cultural identity, health and wellbeing, and their domestic and commercial economies. Therefore, the activities under the EP may be relevant to First Nations people who have an enduring cultural and spiritual connection to the sea. First Nations people or groups were identified through: • Native Title claims or determinations intersecting with, or directly within the vicinity of the Hydrocarbon EMBAs • where an AMP is present within the Hydrocarbon EMBAs, a review of any identified First Nations people or groups Representative bodies: • CAPL's operating experience in the NWS and previous interactions with First Nations representative bodies • where a group has been determined as relevant, the representative body is also considered relevant.
Local government departments or agencies	• local government boundary intersects with the Hydrocarbon EMBAs
Other petroleum titleholders	• CAPL's operating experience in the NWS and pre-existing knowledge of other petroleum operators • other Commonwealth (based on spatial data from NOPTA) petroleum titles that intersect with the Hydrocarbon EMBAs, and with current or proposed activities occurring (based on publicly available EPs from NOPSEMA's EP submission website) within the Hydrocarbon EMBAs • other State (based on spatial data from DEMIRS) petroleum titles that intersect with the Hydrocarbon EMBAs, and with current or proposed activities occurring (based on publicly available EP summaries from DEMIRS EARS database) within the Hydrocarbon EMBAs • potential for temporal and/or spatial interaction between petroleum activity and the operator of another petroleum title
Tourism and recreation operators	Tourism and recreation operators: • CAPL's operating experience in the NWS and pre-existing knowledge of local tour and recreational operators • a record of recent active tour operator fishing effort (based on DPIRD FishCube data) occurring within the Hydrocarbon EMBAs

Category of persons or organisations	Considerations for determining a relevant person
	• where an AMP is present within the Hydrocarbon EMBAs, a review of the 'authorisations issued' from Parks Australia (Ref. 282) • potential for temporal and/or spatial interaction between petroleum activity and the tourism/recreational operator Peak industry bodies: • where a tourism or recreational operator has been determined as relevant, the representative body is also considered relevant.
WA World Heritage advisory committees	• World Heritage area intersects with the Hydrocarbon EMBAs, and an Australian World Heritage advisory committee exists

6.3.4 Relevant persons under Regulation 25(1)

In accordance with the OPGGS(E)R, relevant persons may include any other person or organisation that CAPL considers relevant.

Where a person or organisation on this list does not already become a relevant person under Regulation 25(1)(d)), CAPL may voluntarily opt to include them in the consultation for the petroleum activity as part of wider and ongoing engagement with their broad stakeholder base.

6.3.5 Conclusion on relevant persons identified

As a result of applying the methodology and identification processes, the relevant persons identified for the purposes of Regulation 25 of the OPGGS(E)R are listed in Table 6-4. CAPL is confident that it has used multiple lines of evidence to identify all relevant persons.

Table 6-4: Relevant persons identified for consultation during preparation of the Gorgon and Jansz–Io Drilling Completions Well Maintenance Program

Relevant person	Rationale
Commonwealth department or agencies (Regulation 25(1)(a))	
Australian Fisheries Management Authority (AFMA)	As identified in NOPSEMA's consultation guideline (Ref. 290) AFMA is a relevant agency for consultation where an activity can impact or has the potential to impact on fisheries resources in AFMA managed fisheries. Commonwealth fishery management areas have been identified as overlapping with the EMBA (Section 4.4.1). Therefore, the activities under the EP may be relevant to the AFMA.
Australian Hydrographic Office (AHO)	As identified in NOPSEMA's consultation guideline (Ref. 290) AHO is a relevant agency for consultation when nautical products or other maritime safety information must be updated. Vessel operations are required for the activities within scope of this EP (Section 3.5.1), and thus a safety exclusion zone will be requested around the vessels (Section 3.5.1). Therefore, the activities under the EP may be relevant to the AHO.
Australian Maritime Safety Authority (AMSA)	As identified in NOPSEMA's consultation guideline (Ref. 290) AMSA is a relevant agency for consultation where a proposed activity may impact on the safe navigation of commercial shipping in Australian waters. The EMBA for this EP intersects with shipping routes (Section 4.4.4). Therefore, the activities under the EP may be relevant to the AMSA.
Department of Agriculture, Fisheries and Forestry (DAFF)	As identified in NOPSEMA's consultation guideline (Ref. 290) DAFF is a relevant agency for consultation where an activity has the potential to impact on fishing operations and/or fishing habitats in Commonwealth waters. Commonwealth and State-managed fisheries have been identified as overlapping with the EMBA (Section 4.4.1). Therefore, the activities under the EP may be relevant to DAFF.
Director of National Parks (DNP)	As identified in NOPSEMA's consultation guideline (Ref. 290) DNP is a relevant agency for consultation where • the activity or part of activity is within the boundaries of a proclaimed AMP • activities proposed to occur outside a reserve may impact on the values within an AMP • an environmental incident occurs in Commonwealth waters surrounding an AMP and may impact on the values within the park. The EMBA for this EP intersects with AMPs (Section 4.5.1). Therefore, the activities under the EP may be relevant to the DNP.
Department of Climate Change, Energy, Environment and Water (DCCEEW)	As identified in NOPSEMA's consultation guideline (Ref. 290) DCCEEW is a relevant agency for consultation where an activity has the potential to directly or indirectly adversely impact on protected underwater cultural heritage. The EMBA for this EP overlaps with underwater cultural heritage sites (shipwrecks) (Section 4.6). Therefore, the activities under the EP may be relevant to the DCCEEW.
Department of Defence (DoD)	As identified in NOPSEMA's consultation guideline (Ref. 290) DoD is a relevant agency for consultation where: • a proposed activity may impact DoD training and operational requirements • a proposed activity encroaches on known training areas and/or restricted airspace

Relevant person	Rationale
	• there is a risk of unexploded ordnance in the area where the activity is taking place. DoD areas and/or facilities do intersect with the EMBA (Section 4.4.6). Therefore, the activities under the EP may be relevant to the DoD.
State or Northern Territory departments or agencies (Regulation 25(1)(a))	
Department of Biodiversity, Conservation and Attractions (DBCA)	DBCA promotes biodiversity and conservation through sustainable management of WA's species, ecosystems, lands and the attractions in their care. The EMBA for this EP intersects with State terrestrial and marine protected areas (Sections 4.5.2 and 4.5.3.). Therefore, the activities under the EP may be relevant to DBCA.
Department of Primary Industries and Regional Development (DPIRD)	DPIRD's responsibility is to conserve, sustainably develop and share the use of WA's aquatic resources and their ecosystems. As identified in their consultation guideline (Ref. 30), DPIRD considers that it is a relevant person where a petroleum activity may potentially affect commercially and recreationally important fish species, their prey and habitats, and the business activities of the fishers who harvest these resources in State or Commonwealth waters. State-managed fisheries and recreational fisheries have been identified as overlapping with the EMBA (Sections 4.4.1 and 4.4.2). Therefore, the activities under the EP may be relevant to DPIRD.
Department of Transport (DoT) – Maritime Environmental Emergency Response (MEER) – Marine Pollution	DoT (MEER) is the hazard management agency for marine oil pollution and maritime transport emergencies in WA waters. The MEER's role is to develop marine oil spill response capabilities, provide resources and support during response operations, training programs, assist in developing oil spill contingency plans and raise community awareness about the impact of oil spills. MEER considers that it is a relevant person if activities have the potential to cause a marine oil pollution incident in State waters (Ref. 31). While the unplanned hydrocarbon release events identified for this EP will occur in Commonwealth waters, some areas of State waters may be exposed (Section 7.15). Therefore, the activities under the EP may be relevant to DoT.
Department of Water and Environment Regulation (DWER)	DWER supports WA's community, economy and environment by managing and regulating the state's environment and water resources on behalf of the Minister for the Environment. Therefore, the activities under this EP may be relevant to DWER.
Pilbara Ports Authority	The Pilbara Ports Authority assumes oversight of Barrow Island, Onslow, Port of Ashburton and more and operates as a corporate entity that reports to the State Government of Western Australia's Minister of Ports. The activity occurs within Commonwealth and State waters, requires vessels and ports for use. Therefore, the activities under the EP may be relevant to the Pilbara Ports Authority.
Department of the responsible State or Northern Territory Minister (Regulation 25(1)(b))	
Department of Mines, Energy, Industry, Regulation and Safety (DEMIRS)	DEMIRS is the department of the responsible State Minister. Therefore, they are considered a relevant person as per Regulation 25(1) of the OPGGS(E)R.

Relevant person	Rationale
Person or organisation whose functions, interests, or activities may be affected by the petroleum activity (Regulation 25(1)(d))	
First Nations people and/or representative bodies	
Baiyungu Aboriginal Corporation (BAC) Baiyungu people	Baiyungu Country extends from Point Cloates (north of Carnarvon) along the coast to Point Quobba, then stretches east to Manberry Station and north to Winning Pool Station. A major area of significance is Coral Bay and neighbouring Cardabia Station (a pastoral station run by BAC and the Baiyungu people). The EMBA does not directly intersect with this area of coast; however, the EMBA does extend into the offshore waters of the Gascoyne. No Native Title determination currently exists within the EMBA and this representative body have not been identified in an AMP Management Plan. However, because the EMBA occurs offshore from the Gascoyne Coast, and engagement with BAC identified that Sea Country is of recognised value to the Baiyungu people, the activities under the EP may be relevant to this organisation and the Baiyungu people. Note: CAPL has also consulted NTGAC who also represents the Baiyungu people for Native Title rights and interests.
Buurabalayji Thalanyji Aboriginal Corporation (BTAC) Thalanyji people	The BTAC was registered in 2008 to represent, protect, and support the interests of the Thalanyji people. Thalanyji Country spreads out across the Ashburton River coastal plain south to Tubridji Point, then across to Yannarie River and upstream to Emu Creek, across the range hills of south-west Pilbara to Henry River and Cane River in the north. The EMBA does not directly intersect with this area of coast; however, the EMBA does extend into the offshore waters of the Pilbara. No Native Title determination currently exists within the EMBA and this group have not been identified in an AMP Management Plan. However, because the EMBA occurs offshore from the Pilbara coast, and engagement with BTAC identified that Sea Country is of recognised value to the Thalanyji people, the activities under the EP may be relevant to this RNTBC and the Thalanyji people. Note: CAPL has also consulted NTGAC who also represents the Thalanyji people for Native Title rights and interests.
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) Baiyungu people Thalanyji people Yinggarda people	The NTGAC was registered in 2019 to represent, protect and support the interests of the Baiyungu, Thalanyji and Yinggarda People. The RNTBC represents an area that extends approximately from Exmouth Gulf to Lake Macleod. The EMBA intersects with part of this area of coast, and the EMBA also extends into the offshore waters of the Pilbara and Gascoyne. Native Title determination WCD2019/016 intersects with the EMBA (Section 4.6.3). The Baiyungu, Thalanyji and Yinggarda People were also identified within the North-west Marine Parks Network Management Plan (Ref. 256) as having responsibilities for Sea Country in the Commonwealth Gascoyne Marine Park (Section 4.5.1). Therefore, the activities under the EP may be relevant to this RNTBC and the Baiyungu, Thalanyji and Yinggarda people.
Ngarluma Aboriginal Corporation (NAC) Ngarluma people	The NAC was registered in 2005 to represent, protect and support the interests of the Ngarluma and Yindjibarndi people. Ngarluma Country encompasses the interior hills, tablelands, river systems, and coastline of the west Pilbara region of WA, including the Burrup Peninsula and islands of the Dampier Archipelago.

Relevant person	Rationale
Yindjibarndi people	The EMBA does not directly intersect with this area of coast; however, it does extend into the offshore waters of the Pilbara. No Native Title determination currently exists within the EMBA and this group have not been identified in an AMP Management Plan. However, because the EMBA occurs offshore from the Pilbara coast, the activities under the EP may be relevant to this RNTBC and the Ngarluma and Yindjibarndi people. Note: CAPL has also consulted NYFL who also represents the Ngarluma and Yindjibarndi people.
Ngarluma Yindjibarndi Foundation Ltd (NYFL) Ngarluma people Yindjibarndi people	The NYFL is the Traditional Owner organisation that delivers social and economic outcomes for its members and broader community. The Ngarluma and Yindjibarndi lands in the Pilbara area of WA stretch from the Pilbara coast to the Millstream-Chichester National Park to the south, from around Whim Creek in the east to just west of Pannawonica. The EMBA does not directly intersect with this area of coast; however, it does extend into the offshore waters of the Pilbara. No Native Title determination currently exists within the EMBA and this group have not been identified in an AMP Management Plan. However, because the EMBA occurs offshore from the Pilbara coast and engagement with NYFL identified that Sea Country is of recognised value to the Ngarluma and Yindjibarndi people, the activities under the EP may be relevant to this organisation and the Ngarluma and Yindjibarndi people. Note: CAPL has also consulted NAC who also represents the Ngarluma and Yindjibarndi people.
Mardathoonera Cultural Heritage Pty Ltd (MCH)	Mardathoonera Cultural Heritage Pty Ltd (MCH) has identified themselves as being Traditional Custodians for Barrow Island. The Mardathoonera people are a Pilbara language group, and engagement with MCH identified that Barrow Island was culturally significant. Given that Barrow Island is in close proximity of the EMBA for this EP, CAPL considers that MCH has functions, interests or activities that may be affected by the petroleum activity to be carried out under the EP. Therefore, they are considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Kariyarra Aboriginal Corporation (KAC) Kariyarra People	The Kariyarra Aboriginal Corporation was registered in 2018 to represent, protect and support the interests of the Kariyarra people. Native Title determination WCD2018/015 does not intersect with the EMBA; however, it is located in proximity to the EMBA. Therefore, the activities under the EP may be relevant to this PBC and the Kariyarra People.
Nanda Aboriginal Corporation Nanda People	The Nanda Aboriginal Corporation was registered in 2018 to represent, protect and support the interests of the Nanda people. The Native Title determination does not intersect with the EMBA; however, it is located in proximity to the EMBA. Therefore, the activities under the EP may be relevant to this PBC and the Nanda People.
Malgana Aboriginal Corporation Malgana People	The Malgana Aboriginal Corporation was registered in 2018 to represent, protect and support the interests of the Malgana People. Native Title determination WCD2018/012 intersects with the EMBA. Therefore, the activities under the EP may be relevant to this PBC and the Malgana People.
Murujuga Aboriginal Corporation (MAC) Ngarluma people	The MAC was incorporated in 2006 and is the approved corporate body for the Burrup and Maitland Industrial Estates Agreement. MAC has members from 5 traditional Aboriginal language groups from the Pilbara region: Ngarluma, Yaburara, Mardudhunera,

Relevant person	Rationale
Mardudhunera people	Yindjibarndi, and Wong-Goo-Tt-Oo. MAC is not a PBC for the purposes of Native Title; instead MAC holds the freehold title to Murujuga National Park. The EMBA does not directly intersect with the Burrup Peninsula or Dampier Archipelago; however, it does extend into the offshore waters of the Pilbara. No Native Title determination currently exists within the EMBA and this group have not been identified in an AMP Management Plan. However, because the EMBA occurs offshore from the Pilbara coast, the activities under the EP may be relevant to this organisation and the Ngarluma, Yaburara, Mardudhunera, Yindjibarndi, and Wong-Goo-Tt-Oo people. Note: CAPL has also consulted NAC who also represents the Ngarluma people, NYFL who represent the Ngarluma and Yindjibarndi people, and WAC who also represents the Mardudhunera and Yaburara people.
Yaburara people	
Yindjibarndi people	
Wong-Goo-Tt-Oo people	
Robe River Kuruma Aboriginal Corporation (RRKAC)	RRKAC is the RNTBC for the Robe River Kuruma (RRK) Native Title determined areas. The RRK people have traditional rights to an area in the Pilbara. Their lands lie within the Shire of Ashburton, and around the township of Pannawonica, and comprise part of the Fortescue River and the complete river system of the Jajiwurra (Robe River), in the most westerly part of the Hamersley Range. The EMBA does not directly intersect with the Jajiwurra river mouth; however, it does extend into the offshore waters of the Pilbara. No Native Title determination currently exists within the EMBA and this group have not been identified in an AMP Management Plan. However, because the EMBA occurs offshore from the Pilbara coast, the activities under the EP may be relevant to this organisation and the RRK people.
Robe River Kuruma people	
Wirrawandi Aboriginal Corporation (WAC)	The WAC was registered in 2018 to hold and manage the Native Title rights and interests for the Mardudhunera and Yaburara people. Mardudhunera and Yaburara Country is in the Pilbara region (approximately between Maitland and Robe rivers). The EMBA does not directly intersect with this area of coast; however, it does extend into the offshore waters of the Pilbara. Native Title determination WCD2018/006) intersects with the EMBA (Section 4.6.3). Therefore, the activities under the EP may be relevant to this RNTBC and the Mardudhunera and Yaburara people.
Mardudhunera people	
Yaburara people	
Yamatji Southern Regional Council	The Yamatiji Southern Regional Corporation (YSRC) was established 2020 to serve as the Regional Entity responsible for mplementing the Yamatji Nation Indigenous Land Use Agreement. YSRC supports and represents the interests of the Amangu, Badimia, Hutt River, Mullewa Wadjari, Naaguja, Nhanda, Nhanaghardi, Wajarri, Wattandee, Widi Mob and Wilunyu peoples. The Yamatji Nation Indigenous Land Use Agreement encompasses an area of approximately 48,000 square kilometers in Western Australia's midwest region, extending from the coastal town of Kalbarri in the north, to Yalgoo in the inland east, and reaching as far south as Dalwallinu. The EMBA does not directly intersect with this area of coast, however it does extend into the offshore waters of the Gascoyne. No Native Title determination currently exists within the EMBA and this group have not been identified in an AMP Management Plan. However, given that the EMBA occurs offshore from the Gascoyne coast, and engagement with YSRC identified that Sea Country is of recognised value to the Yamatji people, the activities under the EP may therefore be relevant to the YSRC and the Yamatji people.
Yinggarda Aboriginal Corporation (YAC)	The YAC was registered in 2019 to represent, protect and support the interests of the Yinggarda people. Yinggarda Country is in the Gascoyne Region and includes the township of Carnarvon.

Relevant person	Rationale
Yinggarda people	The EMBA does not directly intersect with this area of coast; however, it does extend into the offshore waters of the Gascoyne. Native Title determination WCD2019/016 intersects with the EMBA (Section 4.6.3). Therefore, the activities under the EP may be relevant to this RNTBC and the Yinggarda people.
Commercial fishery licence holders and/or representative bodies	
Aquaculture Council of Western Australia	These organisations are peak bodies representing the commercial fishers within Commonwealth or State-managed commercial fisheries. Commonwealth and State-managed fisheries have been identified within the EMBA (Section 4.4). As such, these organisations have functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
Commonwealth Fisheries Association	
Western Australian Fishing Industry Council (WAFIC)	
Tourism and recreation operators	
Recfishwest	This organisation is the peak body representing the State-managed recreational fisheries. Recreational fishing has been identified within coastal and nearshore areas of the EMBA (Section 4.4). As such, this organisation has functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
Ashburton Anglers	Ashburton Anglers are a local fishing club. The EMBA for this EP intersects Commonwealth and State waters offshore, and some small areas of coast, within the Pilbara and Gascoyne regions. As such, this organisation has functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
Apache Fishing Charters	Recreational fisheries, tourism and recreational activities have been identified as occurring within or adjacent to the EMBA (Section 4.4). As such, these businesses may have functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
Archipelago Adventures	
Blue Horizon Charters	
Blue Juice Charters	
Blue Lightning Fishing Charters	
Bluesun 2 Boat Charters	
Cape Immersion Tours	
Evolution Fishing Charters	
Exmouth Dive and Whalesharks Ningaloo	

Relevant person	Rationale
Image Dive and Charters	
Live Ningaloo	
Mackerel Islands and Onslow Beach Resort	
Mahi Mahi Charters	
Marine Tourism Association of Western Australia	
Montebello Island Safaris	
Ningaloo Blue Dive	
Ningaloo Glass Bottom Boat	
Ningaloo Whaleshark n Dive	
Ningaloo Whaleshark Swim	
Perfect Nature Cruises	
Sail Ningaloo	
Shark Bay Coastal Tours	
Shark Bay Discovery Centre	
Top Gun Charters	
View Ningaloo	
Wilderness Island	
Wulu Gura Nyinda Eco-Cultural Adventures	
Local government departments or agencies	
Exmouth Chamber of Commerce and Industry	The EMBA for this EP does intersect with the small areas of coast (Section 4.3.5.1). Therefore, local governments may be considered relevant persons under Regulation 25(1)(d) of the OPGGS(E)R.
Onslow Chamber of Commerce and Industry	

Relevant person	Rationale
Shire of Ashburton	
Shire of Shark Bay	
Shire of Exmouth	
WA World Heritage advisory committees	
Ningaloo Coast World Heritage Advisory Committee (NCWHAC)	The NCWHAC provides advice to the Commonwealth and State Environment Ministers on the protection, conservation and management specific to Ningaloo Coast World Heritage Area. The EMBA for this EP does intersect with Ningaloo Coast World and National Heritage areas (Section 4.6). Therefore, NCWHAC is considered a relevant person under Regulation 25(1)(d) of the OPGGS(E)R.
Shark Bay World Heritage Advisory Committee (SBWHAC)	The SBWHAC provides advice to the Commonwealth and State Environment Ministers on the protection, conservation and management specific to the Shark Bay World Heritage Area. The EMBA for this EP does intersect with Shark Bay World Heritage areas (Section 4.6). Therefore, SBWHAC is considered a relevant person under Regulation 25(1)(d) of the OPGGS(E)R.
Other petroleum titleholders	
Carnarvon Energy	Petroleum operations have been identified to occur within the spatial extent of the EMBA (Section 4.4.6). Therefore, other petroleum titleholders are considered relevant persons under Regulation 25(1)(d) of the OPGGS(E)R.
Eni Australia	
Exxon Mobil	
Kato Energy / Kato NWS Pty Ltd	
Santos	
Western Gas	
Woodside	
ENGOs	
Australian Marine Conservation Society	ENGOs are organisations concerned about public welfare, people and the environment. Several environmental receptors intersect with the EMBA (Section 4). Therefore, NGOs may be considered relevant persons under Regulation 25(1)(d) of the OPGGS(E)R.
Cape Conservation Group	
Protect Ningaloo	
Other	
Care for Hedland Environmental Association	A representative from the Care for Hedland Environmental Association contacted CAPL via the Online Consultation Hub to self-identify for consultation.

Relevant person	Rationale
	Care for Hedland run a community-based Flatback Turtle monitoring program, and engagement with the representative identified that a genetic link existed between the Flatback Turtles nesting populations at Port Hedland, Barrow Island, and the broader NWS. While the EMBA is >200 km from Port Hedland, and any direct interaction with Port Hedland is not predicted to occur from planned activities or an unplanned event associated with this EP, given the migratory nature of marine turtles and that the Pilbara Coast represents a single genetic stock (Ref. 54), CAPL considers that the Care for Hedland Environmental Association has functions, interests or activities that may be affected by the petroleum activity to be carried out under the EP. Therefore, they are considered relevant persons under Regulation 25(1)(d) of the OPGGS(E)R.
Any other person or organisation that the titleholder considers relevant (Regulation 11A(1))	
Commercial fishery licence holders and/or representative bodies	
Pearl Producers Association	Pearl Producers Association are the peak representative body of the Australian South Sea Pearling Industry. Relevant pearling operations occur outside the boundary of EMBA; however, under Regulation 25(1) CAPL selected to include the council in consultation.
Western Rock Lobster Council	Western Rock Lobster (WRL) is the peak industry body representing the interests of the western rock lobster fishery. The WRL fishery operates outside the boundary of EMBA; however, under Regulation 25(1) CAPL selected to include the WRL Council in consultation.
Local government departments or agencies	
Carnarvon Chamber of Commerce	The EMBA for this EP intersects Commonwealth and State waters offshore, and some small areas of coast, within the Pilbara and Gascoyne regions, and therefore under Regulation 25(1) CAPL selected to include this organisation in consultation.
City of Karratha	
Gascoyne Development Commission	
Karratha and Districts Chamber of Commerce and Industry	
Shire of Carnarvon	
Other	
Exmouth Gulf Taskforce	The Exmouth Gulf Taskforce provides high-level advice to the Minister for Environment on the environmental management of the Exmouth Gulf and its surrounds, to help preserve the region's unique environmental, cultural and social values. The EMBA for this EP intersects Commonwealth and State waters around Exmouth, and therefore under Regulation 25(1) CAPL selected to include this organisation in consultation
Pilbara Development Commission	The Pilbara Development Commission works across government to support economic growth, stimulate job growth and increase industry innovation among other things. The EMBA for this EP intersects Commonwealth and State waters offshore, and some small areas of coast, within the Pilbara and Gascoyne regions, and therefore under Regulation 25(1) CAPL selected to include this organisation in consultation.

Relevant person	Rationale
Coral Bay Progress Association	The EMBA for this EP intersects Commonwealth and State waters offshore, and some small areas of coast, within the Pilbara and Gascoyne regions, and therefore under Regulation 25(1) CAPL selected to include this organisation in consultation.
WA Coastal and Marine Community Network	
Western Australian Museum	The WA Museum is the State's premier cultural organisation, housing WA's scientific and cultural collection. The EMBA for this EP intersects Commonwealth and State waters offshore, and some small areas of coast, within the Pilbara and Gascoyne regions, and therefore under Regulation 25(1) CAPL selected to include this organisation in consultation.
Australian Conservation Foundation	ENGOs are organisations concerned about public welfare, people and the environment. The EMBA for this EP intersects Commonwealth and State waters offshore of the Pilbara and Gascoyne regions, and therefore under Regulation 25(1) CAPL selected to include this organisation in consultation.
Conservation Council of Western Australia	
Greenpeace	
International Fund for Animal Welfare	
Whale and Dolphin Conservation Society	
Wilderness Society	

6.3.6 Assessment and response

CAPL will assess the merits of all objections and claims regarding the consequences of the petroleum activity on a relevant persons functions, interests, or activities it receives during the consultation period that relate to the petroleum activity, consistent with Regulation 24(b)(ii) of the OPGGS(E)R. This will be done by evaluating appropriate evidence, including evidence provided by the relevant person submitting the objection or claim, and identify the potential impacts or risks on the totality of the values and sensitivities that could be affected by the petroleum activity. Potentially adverse impacts of the petroleum activity may need to be mitigated by applying appropriate control measures. CAPL will consider all input received from relevant persons with the intent of identifying opportunities to better manage its activities and enhance its EPs.

Claims or objections not directly related to the petroleum activity (such as statements of fundamental objection to the oil and gas industry) are not considered to have merit under the OPGGS(E)R because they are not relevant to the petroleum activity itself, or the impacts and risks of the petroleum activity. However, the consultation report will summarise these statements and explain why they have not been considered in preparing the EP.

Appendix D summarises the outcomes of consultation undertaken to date with relevant persons when preparing this EP. The table describes the matters, objections or claims, assesses the merits of the objection or claim, how CAPL responded to the relevant person, and where or how any changes resulting from the consultation were incorporated into the EP.

A record of consultation undertaken, to date, specifically for this petroleum activity is included in the engagement log, which is provided to NOPSEMA in the sensitive information report.

6.3.7 Summary information

Regulation 24 of the OPGGS(E)R requires that an EP contain:

- a report on all consultations under Regulation 25 of any relevant person by the titleholder, that contains:
- a summary of each response made by a relevant person
- an assessment of the merits of any objection or claim about the adverse impact of each activity to which the EP relates
- a statement of the titleholder’s response, or proposed response, if any, to each objection or claim
- a copy of the full text of any response by a relevant person.

Regulation 34(g)(ii) of the OPGGS(E)R requires that the EP demonstrates that ‘the measures (if any) that the titleholder has adopted, or proposes to adopt, because of the consultations are appropriate’.

Appendix D summarises each response, CAPL’s assessment of the merits of any objection or claim, and CAPL’s response to each objection or claim. This consultation summary also describes what (if any) changes to the EP, including control measures, were made in response to each objection or claim. The consultation summary will be updated once the consultation process has been completed.

6.3.8 Conclusion on consultation

CAPL has undertaken the consultation process as described in Section 6. In doing so CAPL has undertaken all practicable and reasonable steps to meet the objective and discharge the requirements of consultation as articulated in the relevant case law and regulation 25 of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth) ("regulation 25").

As detailed in this EP, CAPL has provided sufficient information (Section 6.2.2) and a reasonable period of time (Section 6.2.3) to enable relevant persons to make an informed assessment of the possible impacts and risks of the petroleum activity on their functions, interests or activities (meeting the requirements of regulation 25).

CAPL has provided sufficient time to relevant persons to provide relevant input for CAPL to assess relevant persons claims and objections, and to action the input from relevant persons. In response to input from relevant persons, CAPL has:

- updated its description of environment (Section 4) to include values and sensitivities raised by relevant persons
- updated its impact and risk assessment (Section 7) to include assessment of input from relevant persons on their values and sensitivities (particularly in relation to marine fauna and songlines), including revision and/or addition of control measures through this EP, informed NOPSEMA of relevant persons identities, the nature of the consultation, and the control measures adopted.

For further detail, see Appendix D and the sensitive information report.

In support of discharging its obligations under regulation 25, CAPL notes:

- it has been 9 months since consultation on this EP commenced and information on the petroleum activity, including potential impact and risks associated with the petroleum activity, has been presented on CAPL's website during this time with the option to provide feedback online.
- CAPL has maintained a toll-free contact number for persons or organisations to call and participate in consultation.
- CAPL published notices in seven newspapers, as outlined in Section 6.2.2.
- CAPL has attended multiple face-to-face meetings with First Nations representative bodies while consulting on this EP (as outlined in Appendix D),and provided tailored and bespoke consultation material for consideration.
- CAPL has also provided a reasonable opportunity for relevant persons to engage in genuine two-way dialogue on environmental impacts and concerns, and considers consultation completed subject to CAPL's ongoing consultation obligations (Section 8.3.4.1).
- It is noted that CAPL is not required to obtain consent from a relevant person to engage in the petroleum activity. To the extent a relevant person communicated it had further information to share or claimed consultation under regulation 25 had not completed, Appendix D provides CAPL's reasons why consultation under regulation 25 has been completed in relation to that relevant person.

7 Environmental impact and risk assessment and management strategy

This Section provides an evaluation of the impacts and risks associated with the petroleum activity appropriate to the nature and scale of each impact and risk, details the control measures that are used to reduce the risks to ALARP and to an acceptable level, and identifies the associated environmental performance outcomes, performance standards, and measurement criteria, as required under Regulations 21(5), 21(6) and 21(7) of the OPGGS(E)R.

Table 7-1 summarises the impacts and risks that were identified and evaluated for this activity.

Table 7-1: Summary of impact and risk evaluation

Section	Aspect	Impact	Risk			Decision context	ALARP	Acceptable
		C^	C^	L	R			
7.1	Physical presence—other marine users	–	6	4	9	A	Yes	Yes
7.2	Physical presence—marine fauna	–	6	4	9	A	Yes	Yes
7.3	Seabed disturbance	5	5	6	10	A	Yes	Yes
7.4	Light emissions	6	6	5	10	A	Yes	Yes
7.5	Air emissions	6	6	6	10	A	Yes	Yes
7.6	Underwater sound emissions—continuous	5	5	4	8	A	Yes	Yes
7.7	Underwater sound—impulsive	5	5	4	8	A	Yes	Yes
7.8	Invasive marine pests	–	2	6	7	A	Yes	Yes
7.9	Planned discharges—facility and vessel operations	6	6	6	10	A	Yes	Yes
7.10	Planned discharges—drill cuttings and fluids	4	5	3	7	A	Yes	Yes
7.11	Planned discharges—cement	4	6	6	10	A	Yes	Yes
7.12	Planned discharges—BOP fluids	6	6	6	10	A	Yes	Yes
7.13	Unplanned release—waste	–	6	4	9	A	Yes	Yes
7.14	Unplanned release—minor loss of containment	–	5	4	8	A	Yes	Yes
7.15	Unplanned release—vessel collision event	–	4	5	8	A	Yes	Yes
7.16	Unplanned release—well control event	–	4	5	8	A	Yes	Yes
7.17.4.1	Planned discharges—SSDI response	–	4	5	8	A	Yes	Yes
7.17.4.2	Ground disturbance—shoreline spill response	–	5	5	9	A	Yes	Yes
7.17.4.3	Physical presence—oiled wildlife response	–	5	5	9	A	Yes	Yes

C = consequence, L = likelihood, R = risk

^ For aspects identified causing both impacts and risks, the highest-level consequence was evaluated in detail to ensure that justification is provided to support the highest consequence level for the aspect.

7.1 Physical presence—other marine users

Physical presence—other marine users

Source

Activities identified as having the potential to result in interaction with other marine users are:

- Temporary presence of the MODU within the OAs during the drilling, well intervention and/or well abandonment activities
- Temporary presence of vessels and/or ROV within the OAs during the drilling, well intervention and/or well abandonment activities
- Presence of subsea wellhead and tree at the production well sites

Potential impacts and risks

Impacts	C	Risks	C
N/A	–	Unplanned interactions with other marine users may result in: • disruption to commercial shipping and fishing activities • entanglement of trawl fishing gear on subsea infrastructure or equipment	6

Consequence evaluation

The MODU and support vessels will be present within the OAs during the drilling, well intervention and/or well abandonment activities. The Gorgon OA is ~265 km^2, with water depths of ~215–250 m. The Jansz OA is ~212 km^2, with water depths of ~1,315–1,350 m. It is expected that each well activity will take ~65 days (Section 3.1.2). However, this duration is indicative and subject to potential operational delays (e.g. weather, unplanned contingencies) and final design considerations (e.g. tree option selection). The wellheads and other subsea equipment may be located within the proposed 500 m safety exclusion zone around the MODU. Where required, CAPL would also apply for a 500 m safety exclusion zone for any wells that are re-drilled which will remain in place after the MODU leaves the field.

The potential for unplanned interactions between other marine users and subsea structures is limited to where these users interact with the seabed. Marine users that have the potential to interact with the sea floor have been identified as commercial fisheries that use trawl or trap fishing methods. The potential risks to fishing vessels from subsea structures includes disruption to fishing efforts caused by the need for vessels to avoid the infrastructure or physical damage (via entanglement) to fishing gear that contacts the infrastructure.

Commonwealth fisheries with fishing effort recorded within the OAs are limited to the North West Slope Trawl Fishery (NWSTF). The NWSTF use bottom (or demersal) trawl methods to target deepwater prawn and scampi that live on or near the sea floor (depths of 350–600 m). While the NWSTF was active within its management area and did record fishing effort during all (2015–2020) years, active fishing effort only occurred within the Gorgon OA during 2010 and 2020, and the Jansz OA during 2015 (Ref. 265). Relative fishing intensity data are not available for the NWSTF due to low vessel numbers and confidentiality.

Of the State-managed fisheries with management areas that overlap the OAs, and have recent fishing efforts recorded (Section 4.4.1.2), 2 also use trap methods that would intersect with the sea floor: the Pilbara Trap Managed Fishery, and the West Coast Deep Sea Crustacean Managed Fishery. However, fishing effort is typically low with ≤3 vessels present for these fisheries within the 60 nm fishery grid blocks that intersect with the OAs.

Subsea infrastructure has been in place within the OAs for several years (installation completed in 2016), and to date, no incidences of commercial fishing activities interacting with the infrastructure has been communicated to CAPL. Consequently, the long-term presence of the additional subsea structures are not expected to result in a significant impact to commercial fishing operations (via loss of catches or damage to fishing equipment). Any deviation required by fishing vessels around the subsea structures is not expected to impact on the functions, interests, or activities of commercial fisheries.

The stationary presence of the MODU and using support vessels during the drilling, well intervention and/or well abandonment activities have the potential to disrupt other marine users, including commercial shipping or fishing vessels.

As identified in Section 4.4.1, there are 5 commercial fisheries with recent fishing effort that overlap the Gorgon OA, of these there are 4 State-managed (Mackerel, Pilbara Line, Pilbara Trap and West Coast Deep Sea Crustacean) and one Commonwealth-managed fishery (North West Slope Trawl Fishery). The Jansz OA overlap with one State-managed fishery (Pilbara Line) and one Commonwealth fishery (North west Slope Trawl Fishery).

Although Commonwealth and State fisheries are present, the level of fishing effort within both the Gorgon and the Jansz OA is typically low. Fishing effort records obtained from DPIRD (Ref. 16) for State-managed

Physical presence—other marine users		
commercial fisheries indicate that fishing effort within the OAs varies each year, but that there may be up to >6 vessels operating some years.. The entire fishery has a small number of active permits and vessels (e.g. 7 permits and 3 vessels were active during the 2021–2022 season [Ref. 19]). Any deviation required by fishing vessels around the MODU (and its safety exclusion zone) or the support vessels within the OAs, is not expected to impact on the functions, interests, or activities of other marine users. The Gorgon and Jansz OAs are outside major shipping fairways and commercial vessel traffic density within each OA is low (Section 4.4.4). Therefore, the presence of the MODU and support vessels within the OAs are not expected to affect commercial shipping operations. Any deviation required by commercial shipping operators is not expected to impact on the functions, interests, or activities of other marine users. Taking the above into consideration, the physical presence of the MODU and support vessels within the OA during drilling, well intervention and/or well abandonment activities, are not expected to cause significant impacts to other marine users, with limited potential impact to their functions, interests, or activities. Therefore, CAPL has ranked the potential consequence to other marine users from physical presence as Incidental (6).		
ALARP decision context justification		
Offshore drilling and support vessel operations are commonplace and well-practised both nationally and internationally. The control measures to manage the risks associated with unplanned interactions with other marine users are well defined and understood by the industry. During relevant persons consultation, no objections or claims were raised regarding disruption to other marine users arising from the petroleum activity. The risks arising from the physical presence of the MODU and support vessels to other marine users are considered lower-order risks in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.		
Good practice control measures		
Control measure	**Description**	
Relevant persons engagement	Relevant persons will be advised of the commencement of the activity and any relevant safety exclusion zone information. Communicating the activity details, location, requested safety exclusion zone, and presence of vessels to other marine users ensures they are informed and aware, thereby reducing the risk of unplanned interactions.	
Maritime safety information	Maritime safety information, such as AUSCOAST navigational warnings, are issued by the Joint Rescue Coordination Centre (JRCC) Australia, part of AMSA. Under the *Navigation Act 2012*, the AHO is also responsible for maintaining and disseminating navigational charts and publications, including providing safety-critical information to mariners (including any change to prohibited/restricted areas, obstructions to surface navigation, etc.) via the Notice to Mariners system. Notice to Mariners can be permanent or temporary notifications. Where required, AUSCOAST and/or Notice to Mariners will be issued; thus enabling other marine users to also safely plan their activities.	
Marine Standard	Chevron's *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 29) ensures that various legislative requirements are met. These include: • crew meet the minimum standards for safely operating a vessel, including watchkeeping requirements • navigation, radar equipment, and lighting meet industry standards. These requirements will ensure that direct vessel radio contact is available to other marine users operating in this area to enable ease of communication in highlighting risks and safety exclusion zones.	
Additional control measures and cost–benefit analysis		
Control measure	**Benefit**	**Cost**
N/A	N/A	N/A
Likelihood and risk level summary		
Likelihood	Due to the nature and scale of this petroleum activity, the slow-moving nature of vessels within the OA, the limited area of operation and the limited duration of each activity, the likelihood of interaction with other marine users is considered	

<table>
<tr><th colspan="3">Physical presence—other marine users</th></tr>
<tr><td></td><td colspan="2">low. Interaction with the wellhead or subsea equipment is not expected to occur. As such, CAPL consider the likelihood of the consequence occurring is Unlikely (4).</td></tr>
<tr><td>Risk level</td><td colspan="2">Very low (9)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The risks associated with this aspect are unplanned interactions causing incidental disruption to other marine users, which is not considered as having the potential to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Incidental (6).
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td rowspan="2">Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered relevant for this aspect include:
• Navigation Act 2012 (Cth)
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.</td></tr>
<tr><td>Requirement</td><td>Demonstration</td></tr>
<tr><td></td><td>Navigation Act 2012 (Cth)
Notice to Mariners</td><td>Requirement to issue a Notice to Mariners has been incorporated into the maritime safety information control measure.</td></tr>
<tr><td>Internal context</td><td colspan="2">The following CAPL management processes or procedures were deemed relevant for this aspect:
• Marine Standard Non Tankers: Corporate OE Standard (Ref. 29).
• Managing Safe Work OE Process (Ref. 28).
Control measures related to the above management process have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding interaction with other marine users arising from the activity.</td></tr>
<tr><td>Defined acceptable level</td><td colspan="2">These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.</td></tr>
<tr><th>Environmental performance outcome</th><th>Environmental performance standard</th><th>Measurement criteria</th></tr>
<tr><td rowspan="3">(EPO 1) Other marine users are aware of the potential impacts and risks from the petroleum activity.</td><td>(EPS 1.1) Relevant persons consultation—Ongoing consultation (notifications)
Relevant persons (that have requested notifications) will be advised of the commencement and expected completion dates.</td><td>(MC 1.1.1) Relevant persons consultation records.</td></tr>
<tr><td>(EPS 1.2) Maritime safety information
Notify relevant agency of activities, vessel movements, and requested safety exclusion zone, to enable them to generate radio-navigation warnings and/or Notice to Mariners prior to commencing offshore activities.</td><td>(MC 1.2.1) Record of lodgement of notification to relevant agency.</td></tr>
<tr><td>(EPS 1.3) Marine Standard
MODU and vessel crew will meet the minimum competency, navigation</td><td>(MC 1.3.1) Records indicate that MODU and vessels meet the crew competency,</td></tr>
</table>

Physical presence—other marine users		
	equipment, and radar requirements of the Marine Standard.	navigation equipment, and radar requirements of the Marine Standard.

7.2 Physical presence—marine fauna

Physical presence—marine fauna

Source

Activities identified as having the potential to result in interaction with marine fauna are:

- MODU—presence within either OA during the drilling, well intervention and/or well abandonment activities
- field support—presence of vessels within either OA during the drilling, well intervention and/or well abandonment activities.

Potential impacts and risks

Impacts	C	Risks	C
N/A	–	Unplanned interactions with marine fauna result in: • injury or death of marine fauna • changes to cultural heritage values.	 6 6

Consequence evaluation

The MODU and support vessels will be present within the OAs during the drilling, well intervention and/or well abandonment activities. The Gorgon OA is ~265 km^2, with water depths of ~200–250 m. The Jansz OA is ~212 km^2, with water depths of ~1,315–1,350 m. It is expected that each well activity will take ~65 days (Section 3.1.2). However, this duration is indicative and subject to potential operational delays (e.g. weather, unplanned contingencies) and final design considerations (e.g. tree option selection). The stationary presence of the MODU and use of support vessels during the drilling, well intervention and/or well abandonment activities has the potential to result in unplanned interactions with marine fauna.

Injury or death of marine fauna

Surface-dwelling fauna are the species at most risk from this aspect and thus are the focus of this evaluation. As identified in Section 4.3.3, several marine species listed as either threatened and/or migratory under the EPBC Act have the potential to occur within the Gorgon and Jansz OAs. Several BIAs or habitat critical to survival of a species also overlap with the Gorgon OA, including:

- Flatback Turtle (internesting buffer BIA, internesting habitat critical to the survival of a species)
- Whale Shark (foraging)
- Pygmy Blue Whale (distribution and migration)
- Humpback Whale (migration)

The following BIAs overlap with the Jansz OA:

- Pygmy Blue Whale (distribution and migration)

A review of the documents made or implemented under the EPBC Act for all turtle, shark, cetacean and bird species likely to be present within the OA (i.e. Flatback Turtle [Ref. 46], Whale Sharks [Ref. 47], Fin Whale [Ref. 48], Sei Whale [Ref. 49] and Blue Whale [Ref. 50]) indicates that either vessel disturbance or interaction (such as collisions) as a key threat to the recovery of the species.

The *Recovery Plan for Marine Turtles in Australia* (Ref. 46) identifies vessel disturbance as a key threat; however, it also notes that this is particularly an issue in shallow coastal foraging habitats, and internesting areas with high numbers of recreational and commercial craft, or in areas of marine development. The Gorgon OA occurs in Commonwealth waters ~200–250 m deep and ~60 km from the nearest coast at Barrow Island. The Jansz OA is located further offshore in water depths of ~1,315–1,350 m and more than ~125 km from the nearest coast (Barrow Island).

The Recovery Plan (Ref. 46) defines the internesting habitat critical to the survival of a species as a distance seaward from nesting habitat critical to the survival of a species as 60 km for Flatback Turtles (Ref. 26). Recent studies (Ref. 184) have indicated that the internesting behaviour of Flatback Turtles on the NWS appears more spatially restricted than that suggested by the Recovery Plan. Whittock et. al. (Ref. 184) reported that Flatback Turtles preference habitats near the coast and at relatively shallow depths during the internesting periods. Specifically, during the study, a maximum distance from the nearest coast and maximum water depth of 27.8 km and <44 m respectively was recorded, with the mean maximum distance away from the nearest coast and mean water depth being less than 6.1 km and <10 m respectively (Ref. 184). Unsuitable Flatback Turtle internesting habitat was defined as waters >25 m deep and >27 km from the coast (Ref. 184).

Physical presence—marine fauna

This suggests that although the Gorgon OA does overlap with some internesting habitat critical for the survival of a species, its location offshore in water depths ranging between ~200 m and 250 m, and because Flatback Turtle nesting occurs on the east coast beaches of Barrow Island (Ref. 327) (i.e. opposite side of the island to the OA), the Gorgon OA is not likely to provide preferred internesting habitat for this species.

Given vessel activity is limited to within the OAs and is not in shallow water, vessel disturbance to turtles is not evaluated further, and the focus of this evaluation is on cetaceans and sharks, as they provide a representative case to enable an indicative consequence evaluation to be undertaken.

For all cetacean species likely to be present within the OA, documents developed or implemented under the EPBC Act (listed above) indicate that management actions are limited to reporting incidents via the national database (refer to incident reporting in Section 8.4.2) and ensuring that the risk of vessel strike is assessed (refer to following text).

Cetaceans are naturally inquisitive marine mammals that are often attracted to offshore vessels and facilities. The reaction of whales to the approach of a vessel is quite variable. Some species remain motionless when near a vessel, while others are curious and often approach vessels that have stopped or are slow moving, although they generally do not approach, and sometimes avoid, faster-moving vessels (Ref. 51).

The *Conservation Management Plan for the Blue Whale 2015–2025* (Ref. 50) indicates that although all forms of vessels can collide with whales, severe or lethal injuries are expected to occur by larger or faster vessels. Laist et al. (Ref. 52) found that larger vessels with reduced manoeuvrability moving >10 knots may cause fatal or severe injuries to cetaceans, with the most severe injuries caused by vessels travelling faster than 14 knots. Because vessels will be stationary or slow moving while undertaking the activities within the scope of this EP, any interaction with marine fauna would not be expected to cause severe injuries.

Predictions from modelling based on passive acoustic data indicate greatest numbers of Pygmy Blue Whales during April to July (northern migration), and November and December (southern migration) (Ref. 172). The Jansz OA overlaps with an area of importance to migrating Pygmy Blue Whales. Given the deep, offshore location Pygmy Blue Whales may transit through the Jansz OA during their migration periods. Recent satellite tracking and acoustic detection found that Pygmy Blue Whales are more likely to travel offshore in deeper waters (Ref. 55; Ref. 56); however, the BIA near the drilling, well intervention and/or well abandonment activities is not considered to be a 'confined migratory pathway'[23].

The Gorgon OA is outside the areas considered to be important migratory areas for Pygmy Blue Whales but overlaps with the larger BIA for Pygmy Blue Whale migration. Recent satellite tracking and acoustic detection found that Pygmy Blue Whales are more likely to travel offshore in deeper waters (>1,000 m water depth) (Ref. 55; Ref. 56), and the Gorgon OA is situated in water depths of only ~200–250 m. As such it is considered less likely that Pygmy Blue Whales will transit through the Gorgon OA.

Vessel disturbance and strike is listed as a known current and future threat for the Humpback Whales (Ref. 310). Humpback Whales are one of the most frequently reported whale species involved in vessel strikes worldwide (Ref. 52).

The Gorgon OA overlaps with the migration BIA for Humpback Whales, and as such, there is the potential for whales to be present within this area during the predicted migration periods (June to October). Given the specific timing of any works relevant to this EP is yet to be determined, there is the potential for overlaps with the migration periods. Studies suggest that northbound Humpback Whales tend to travel around the 200 m water depth contour (i.e. potentially within the Gorgon OA and the migration BIA), while southbound Humpback Whales tend to travel closer to Barrow Island and generally occur between 50 m and 200 m water depths (Ref. 306). However, the Humpback Whale BIA near the drilling, well intervention and/or well abandonment activities only has a partial overlap with the south-western boundary of the Gorgon OA and the BIA is not considered to be a 'confined migratory pathway'[23].

There have been few recorded instances of cetacean deaths in Australian waters (e.g. a Bryde's Whale in Bass Strait in 1992) (Ref. 53), although the data indicates deaths are more likely to be associated with container ships and fast ferries. Mackay et al. (Ref. 54) report that 4 fatal and 3 non-fatal collisions with Southern Right Whales were recorded in Australian waters between 1950 and 2006, with one fatal and one non-fatal collision reported between 2007 and 2014.

A review of the *Conservation Advice Rhincodon typus Whale Shark* (Ref. 47) indicates that management actions should consider minimising offshore developments and transit time of large vessels in areas close to marine features that correlate with Whale Shark aggregations (Ningaloo Reef, Christmas Island and the Coral Sea). Because vessel activities are minimised to the smallest practicable extent (as also driven by economic considerations), the high-density foraging BIA is not located within the Gorgon OAs, and the nature and scale of vessel operations over the course of this EP are limited, the activity is considered to be consistent with all relevant management actions.

[23] *Confined migratory pathways are typically constrained by a physical (or other) barrier, and create a narrow or restricted bottleneck through which most of the population must pass.*

Physical presence—marine fauna
Whale Sharks are known to spend considerable time close to the surface increasing their vulnerability to vessel strike. Whale Sharks tagged off WA (Ref. 57, Ref. 58) spent ~25% of their time within 2 m from the surface and greater than 40% of their time in the upper 15 m of the water column. Spending such considerable time within 15 m of the surface leaves them vulnerable to collision with smaller vessels as well as larger commercial vessels that have drafts greater than 20 m below the surface. A search of the National Database (Ref. 59) did not identify any previous incidences of vessel strikes with Whale Sharks, indicating that although the risk is possible, previous events are limited in frequency. Though the Gorgon OA overlaps the Whale Shark foraging BIA, vessels will be stationary or slow moving while implementing the activities within the scope of this EP. Dugongs occur throughout the shallow waters between the Pilbara offshore islands and the mainland, and are generally associated with seagrass meadows (Ref. 198). Dugongs are known to occur around the islands of the Rowley Shelf such as Barrow Island, the Lowendal Islands and the Montebello Islands (Ref. 198); however Dugong populations are known to be greater in Exmouth Gulf or Shark Bay than around the offshore islands (Ref. 198; Ref. 322; Ref. 323). The OA closest to shore (the Gorgon OA) is located in deep, offshore waters (~200–250 m depth and ~40 km north-west of Montebello Islands) and as such does not support any critical feeding habitats for Dugong. Therefore, any presence of Dugong within the Gorgon OA is expected to be intermittent and transitory. Studies in Queensland showed that Dugongs spend around 47% of their time within ~1.5 m of the surface including ~3.5% resting at the surface (Ref. 324; Ref. 326). As such, similarly to Whale Sharks, this high proportion of time within surface waters makes Dugongs vulnerable to vessel strikes. In addition, there is evidence to suggest that Dugongs fail to flee or evade the approach of fast moving vessels until an interaction is unavoidable (Ref. 325; Ref. 326). Collision with vessels has been identified as a pressure ‘of potential concern’ within the NWMR; however, it is noted that this risk is greatest in shallow nearshore waters and vessels operating at higher speeds (Ref. 355). The threatened Short-nosed Seasnake or Leaf-scaled Seasnake are not expected to be present within the OAs given known habitat preferences for shallow water and reef habitat; vessel strike has also not been identified as a threat for either species (Ref. 315; Ref. 316). Other EPBC marine listed seasnake species may occur in broader habitats within the NWMR, and collision with vessels has been identified as a pressure ‘of less concern’ (Ref. 317). Vessels within the Gorgon and Jansz OA will be stationary or slow-moving (<5 knots) while implementing the activities within the scope of this EP. If a fauna strike occurred and resulted in death, it is not expected to have a detrimental effect on the overall population; this event would result in a limited environmental impact (individual impacts). Thus, fauna strike is evaluated as having the potential to result in an Incidental (6) consequence.
Changes to cultural heritage values There are no World, National, or Commonwealth heritage listed places or sites within the OA (Section 4.6). As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. It is understood that the term ‘Country’ refers to more than just a geographical area, and includes values, places, resources, stories, and cultural obligations associated with that geographical area (Ref. 248; Ref. 349). One of the specific tangible values of Sea Country identified through consultation was marine fauna (e.g. whales, turtles; Table 4-14). The consequence evaluations to these receptors are provided above. Intangible cultural heritage refers to the “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage” (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Songlines are paths that track across Country and skies, representing Indigenous knowledge that has been collected, protected and transmitted (Ref. 382). Songlines are living tools that embed and mediate history, ecological knowledge, relationships, ancestral beings, and cultural belonging on Country (Ref. 382). Certain songlines may be referred to as ‘Dreaming Pathways’ because of the tracks forged by Creator Spirits during the Dreaming (Ref. 351). Kearney et al (Ref. 353) describe that for saltwater peoples “stories and songlines locate, interpret and inscribe knowledges of both the Dreaming tracks, bodies and movements of ancestral beings that criss-cross over Sea Country and the permanent sites of ancestral inhabitation within the marine environment”. Fauna are also woven into the Dreaming, songlines and stories (Ref. 383). For example, representatives from MCH identified that there are songlines, including a whale songline, that go through Barrow Island and offshore and connect Barrow Island to the mainland (Table 4-14). Listening and talking with Country through stories, songlines, and other practices are ways First Nations care for, navigate, and connect with Country (Ref. 384). Songlines rely on the continued health of Country, and people’s continued access and connection to it (Ref. 382). When Country is damaged or altered, so too are songlines and the knowledge they embody and enact (Ref. 382). Representatives from MCH described this as when songlines are disrupted, their widdart (heart) is disconnected (Table 4-14). No impact pathway to a change in access to Country from an unplanned interaction with marine fauna within the OA is anticipated.

Physical presence—marine fauna
The consequence evaluation for marine fauna is provided above—if an interaction did occur, any impact would be to individuals, and is not expected to affect the overall population of the species. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected from an unplanned interaction with marine fauna within the OA Given the offshore location of the OA (Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to cultural heritage values attributed to the offshore marine area from artificial light emissions within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Incidental (6).
ALARP decision context justification
Offshore drilling and support vessel operations are commonplace and well-practised both nationally and internationally. The control measures to manage the risk associated with fauna strike are well defined via legislative requirements that are considered standard industry practice. These are well understood and implemented by the petroleum industry and CAPL. During relevant persons consultation, no objections or claims were raised regarding interaction with marine fauna arising from the activity. The risks arising from the physical presence of the MODU and support vessels to marine fauna are considered lower-order risks in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect. Notwithstanding this, CAPL has considered additional mitigation measures that could potentially further reduce the risk of physical interaction with marine fauna species (in addition to legislated requirements for cetaceans).
Good practice control measures

Control measure	Description
Vessels under transit or on standby within the OA	For vessels under transit within the OA, the following caution, approach, or separation distances (and associated vessel speeds) will be maintained by the vessels: • caution and no approach zones for cetaceans as described in EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans (Cth)
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).

Additional control measures and cost–benefit analysis

Control measure	Benefit	Cost
Petroleum activity schedule—Adjust to reduce likelihood of presence of EPBC listed threatened and/or migratory species	By altering the timing of any planned petroleum activities described in this to reduce overlap with the predicted seasonal presence of protected marine fauna within the OAs may consequently reduce the likelihood (and residual risk) of an unplanned interaction occurring.	Although no planned activities have been scheduled, based on the known seasonal presence of protected marine fauna within the area, overlap with the predicted presence of all protected marine fauna is likely to be unavoidable. Therefore, this control measure has been not been adopted for use.
Separation distances—Whale Sharks	Implementing the activities within the scope of this EP may coincide with the use of the migration BIA (July to November), therefore it is possible that Whale Sharks may be present within the OA. Implementing separation distances and speed limits between vessels and Whale	The detection of Whale Sharks within the vicinity of vessel activities may lead to an increase in the duration of the activities and overall costs. However, the benefit of reducing impacts to Whale Sharks is considered to outweigh the financial costs from not implementing this control. Therefore, control measure has been adopted for use.

<table>
<tr><th colspan="3">Physical presence—marine fauna</th></tr>
<tr><td></td><td>Sharks would decrease the risk of adverse physical interactions.</td><td></td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">Due to the nature and scale of vessel activities within the scope of this EP, the slow-moving nature of vessels within the OA, and the relatively limited area of operation, the likelihood of a vessel collision with marine fauna is considered low. Based upon previous experience in the OA, CAPL consider the likelihood of the consequence occurring is Unlikely (4).</td></tr>
<tr><td>Risk level</td><td colspan="2">Very low (9)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The risks associated with this aspect are unplanned interactions causing individual fauna injury or death, which is not considered as having the potential to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Incidental (6).
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered relevant for this aspect include:
EPBC 2008/4469 Condition 26, Conservation Significant Marine Fauna. Conservation Significant Marine Fauna Interaction Management Plan (CSMFIMP) (Ref. 207)
EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 50)
Conservation Advice Balaenoptera borealis Sei Whale (Ref. 49)
Conservation Advice Balaenoptera physalus Fin Whale (Ref. 48)
Conservation Advice Rhincodon typus Whale Shark (Ref. 47)
Recovery Plan for Marine Turtles in Australia (Ref. 46)
Approved Conservation Advice for Dermochelys coriacea (Leatherback Turtle) (Ref.334)
National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (Ref. 325).
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.
<table>
<tr><th>Requirement</th><th>Demonstration</th></tr>
<tr><td>EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans
Caution and no approach zones for interacting with cetaceans from vessels</td><td>Requirements of Regulations 8.05 and 8.06 for vessels interacting with cetaceans has been incorporated into the EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans control measure.</td></tr>
<tr><td>Conservation Management Plan for the Blue Whale 2015–2025
Management action A.4.2: Ensure all vessel strike incidents are reported in the National Ship Strike Database
Management action A.4.3: Ensure the risk of vessel strikes on Blue Whales is considered when assessing actions that increase vessel traffic in areas where Blue Whales occur and, if required, appropriate mitigation measures are implemented</td><td>Requirements to report vessel strike incidents is included in Section 8.4.2.
This section provides a risk evaluation for vessel strikes on Blue Whales, and control measures have been identified.
Therefore, this activity is not considered to be inconsistent with the Conservation Management Plan for the Blue Whale.</td></tr>
<tr><td>Conservation Advice Balaenoptera borealis Sei Whale</td><td>Requirements to report vessel strike incidents is included in Section 8.4.2.</td></tr>
</table>
</td></tr>
</table>

Physical presence—marine fauna		
	Conservation action: Ensure all vessel strike incidents are reported in the National Vessel Strike Database	Therefore, this activity is not considered to be inconsistent with the Conservation Advice Balaenoptera borealis Sei Whale.
	Conservation Advice Balaenoptera physalus Fin Whale Conservation action: Ensure all vessel strike incidents are reported in the National Vessel Strike Database	Requirements to report vessel strike incidents is included in Section 8.4.2. Therefore, this activity is not considered to be inconsistent with the Conservation Advice Balaenoptera physalus Fin Whale.
	Conservation Advice Rhincodon typus Whale Shark Conservation action: Minimise offshore developments and transit time of large vessels in areas close to marine features likely to correlate with Whale Shark aggregations (Ningaloo Reef, Christmas Island and the Coral Sea) and along the northward migration route that follows the northern WA coastline along the 200 m isobath	Requirements of minimise interaction with Whale Sharks has been incorporated into the Interacting with Whale Sharks control measure. As discussed in Section 4.3.3.3.1, both the Gorgon and Jansz OAs are outside Whale Shark aggregation areas (including Ningaloo Reef, Christmas Island and the Coral Sea). Based on both environmental and economic considerations, vessel activities are minimised to the smallest practicable extent. Therefore, this activity is not considered to be inconsistent with the Conservation Advice Rhincodon typus Whale Shark.
	Recovery Plan for Marine Turtles in Australia No specific management action identified.	N/A
	National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna No specific action identified.	N/A
Internal context	No CAPL management processes or procedures were deemed relevant for this aspect.	
External context	During relevant persons consultation, no objections or claims were raised regarding interaction with marine fauna arising from the activity.	
Defined acceptable level	These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan. However, in alignment with Section 5.6.2, because vessel strike is listed as a threat to protected matters under documents made or implemented under the EPBC Act, CAPL has defined an acceptable level of impact such that it is consistent with these documents. Objectives of the relevant documents are shown below	

Physical presence—marine fauna		
	Plan	**Objective**
	Conservation Management Plan for the Blue Whale 2015–2025	Recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list. Interim objective 4 Anthropogenic threats are demonstrably minimised.
	Recovery Plan for Marine Turtles in Australia	Recovery objective: The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list. Interim objective 3: Anthropogenic threats are demonstrably minimised.
	Therefore, CAPL has defined the following acceptable level of impact such that it is consistent with these documents: • no injury or death to Pygmy Blue Whales or marine turtles such that it would prevent the long-term recovery of the species • no adverse change to the values of the Montebello Marine Park. CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the risk to marine fauna, that the risk to values of the AMP are also subsequently managed to this acceptable level.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
(EPO 2a) No injury or mortality to marine fauna within the OA from vessel activities associated with the petroleum activity (EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity	**(EPS 2.1) Vessels under transit or on standby within the OA** Vessels will implement caution and no approach zones, where practicable: • caution zone (300 m either side of whales; 150 m either side of dolphins)–vessels must operate at ≤6 knots within in this zone, maximum of three vessels within zone, and vessels should not enter if a calf is present • no approach zone (300 m to the front and rear of whales and 100 m either side; 300 m for whale calves; 150 m to the front and rear of dolphins and 50 m either side)–vessels should not enter this zone and should not wait in front of the direction of travel of an animal or pod or follow directly behind.	(MC 2.1.1) Induction materials include relevant marine fauna caution and no approach zone requirements. (MC 2.1.2) Training records confirm offshore personnel involved in the activities have completed the induction. (MC 2.1.3) Vessel records show if marine fauna interaction occurred within caution approach zones or separation distances, and what mitigation (e.g. divert or slow vessel) measure was implemented.
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) **Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.**	(MC 2.2.1) Relevant persons consultation records.

Physical presence—marine fauna		
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) **If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation.**	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

7.3 Seabed disturbance

Seabed disturbance

Source

Activities identified as having the potential to result in seabed disturbance are:

- MODU— installing and removing mooring anchors (8–12) within an OA during the drilling, well intervention and/or well abandonment activities
- dragging of mooring wires/chain from the MODU mooring system
- drilling, well intervention and/or abandonment activities—well-spudding and installing subsea equipment within an OA
- well re-spud (contingency activity only)
- field support—temporary wet parking of ROVs within an OA during the drilling, well intervention and/or well abandonment activities
- field support—unplanned vessels anchoring (e.g. during an emergency) within an OA during the drilling, well intervention and/or well abandonment activities.

In addition to these activities, discharge of drilling fluids and cuttings has the potential to result in seabed disturbance. However, these discharges are assessed in Section 7.10 and not considered further in this section.

Potential impacts and risks

Impacts	C	Risks	C
Seabed disturbance may result in: • alteration of marine habitats • localised and temporary change in water quality	5 6	Seabed disturbance may result in: • changes to cultural heritage values	5

Consequence evaluation

Alteration of marine habitats

The MODU would be positioned within an OA using an 8- to 12-point mooring system (up to 3 anchors per corner of the MODU), with a disturbance footprint from an anchoring system (including anchors and chains) estimated at up to ~0.013 km^2 per well (Ref. 11).

The direct disturbance footprint of drilling on the seabed is expected to be relatively small (e.g. <0.001 km^2), and if wet parking of the ROV occurs, disturbance to the seabed would be expected to be very small (e.g. <15 m^2). The areas of the Gorgon and Jansz OAs are ~265 km^2 and 212 km^2 respectively. The indicative, cumulative seabed disturbance area of ~0.014 km^2 represents <0.005% of the Gorgon OA, and <0.007% of the Jansz OA.

Although anchoring by support vessels is not permitted within the OA except during an emergency, it has been carried through as a contingent activity in the event anchoring is required within the OA due to a significant weather event. National Energy Resources Australia (NERA; Ref. 11) indicates that a vessel anchored within water depths greater than 70 m with a single anchor could result in a total disturbance area of up to ~0.0013 km^2. Assuming 3 vessels were required to anchor, this indicative seabed disturbance area represents <0.001% of both OAs.

Seabed disturbance

The benthic habitat within the OAs where seabed disturbance could occur is expected to predominantly be soft substrate (Section 4.3.1). The particular values and sensitivities within the Gorgon OA with the potential to be impacted by seabed disturbance include the following:

- Continental slope demersal fish communities (KEF)

There are no particular values and sensitivities within the Jansz OA with the potential to be impacted by seabed disturbance.

Bacteria and fauna present on the continental slope are the basis of the food web for demersal fish and higher-order consumers in this KEF system (Ref. 60). Although physical habitat modification is considered a pressure of potential for this KEF, this modification has been associated with fishing activities (Ref. 60).

If a well re-spud or sidetrack is required (Section 3.2.9) the activity could involve moving the MODU within the immediate area of the primary well and to recommence drilling; however, no movement of the MODU anchors would be required and as such there is no change to the area of seabed temporarily disturbed from anchoring.

Direct physical smothering of benthic habitats will occur under the anchors; and alteration (e.g. scraping etc.) can occur in areas subjected to anchor drag or chain scour. Following recovery of the anchors, impacts from the disturbance are expected to be localised and short-term, with the underlying conditions present to support re colonisation and recovery after the activity has been completed. As such the anchor disturbance to the seabed is determined to be minor and temporary (Ref.11)

The areas within the existing infrastructure have been historically disturbed, and any additional disturbance is expected to be minimal. Benthic habitats within the OAs mostly comprise unvegetated, soft, and unconsolidated sediments with a low but varying degree of benthic invertebrate habitation (Section 4.3.1.1).

The habitat type within the OA where seabed disturbance is planned to occur (i.e. soft sediment, typically unvegetated, and with low benthic invertebrate habitation) is widespread through the region, and as such the potential cumulative disturbance footprint per well (~0.014 km^2) is highly localised, expected to recover, and not expected to affect ecosystem function or connectivity of communities. As such, CAPL has ranked the consequence as Minor (5).

Localised and temporary reduction in water quality

During activities that interact with the seabed (e.g. install**ing** MODU anchors, or seabed equipment), some unconsolidated sediment may be resuspended into the water column, resulting in a decrease in local water quality. As described above, the area of seabed disturbance within the OA is limited, and as it is related to discrete activities, does not occur continually for the duration of the drilling, well intervention and/or well abandonment activities.

Given the hydrodynamics in open ocean areas, the area of decreased water quality is expected to be localised and temporary, as sediments would settle out of the water column relatively quickly (Ref. 11). As such, CAPL has ranked the consequence as Incidental (6).

Changes to cultural heritage values

As discussed in Section 4.6 there are no World, National, or Commonwealth heritage listed places or sites, and no protected UCH[24] sites or artefacts have been identified within the OA. Therefore, no impacts to known protected seabed-based UCH (e.g. shipwrecks or archaeology), including First Nations UCH, are expected to occur.

Given known sea level history, the OAs (which both occur in water depths >200 m), would not have been emergent land during the extended history of First Nations occupation of Australia. At the time of writing, CAPL understands through consultation with the relevant First Nations people and/or representative bodies that there are no known artefacts or specific sites of cultural value associated with the seabed within the OA. As such, it is anticipated that tangible heritage features would not be significantly adversely affected from planned seabed disturbance within the OA.

As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. One of the specific tangible values of Sea Country identified through consultation was the ocean (Table 7-14). The consequence evaluations to related receptors (i.e. marine environmental quality, benthic communities and habitats) are provided above.

Intangible cultural heritage refers to the “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage” (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 7-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and

[24] *Under section 15 of the UCH Act, UCH is defined as “any trace of human existence that has a cultural, historical, or archaeological character, and is located under water”.*

Seabed disturbance	
offshore (Table 7-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2. No impact pathway to a change in access to Country from seabed disturbance within the OA is anticipated. The consequence evaluation to benthic communities and habitats is provided above and was assessed as resulting in highly localised and minor environmental impacts. Further, as described in the above evaluation, changes to the benthic habitat within the disturbance footprint is not expected to affect ecosystem function or connectivity. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected from seabed disturbance within the OA. Given the small disturbance area associated with the petroleum activity (~0.013 km^2 per well, noting there are no planned wells) and that benthic habitat within the OA is expected to predominantly be soft substrate, a significant adverse change to cultural heritage values attributed to the offshore marine area from seabed disturbance is not predicted to occur. As such, CAPL has ranked the consequence as Minor (5).	
ALARP decision context justification	
Seabed disturbance from offshore activities is commonplace; the activities causing this aspect are practised nationally and internationally. The control measures to manage the impacts associated with seabed disturbance are well understood and implemented by the industry. The impacts associated with seabed disturbance are considered lower-order impacts in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.	
Good practice control measures	
Control measure	**Description**
Mooring analysis	Mooring analysis will be undertaken before MODU anchoring, as per requirements of *API RP 2SK Design and analysis of station keeping systems for floating structures* (Ref. 62).
Monitoring mooring line tensions	*ISO 19901-7:2013: Station keeping systems for floating offshore structures and mobile offshore units* (Ref. 61) states that mooring line tensions should be measured and recorded during normal operations to ensure that drag is reduced.
ROV inspection	A visual inspection (via ROV) of the seabed will be conducted before commencing well-spudding.
Marine Standard	Chevron *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 29) ensures that various legislative requirements are met, including vessels will meet the crew competency, navigation equipment, and radar requirements.
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).
UCH finds protocol	In alignment with the draft *Guidelines for working in the near and offshore environment to protect Underwater Cultural Heritage* (Ref. 300) a UCH finds protocol will be implemented where there are activities interacting with the seabed with the risk of disturbing unlocated UCH. The UCH finds protocol ensures that inadvertent discoveries of UCH (including First Nations UCH) are identified on site and responded to with adequate conservation and management actions. The protocol will identify actions to be taken should potential UCH be identified within the OA.

Additional control measures and cost–benefit analysis		
Control measure	**Benefit**	**Cost**
N/A	N/A	N/A

Likelihood and risk level summary	
Likelihood	Due to the limited area of seabed disturbance, and with the control measures in place, the likelihood of impacts to cultural values from seabed disturbance is Rare (6).

<table>
<tr><th colspan="3">Seabed disturbance</th></tr>
<tr><td>Risk level</td><td colspan="2">Very low (10)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential impacts associated with this aspect is limited to localised short-term effects that are not expected to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Minor (5).
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td rowspan="4">Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered for this aspect include:
• API RP 2SK Design and analysis of station keeping systems for floating structures (Ref. 62)
• ISO 19901-7:2013: Station keeping systems for floating offshore structures and mobile offshore units (Ref. 61)</td></tr>
<tr><td>Requirement</td><td>Demonstration</td></tr>
<tr><td>API RP 2SK Design and analysis of station keeping systems for floating structures</td><td>Technical requirements have been incorporated into the Mooring analysis control measure.</td></tr>
<tr><td>ISO 19901-7:2013: Station keeping systems for floating offshore structures and mobile offshore units</td><td>Technical requirements have been incorporated into the Monitoring mooring line tensions control measure.</td></tr>
<tr><td>Internal context</td><td colspan="2">The following CAPL management processes or procedures were deemed relevant for this aspect:
• Chevron Marine Standard Non Tankers: Corporate OE Standard (Ref. 29).</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding seabed disturbance arising from the activity.</td></tr>
<tr><td>Defined acceptable level</td><td colspan="2">These impacts are inherently acceptable as they are considered lower-order impacts in accordance with Table 5-3. In addition, the potential impacts evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.</td></tr>
<tr><th>Environmental performance outcome</th><th>Environmental performance standard</th><th>Measurement criteria</th></tr>
<tr><td rowspan="4">(EPO 3a) Reduce the risk of impacts to sensitive environmental receptors within the OA from the petroleum activity.

(EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.</td><td>(EPS 3.1) Mooring analysis
Mooring analysis for the MODU will be undertaken prior to anchoring activities commencing.</td><td>(MC 3.1.1) Records verify that mooring analysis was undertaken prior to MODU anchoring.</td></tr>
<tr><td>(EPS 3.2) Monitoring mooring line tensions
Mooring line tensions will be monitored through the duration of the petroleum activity.</td><td>(MC 3.2.1) Records verify mooring line tensions were monitored for the duration of the petroleum activity.</td></tr>
<tr><td>(EPS 3.3) ROV inspection
A visual inspection of the seabed will be undertaken prior to well spudding activities commencing.</td><td>(MC 3.3.1) Records verify that a visual seabed inspection was undertaken prior to well spudding.</td></tr>
<tr><td>(EPS 1.3) Marine Standard
MODU and vessels will meet the crew competency, navigation equipment, and radar requirements of the Marine Standard.</td><td>(MC 1.3.1) Records indicate that MODU and vessels meet the crew competency, navigation equipment, and radar requirements of the Marine Standard.</td></tr>
</table>

Seabed disturbance		
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation.	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.
(EPO 4) No impacts to underwater cultural heritage from the petroleum activity.	**(EPS 4.1) UCH finds protocol** CAPL will develop and implement a UCH finds protocol to identify and manage any potential UCH during the petroleum activity.	(MC 4.1.1) Records indicate that a UCH finds protocol was developed and in place prior to the commencement of the petroleum activity.
		(MC 4.1.2) Induction materials include relevant UCH requirements.
		(MC 4.1.3) Training records confirm personnel involved in offshore vessel activities and/or ROV operations have completed the induction.
		(MC 4.1.4) Records show if UCH (or potential UCH) were identified within the OA, and what conservation and management actions were implemented.
	(EPS 4.2) UCH finds protocol If First Nations UCH (or potential UCH) is identified during the petroleum activity, the finding is shared with the relevant First Nations representative bodies.	(MC 4.2.1) Relevant persons consultation records.
	(EPS 4.3) UCH finds protocol Where required, UCH finds have been reported to the relevant agency (Table 8-14)	(MC 4.3.1) Record of lodgement of notification to relevant agency.

7.4 Light emissions

Light emissions
Source
Activities identified as having the potential to result in artificial light emissions: • MODU—navigational and operational lighting from the MODU within the OAs during the drilling, well intervention and/or well abandonment activities • field support— navigational and operational lighting from vessels within the OAs during the drilling, well intervention and/or well abandonment activities

Light emissions

- wellbore clean-up and flowback (flaring activities).

Potential impacts and risks

Impacts	C	Risks	C
Light emissions may result in: • localised and temporary change in ambient light.	6	A change in ambient light may result in: • change in fauna behaviour (e.g. attraction, disorientation, etc.), in turn affecting predator–prey dynamics	6

Consequence evaluation

Localised and temporary change in ambient light

The MODU and support vessels will be present within an OA during the drilling, well intervention and/or well abandonment activities. It is expected that each well activity will take ~65days (Section 3.1.2). However, this duration is indicative and subject to potential operational delays (e.g. weather, unplanned contingencies) and final design considerations (e.g. tree option selection). As activities under this EP may be undertaken 24 hours a day, lighting is required at night for navigation and to ensure safe operations when working on the MODU and/or support vessels.

Monitoring undertaken by Woodside (Ref. 63) indicates that light density from navigational lighting on a MODU attenuated to below 1.0 lux and 0.03 lux at distances of ~300 m and ~1.4 km, respectively. Light densities of 1.0 lux and 0.03 lux are comparable to natural light densities experienced during deep twilight and during a quarter moon.

Based on Woodside (Ref. 63), CAPL expects that there would be a temporary change (~65 days[25]) to ambient light levels within a radius of ~1.4 km from the MODU.

Navigational and operational lighting is expected to be less on support vessels in comparison to a MODU. However, as a conservative approach for this consequence evaluation, CAPL estimates that its vessel activities will result in temporary changes to ambient light no greater than a radius of ~1.4 km from the support vessel. As described in Section 3.7.1, the number of support vessels within either OA may vary over the duration of the drilling, well intervention and/or well abandonment activities.

Flaring during drilling and well intervention operations will be an infrequent, short-term occurrence, for a duration of up to one day per well. Flaring is only undertaken from one well at a time. As MODU flare tip height and flaring specifications are not yet known, modelling analogues were identified. Modelling of routine flaring from an Floating Production Storage and Offloading (facility) (FPSO) for the Dorado Development predicted the flare is no longer visible at 42.4 km, when the flare drops below the horizon. Modelling of routine flaring from a MODU for the Amulet and Corowa Developments predicted that the potential impact area (i.e. a measurable change in ambient light) was between 10.8 km and 34.2 km respectively, for different flaring rates (Ref. 299).

Barrow Island is located ~60 km from the Gorgon OA and therefore would not be affected by the worst-case spatial extent of illumination associated with flaring. The mainland and other islands are all >42.4 km from the Gorgon OA. Flaring during the daytime would be less visible. The Jansz OA is located even further offshore, more than ~125 km from the nearest coast (Barrow Island) and as such would not be affected by the worst-case spatial extent of illumination associated with flaring.

Given the limited spatial extent of the change arising from navigational and operational lighting, and the relatively limited duration of the drilling, well intervention and/or well abandonment activities, CAPL has ranked the consequence associated with a direct change in ambient light levels as Incidental (6).

Change in fauna behaviour for light-sensitive species

During activities that result in a change in ambient light conditions, a subsequent change in the behaviour of light-sensitive fauna may occur. Light-sensitive fauna (including reptiles, birds and fish) are the species most at risk from this aspect and thus are the focus of this evaluation.

[25] *As described in Section 3.1.2, activities carried out under this EP are unscheduled remediation works and as such cannot be scheduled. For the purpose of the risk assessment in this EP an estimate of ~80 days per activity is assumed.*

Light emissions

As identified in Section 4.3.3, several marine species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Gorgon and Jansz OAs respectively. BIAs or habitat critical to survival of a species that overlap with the Gorgon OA include:

Flatback Turtle (internesting buffer BIA, internesting habitat critical to the survival of a species)

- Whale Shark (foraging BIA)
- Pygmy Blue Whale (distribution and migration BIA)
- Humpback Whale (migration BIA)
- Wedge-tailed Shearwater (breeding BIA).

The following BIAs overlap with the Jansz OA:

- Pygmy Blue Whale (distribution and migration BIA)

No habitat critical for the survival of a species was identified within the Jansz OA.

The *National Light Pollution Guidelines* (Ref. 7) indicate that a 20 km buffer or exposure area can provide a general precautionary light impact limit based on observed effects of sky glow on marine turtle hatchlings demonstrated to occur at 15–18 km (Ref. 70; Ref. 71) and fledgling seabirds grounded in response to artificial light 15 km away (Ref. 72).

Anthropogenic disturbance and artificial lighting are identified as threats within the *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 69). Studies conducted between 1992 and 2002 in the North Sea confirmed that artificial light was the reason that birds were attracted to and accumulated around illuminated offshore infrastructure (Ref. 65) and that lighting can attract birds from large catchment areas (Ref. 66). These studies indicate that migratory birds are attracted to lights from offshore platforms when travelling within a radius of 5 km from the light source, but their migratory paths are unaffected outside this zone (Ref. 67). Fledglings are considered more vulnerable to artificial lights than adults for several factors, including immature development of ganglions in the eyes, disturbance to sea-finding cues, and potential connection between light and food (Ref. 192).

At its closest, the Gorgon OA is located ~60 km north west from the closest coast (Barrow Island). Based on this assessment, no coastal areas (and therefore fledgling seabirds) are expected to be exposed.

Anthropogenic disturbance (including artificial lighting) is identified as a threat within the *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 69) and light pollution is identified as a threat within the *Wildlife Conservation Plan for Seabirds* (Ref. 192). It is possible that nocturnally active seabirds and/or migratory shorebirds may be affected by light spill and make alterations to their normal behaviours. Procellariforms (shearwaters, petrels and albatross) species forage at night on bioluminescent prey, and therefore are attracted to light of any kind (Ref. 73; Ref. 66). The presence of the Wedge-tailed Shearwater is seasonal, typically occurring between mid-August to April in the Pilbara; and they are known to forage either relatively close to breeding islands or over a large area, depending on prey availability. Given the uncertain duration of the proposed activities, it is possible there may be some overlap of with this period. The mechanism of birds being attracted to light is not proven, but it is proposed that the artificial lighting may override the internal magnetic compass of migratory shorebirds or nocturnal seabirds (Ref. 74). However, Marquenie (Ref. 74) estimated that a change in migratory behaviour of birds was limited to <5 km from the source. Therefore, this type of impact is expected to be spatially restricted to the vicinity of the MODU and/or support vessels and affect only individuals (rather than populations).

The Recovery Plan for Marine Turtles in Australia (Ref. 46) identifies light emissions as a key threat because it disrupts critical behaviours, such as nesting, hatchling orientation, sea-finding, and dispersal behaviour.

The *Recovery Plan for Marine Turtles in Australia* (Ref. 46) defines the habitat critical for the survival of a species for nesting for each species at a stock level. The closest nesting habitat critical to the survival of a species to the Gorgon OA include Barrow, Montebello and Lowendal islands, which have been identified as nesting habitat for Flatback, Green, and/or Hawksbill Turtles (Ref. 46). At its closest, the Gorgon OA is located ~60 km from the closest coast (Barrow Island). As light emissions from the MODU and support vessels are expected to result in a change to ambient conditions up to a maximum of ~1.4 km from each source, and the worst-case spatial extent of illumination associated with flaring is 42.4 km, no coastal areas (and therefore no adult nesting turtles, or turtle hatchlings) are expected to be exposed.

The Gorgon OA intersects with habitat critical for the survival of a species for internesting as defined within the Recovery Plan (Ref. 47). Recent studies (Ref. 68) have indicated that the internesting behaviour of Flatback Turtles on the North West Shelf appears more spatially restricted than that suggested by habitat critical for the survival of a species or BIAs. Whittock et. al. (Ref. 68) reported that Flatback Turtles preference habitats near the coast and at relatively shallow depths during the internesting periods. Specifically, during the study, a maximum distance from the nearest coast and maximum water depth of 27.8 km and <44 m respectively was recorded, with the mean maximum distance away from the nearest coast and mean water depth being less than 6.1 km and <10 m respectively (Ref. 68). This suggests that although the Gorgon OA does overlap with the internesting buffer BIA, due to the OA being located offshore (>60 km from the Barrow Island) and with

Light emissions
increasing water depths (up to ~250 m), it is not expected that aggregating turtles would be exposed to light emissions within the Gorgon OA during their internesting period. The EPBC threatened Short-nosed Seasnake or Leaf-scaled Seasnake are not expected to be present within the OA given known habitat preferences for shallow water and reef habitat; light has also not been identified as a threat for either species (Ref. 315; Ref. 316). While other EPBC marine listed seasnake species may occur in broader habitats within the NWMR, snakes are inactive at night (Ref. 317). As such, light is not considered to be a significant factor in seasnake behaviour or survival. Artificial light may result in varied ecological changes to fish, including changes to predatory behaviour and abundance (Ref. 75; Ref. 78), altering hatching success (Ref. 76), acting as an attractant for plankton (Ref. 77), or altering circadian behavioural rhythms (Ref. 78). The Whale Shark BIA is associated with foraging behaviours during northward migration from the Ningaloo Reef seasonal aggregation area, along the 200 m isobath during July to November (Ref. 47). Light has not been identified as a key threat for the Whale Shark (Ref. 47). Despite the potential for light emissions to be present in ocean areas used by Whale Sharks during their northern migration, their migratory behaviour greatly reduces the potential for prolonged or frequent exposure when moving through the Gorgon OA, and thus any impacts would be limited. Cetaceans predominantly use acoustic senses rather than visual sources to monitor their environment (Ref. 64), so consequently, light is not considered to be a significant factor in cetacean behaviour or survival. The EPBC listed (migratory) Dugong may have an intermittent and transitory presence within the OA. Artificial light has not been identified as a pressure within the NWMR for this species (Ref. 317). Consequently, only localised short-term behavioural impacts to transient individuals have the potential to arise from these activities and are therefore evaluated as Incidental (6).
Changes to cultural heritage values There are no World, National, or Commonwealth heritage listed places or sites within the OA (Section 4.6). As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. It is understood that the term ‘Country’ refers to more than just a geographical area, and includes values, places, resources, stories, and cultural obligations associated with that geographical area (Ref. 248; Ref. 349). One of the specific tangible values of Sea Country identified through consultation was marine fauna (e.g. whales, turtles; Table 4-14). The consequence evaluations to these receptors are provided above. Intangible cultural heritage refers to the “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage” (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2. No impact pathway to a change in access to Country from light emissions within the OA is anticipated. The consequence evaluation to marine fauna is provided above, and is not expected to affect the overall population of the species. Further, as described in the above evaluations, the source of light emissions within the OA (i.e. MODU and vessels) is temporary and is not expected to affect the long-term ambient light of the marine environment. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected from light emissions within the OA. Given the offshore location of the OA (Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to cultural heritage values attributed to the offshore marine area from artificial light emissions within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Incidental (6).
ALARP decision context justification
Offshore drilling and support vessel operations and subsequent light emissions arising from these activities are commonplace in offshore environments nationally and internationally. During relevant persons consultation, no objections or claims were raised regarding light emissions arising from the activity. The impacts and risks associated with light emissions are well understood and are considered lower-order impacts and risks in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.

<table>
<tr><th colspan="3">Light emissions</th></tr>
<tr><th colspan="3">Good practice control measures</th></tr>
<tr><th>Control measure</th><th colspan="2">Description</th></tr>
<tr><td>Marine Standard</td><td colspan="2">Chevron Marine Standard Non Tankers: Corporate OE Standard (Ref. 29) ensures that various legislative requirements are met. This includes ensuring that lighting sufficient for navigational, safety and emergency requirements are met, as appropriate to vessel class.</td></tr>
<tr><td>Light management</td><td colspan="2">Given the purpose of the activities under this EP are unscheduled remediation works, any drilling, well intervention and/or well abandonment activities may overlap with seasonal presence of Wedged-tailed Shearwaters.
As a conservative management measure, the MODU and support vessels working at night during the activities will be required to reduce lighting to the minimum required for safe operations.</td></tr>
<tr><td>Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)</td><td colspan="2">In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).</td></tr>
<tr><th colspan="3">Additional control measures and cost–benefit analysis</th></tr>
<tr><th>Control measure</th><th>Benefit</th><th>Cost</th></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">The MODU and vessel activities for this petroleum activity occur within offshore waters away from the coast. As such, the likelihood of exposing light-sensitive fauna resulting in the identified consequence was considered Remote (5).</td></tr>
<tr><td>Risk level</td><td colspan="2">Very low (10)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The risks associated with this aspect is disruption to light-sensitive species behaviour, which given the location and duration of the activity, is not considered as having the potential to affect biological diversity and ecological integrity.
The impact associated with this aspect is Incidental (6).
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td rowspan="4">Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered relevant to this aspect include:
Navigation Act 2012
National Light Pollution Guidelines for Wildlife (Ref. 7)
Recovery Plan for Marine Turtles in Australia (Ref. 46)
Conservation Advice Rhincodon typus Whale Shark (Ref. 47)
Wildlife Conservation Plan for Seabirds (Ref. 192)
Wildlife Conservation Plan for Migratory Shorebirds (Ref. 69)
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.</td></tr>
<tr><td>Requirement</td><td>Demonstration</td></tr>
<tr><td>Navigation Act 2012 (Cth)
Appropriate lighting, navigation and communication to inform other users</td><td>Legislative requirements have been incorporated into the Marine Standard control measure.</td></tr>
<tr><td>National Light Pollution Guidelines</td><td>This section provides an impact assessment and consideration of control measures as identified within</td></tr>
</table>

Light emissions		
	Undertake an environmental impact assessment	the mitigation toolboxes for marine turtles, seabirds, and migratory shorebirds.
	Recovery Plan for Marine Turtles in Australia Management action A8.1: Artificial light within or adjacent to habitat critical to the survival of marine turtles will be managed such that marine turtles are not displaced from these habitats	Exposure areas from light emissions from vessel activities and any associated impacts or risks, have been described in the above consequence evaluation. The control measures identified above are considered appropriate to manage the risk to marine turtles to ALARP. Given the unsuitability of most of the OA as internesting habitat, the extent of changes to ambient light exposures does not overlap with any nesting areas, and the control measures in place, the activity is not considered to be inconsistent with the Recovery Plan for Marine Turtles in Australia.
	Conservation Advice Rhincodon typus Whale Shark Conservation action: Assess the impacts of offshore installations and associated environmental changes (light spill, chronic noise, changed water temperature, localised nutrient levels) on Whale Sharks and mitigation options for these impacts	This section provides an impact assessment and consideration of control measures for vessel light spill. Therefore, this activity is not considered to be inconsistent with the *Conservation Advice Rhincodon typus Whale Shark*.
	Wildlife Conservation Plan for Seabirds No specific action identified.	N/A
	Wildlife Conservation Plan for Migratory Shorebirds No specific action identified.	N/A
Internal context	The following CAPL management processes or procedures were deemed relevant for this aspect: • Chevron Marine Standard Non Tankers: Corporate OE Standard (Ref. 29). Control measures related to each of the above management processes or procedures have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.	
External context	During relevant persons consultation, no objections or claims were raised regarding light emissions arising from the activity.	
Defined acceptable level	These impacts and risks are inherently acceptable as they are considered lower-order impacts and risks in accordance with Table 5-3. In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan. However, in alignment with Section 5.6.2, where the aspect is listed as threat to a protected matter or identified as a concern to a listed conservation value, CAPL will define an acceptable level of impact that aligns with the objectives of these documents. Objectives of the relevant documents are shown below.	
	Plan	**Objective**

Light emissions		
	Recovery Plan for Marine Turtles in Australia	Recovery objective: The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list. Interim objective 3: Anthropogenic threats are demonstrably minimised.
	Wildlife Conservation Plan for Migratory Shorebirds	Objective 1: Protection of important habitats for migratory shorebirds has occurred throughout the East Asian-Australasian Flyway Objective 3: Anthropogenic threats to migratory shorebirds in Australia are minimised or, where possible, eliminated.
	Wildlife Conservation Plan for Seabirds	Objective 2: Seabirds and their habitats are identified, protected and managed in Australia.
	Therefore, CAPL has defined the following acceptable level of impact such that it is consistent with these documents: • no displacement of marine turtles from habitat critical to the survival of a species such that it would prevent the long-term recovery of the species • no disruption of biologically important behaviours of marine turtles within biologically important areas such that it would prevent the long-term recovery of the species • no disruption of biologically important behaviours of migratory shorebirds or seabirds within important habitats such that it would prevent the conservation of the species and their habitat • no adverse change to the values of the Montebello Marine Park. CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the risk to marine fauna, that the risk to values of the AMP are also subsequently managed to this acceptable level.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
(EPO 5) No disruption of biologically important behaviours of marine fauna from vessel activities occurring within the OA. (EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.	**(EPS 1.3) Marine Standard** MODU and vessels will meet the lighting requirements of the Marine Standard.	(MC 1.3.1) Records indicate that MODU and vessels meet lighting requirements of the Marine Standard.
	(EPS 5.1) Light management MODU and vessels working at night will be required to: • reduce external lighting to the minimum required for safe operations and navigation • where practicable, operational lighting directed downwards to working deck area • use window coverings to shield internal lights from view (unless windows are required to be uncovered for safe operations).	(MC 5.1.1) Inspection records during night operations confirm only minimum lighting for safe operations and navigation is in use, where practicable operational lighting is directed downwards to working deck area, and internal window coverings are used (unless required for safe operations).

Light emissions		
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation.	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

7.5 Air emissions

Air emissions

Source

Activities identified as having the potential to result in air emissions:

- well intervention or clean-ups—venting of hydrocarbons within wellbore, venting of N_2 upon retrieval of intervention tooling
- well testing and flowback (contingency only)
- MODU—combustion of fuel onboard the MODU within either OA during the drilling, well intervention and/or well abandonment activities
- field support—combustion of fuels from vessels and helicopters within either OA during the drilling, well intervention and/or well abandonment activities

Potential impacts and risks

Impacts	C	Risks	C
Atmospheric emissions may result in: • a localised and temporary reduction in air quality • contribution to the reduction of the global atmospheric carbon budget.	 6 6	N/A	–

Consequence evaluation

Localised and temporary reduction in air quality

The MODU and support vessels will be present within the OAs during drilling, well intervention and/or well abandonment activities. Given the unknown requirements of future well intervention activities, for the purposes of assessing impact and risk in this EP, CAPL will assume that any activity carried out under this EP will take ~65 days. (Section 3.1.2). This duration is indicative and subject to potential operational delays (e.g. weather, unplanned contingencies) and final design considerations (e.g. tree option selection).

Well testing and flowback

CAPL has no plan to conduct scheduled well testing or well flowback activities. However, these tasks may need to be done depending on the results of the maintenance program or well performance. For the purposes of this EP, the types of tasks associated with well testing and flowback may include (but are not limited to):

- wellbore clean-up
- reservoir gas venting/flaring
- well reinstatement (return to operations).

Air emissions
If a well is underperforming, or surveillance indicates debris is contained within the well, the contents of the wellbore may be flowed to a MODU then vented or flared. As the gas produced from the Gorgon and Jansz fields comprises 'dry' gas, condensate drop-out from the flare boom is not expected. **Well intervention** During well intervention activities, the wells will be de-suspended by pulling wireline plugs. During these operations, small volumes of hydrocarbon gas may need to be vented via the vent lines on the vessel. The well will not be flowing during the activity and venting for each well will be a discrete event to enable safe de-suspension of the well (i.e. there will not be continuous venting). The hydrocarbon gas will circulate into the surge tank on the vessel and will then be vented via the vent lines on the port and starboard side of the vessel. During well intervention activities, the well may be stabilised by using a nitrogen gas cushion. When retrieving intervention tooling, small volumes of wellbore fluids may be displaced back into the well using nitrogen gas (N_2). Upon retrieval of the tooling the nitrogen gas will be vented to the environment. The well will not be flowing during the activity and venting for each well will be a discrete event to enable safe de-suspension of the well (i.e. there will not be continuous venting). Venting during well intervention, well workovers or well testing and flowback would be undertaken intermittently over several days. Volumes released are controlled so that only small amounts are released at any given time. Given the slow-release rates and low volumes associated with this activity, it is not expected to generate exposures significant enough to result in impacts to any identified environmental receptors. **MODU and field support vessel combustion** The MODU is serviced by support vessels (Section 3.7.1) and regular helicopter operations (Section 3.7.2). The MODU, vessels, and helicopters rely on the combustion of fuel for power generation, which subsequently result in air emissions. Air emissions may include criteria pollutants (e.g. nitrogen oxides [NO_x]), and GHGs (e.g. carbon dioxide [CO_2]). Impacts from air emissions depend on discharge volume, frequency, duration of exposure, as well as the location and nature of the receiving environment. Air quality changes associated with emissions are typically limited to the local air shed, given the rapid dispersal into the atmosphere following release. Modelling was undertaken for nitrogen dioxide (NO_2) emissions from MODU power generation for another offshore project (Ref. 79). NO_2 is the focus of the modelling because it is considered the main (non-GHG) atmospheric pollutant of concern, with larger predicted emission volumes compared to the other pollutants and has potential to impact on human health (as a proxy for environmental receptors). Results of this modelling indicate that on an hourly average, there is the potential for an increase in ambient NO_2 concentrations of 0.0005 ppm within 10 km of the emission source and an increase of 0.00005 ppm in ambient NO_2 concentrations >40 km away. Air emissions are expected to be less from the support vessels in comparison to a MODU. The *National Environmental Protection (Ambient Air Quality) Measure* (NEPM) recommends that hourly exposure to NO_2 is <0.12 ppm with annual average exposure <0.03 ppm. Because modelling indicated that the highest hourly averages (0.00039 ppm or 0.74 µg/m^3) were restricted to a distance ~5 km from the MODU (Ref. 79), exposures are considered below NEPM standards. Given the limited spatial extent of the change arising from air emissions, and the limited duration of the drilling, well intervention and/or well abandonment activities, CAPL has ranked the consequence associated with a direct change in local air quality as Incidental (6).
Contribution to the reduction of the global atmospheric carbon budget The MODU, vessels, and helicopters rely on the combustion of fuel for power generation, which result in GHG emissions, which will contribute to a reduction in the global carbon budget. Direct GHG emissions from activities in this EP are estimated to be ~ 0.015 Mt CO_2-e per well activity [26],[27] (should this activity occur). These direct emissions represent ~0.016% of national Australian emissions (when compared to March 2023 inventory) (Ref. 80). To determine the relevance of indirect emissions to the activities under this EP, CAPL undertook an assessment against the factors for determining what is an indirect consequence, in accordance with the '*Indirect consequences' of an action: Section 527E of the EPBC Act Policy Statement*'. Because the drilling, well intervention and/or well abandonment activities are not considered to facilitate to a major extent any existing petroleum activity within the WA-36L, WA-37-L and WA-39-L permits, no indirect emissions were identified for activities under this EP. The objective of drilling, completions and well maintenance is to maintain

[26] *Emissions calculation is based on 65 days of moored MODU operations, 9 days of three vessels on DP (assuming 2 anchor handlers and 1 platform supply vessel), and 6 helicopter transfers, using NGER energy content and emissions factors (Ref. 83).*

[27] *Any equipment (e.g., ROV) used to support vessel activities are powered by the support vessel itself, and as such these don't represent an additional emission source to that already accounted for by the vessel.*

Air emissions

the Gorgon Project gas supply, as opposed to increasing production capacity. Therefore the indirect emissions evaluation in the Gorgon Project Operations Plan (Ref. 5) is still relevant for assessing indirect emissions associated with the project. As such, indirect emissions are not further described in this EP.

According to the Intergovernmental Panel on Climate Change (IPCC), Sixth Assessment Report (AR6) for Working Group 1, 'the total anthropogenic effective radiative forcing in 2019, relative to 1750, was 2.72 [1.96–3.48] Wm^{-2} (*medium confidence*) and has been growing at an increasing rate since the 1970s, [and]… Over 1750–2019, CO_2 increased by 131.6 ± 2.9 ppm (47.3%)'[28] (Ref. 81).

The IPCC defines the term 'carbon budget' as 'refer[ring] to the maximum amount of cumulative net global anthropogenic CO_2 emissions that would result in limiting global warming to a given level with a given probability, taking into account the effect of other anthropogenic climate forcers. This is referred to as the total carbon budget when expressed starting from the pre-industrial period, and as the remaining carbon budget when expressed from a recent specified date. Historical cumulative CO_2 emissions determine to a large degree warming to date, while future emissions cause future additional warming. The remaining carbon budget indicates how much CO_2 could still be emitted while keeping warming below a specific temperature level.'[29] (Ref. 82).

The remaining carbon budget for a 50% likelihood to limit global warming to 1.5 °C, 1.7 °C, and 2 °C is respectively, 500 Gt CO_2, 850 Gt CO_2, and 1,350 Gt CO_2 [30] (Ref. 82).

If the total direct GHG emissions from activities associated with this EP (based on one well) is ~0.024 Mt CO_2-e then the activities under this EP may contribute ~1.2–3.2 × 10^{-6} percent to the reduction in the total remaining global carbon budget, which is a *de minimis* decrease.

Due to the overall *de minimis* contribution to the reduction of the global carbon budget from the activities under this EP, the impact of contribution to the global carbon budget has been evaluated as having the potential to result in an Incidental (6) consequence.

Changes to cultural heritage values

There are no World, National, or Commonwealth heritage listed places or sites within the OA (Section 4.6).

As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. It is understood that the term 'Country' is also understood to include Sky Country (Ref. 384).

Intangible cultural heritage refers to the "practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage" (Ref. 381). Specific intangible values of Sky Country identified through consultation included Dreamtime stories and songlines (Table 7-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 7-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2.

No impact pathway to a change in access to Country from air emissions within the OA is anticipated. The consequence evaluation to ambient air quality and the reduction in atmospheric global carbon budget are provided above, and were assessed as having a localised and limited environmental impacts to air quality, and a *de minimis* contribution to the reduction of the global carbon budget. Further, as described in the above evaluation, the source of air emissions within the OA (i.e. MODU and vessels) is temporary and is not expected to affect the long-term air quality of the marine environment. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected from air emissions within the OA.

Given the offshore location of the OA (Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to cultural heritage values attributed to the offshore marine area from air emissions within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Incidental (6).

ALARP decision context justification

There is no safe and feasible alternative to flaring to complete well testing. Flaring is an essential element for safe well testing that results in atmospheric emissions. Bulk transfers are necessary to provide drilling materials and tank venting is a necessary safety control. There are no safe and feasible alternatives to venting to complete the activity.

Offshore drilling and support vessel operations and subsequent air emissions arising from these activities are commonplace in offshore environments nationally and internationally. The control measures to manage the

[28] *IPCC, AR6, WG1, at TS-35.*

[29] *IPCC, AR6, WG1, at SPM-48 footnote 43*

[30] *IPCC, AR6, WG1, at SPM-29 Table SPM.2*

Air emissions		
impacts associated with air emissions are well defined via legislative requirements that are considered standard industry practice. These are well understood and implemented by the petroleum industry and CAPL. The impacts associated with air emissions are considered to be lower-order impacts (Table 5-3). As such, CAPL applied ALARP Decision Context A for this aspect.		
Good practice control measures		
Control measure	**Description**	
Reduced sulfur content fuel	Sulfur content of diesel/fuel oil complies with Marine Order 97 and Regulation 14 of MARPOL 73/78 Annex VI. Only low-sulfur (0.50 mass % concentration [m/m]) fuel oil will be used to minimise sulfur oxides (SOx) emissions.	
Marine Order 97: Marine Pollution Prevention – Air Pollution	Before commencing activities, the Marine Standard (Ref. 29) is used to verify that all vessels comply with Marine Order 97: Marine Pollution Prevention – Air Pollution (appropriate to vessel class) for emissions from combusting fuel, including: • Vessels will hold a valid International Air Pollution Prevention (IAPP) certificate and a current International Energy Efficiency (IEE) certificate • All vessels (as appropriate to vessel class) will have a Ship Energy Efficiency Management Plan (SEEMP) as per MARPOL 73/78 Annex VI • Vessel engine nitrogen oxides (NOx) emission levels will comply with Regulation 13 of MARPOL 73/78 Annex VI.	
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).	
Additional control measures and cost–benefit analysis		
Control measure	**Benefit**	**Cost**
Use non- hydrocarbon powered vessels/MODUN/A	If non-hydrocarbon (e.g. hydrogen) powered vessels/MODU were used for the program, CAPL could avoid emissions associated with fuel combustion. However, for activities under this EP, the avoidance of emissions would be minimal (i.e. total direct greenhouse gas emissions associated with this EP are ~0.1365 Mt CO_2-e). Consequently, the benefit would be negligible.N/A	No commercially viable vessels/MODU are currently available to implement the activities discussed in this EP. Consequently, the practicability of using vessels/MODU with alternative fuel sources to avoid direct emissions is not considered practicable.N/A
Monitor fuel usage	Monitoring and recording fuel usage during the petroleum activity helps identify whether the estimates were accurate and strategies to reduce emissions may be identified.	No additional cost. Therefore, control measure has been adopted for use.
Likelihood and risk level summary		
Likelihood	Due to the localised and temporary nature of air emissions within the OA, and with the control measures in place, the likelihood of impacts to cultural heritage values from air emissions is Rare (6).	
Risk level	Very low (10)	
Determination of acceptability		
Principles of ESD	The potential impact associated with this aspect is limited to a direct reduction in air quality for a localised area for a short time, which is not considered to have the potential to affect biological diversity and ecological integrity. The impact associated with this aspect is a *de minimis* contribution to the reduction of the global carbon budget, which is not considered to have the potential to affect intergenerational equity. The control measures identified above are considered to reduce this impact to ALARP.	

<table>
<tr><th colspan="3">Air emissions</th></tr>
<tr><td></td><td colspan="2">The consequence associated with this aspect is Incidental (6).
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td rowspan="3">Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered for this aspect include:
• Marine Order 97
• MARPOL 73/78.</td></tr>
<tr><td>Requirement</td><td>Demonstration</td></tr>
<tr><td>Marine Order 97
Gives effect to Annex VI of MARPOL 73/78</td><td>Prescribed limits (as per Division 7) for sulfur content of fuel oil have been incorporated into the reduced sulfur content fuel control measure
IAPP and IEE certificate (as per Division 2), SEEMP (as per Division 6), and nitrogen oxides emission requirements (as per Division 3) have been incorporated into the Marine Order 97: Marine Pollution Prevention – Air Pollution control measure</td></tr>
<tr><td>Internal context</td><td colspan="2">The following CAPL management processes or procedures were deemed relevant for this aspect:
• Chevron Marine Standard Non Tankers: Corporate OE Standard (Ref. 29).</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding atmospheric emissions arising from the activity.</td></tr>
<tr><td>Defined acceptable level</td><td colspan="2">These impacts are inherently acceptable as they are considered lower-order impacts in accordance with Table 5-3. In addition, the potential impacts evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.</td></tr>
<tr><td>Environmental performance outcome</td><td>Environmental performance standard</td><td>Measurement criteria</td></tr>
<tr><td rowspan="3">(EPO 6) Planned air emissions from vessel operations during the petroleum activity will meet Marine Order 97 requirements.</td><td>(EPS 6.1) Reduced sulfur content fuel
Only low-sulfur (0.50 mass % concentration [m/m]) fuel oil will be used to minimise SO_x emissions.</td><td>(MC 6.1.1) Bunker receipts verify the use of low-sulfur fuel oil.</td></tr>
<tr><td>(EPS 6.2) Marine Order 97: Marine Pollution Prevention – Air Pollution
Prior to commencement of activities, the following will be verified for the MODU/vessels, as per the Marine Standard:
• hold a valid IAPP certificate and a current IEE certificate
• will have a SEEMP as per MARPOL 73/78 Annex VI (as appropriate to vessel class)
• engine nitrous oxides (NOx) emission levels will comply with regulation 13 of MARPOL 73/78 Annex VI.</td><td>(MC 6.2.1) OVIS report / ABU Marine OE Inspection Checklist confirms vessels hold IAPP and IEE certificates, a SEEMP is in place (as appropriate to class), and NO_x emission levels comply with regulations.</td></tr>
<tr><td>(EPS 6.3) Fuel usage
Fuel usage is monitored and recorded during the petroleum activity.</td><td>(MC 6.3.1) Records show that fuel usage was monitored and recorded.</td></tr>
<tr><td>(EPO 2b) No adverse change to First</td><td>(EPS 2.2) Relevant persons consultation—Ongoing consultation</td><td>(MC 2.2.1) Relevant persons consultation records.</td></tr>
</table>

Air emissions		
Nations cultural heritage values from the petroleum activity.	**(First Nations people and/or representative bodies)** **Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.**	
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation.	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

7.6 Underwater sound emissions—continuous

7.6.1 Acoustic modelling

CAPL commissioned JASCO Applied Sciences to conduct acoustic modelling to inform risk assessments associated with underwater sound exposure from drilling activities (Ref. 267). The modelling was undertaken to assist in understanding the distances from operations at which underwater sound levels reached noise effect thresholds and criteria for marine mammals, sea turtles and fish (Ref. 267).

The modelling methodology considered scenario specific source levels and range-dependent environmental properties. Estimated underwater acoustic levels are presented as sound pressure levels (SPL), and as accumulated sound exposures levels (SEL) for different noise criteria.

The modelling study considered the following sound-producing activities:

- drilling from an anchored MODU
- an Offshore Support Vessel (OSV) on slow transit in standby operations
- an OSV conducting resupply operations under Dynamic Positioning (DP).

Five scenarios, each describing a unique combination of sound sources, were modelled (Table 7-2). Each of the scenarios were modelled at 2 different well site locations situated at water depths of ~250 (Well location 1) and ~990 m (Well location 2) on the NWS. The water depths for these locations are comparable to the Gorgon and Jansz fields respectively.

Table 7-2: Summary of modelled scenarios

Scenario	Description
1	Anchored MODU drilling (24 h)
2	Anchored MODU drilling (24 h) + OSV resupply under DP (2 h)
3	Anchored MODU drilling (24 h) + OSV resupply under DP (8 h)
4	Anchored MODU drilling (24 h) + OSV on standby (24 h)
5	Anchored MODU drilling (24 h) + OSV resupply under DP (8 h) + OSV on standby (24 h)

In the absence of modelling, the estimates of SPL from helicopter operations (149–162 dB re 1 µPa) (Ref. 51; Ref. 64) has been used for the purposes of behavioural thresholds for this consequence evaluation. Given the nature of helicopter operations (i.e. crew transfers) covered under this EP, exposure to sound from this source for an extended period (e.g. 12 or 24 hours) is not credible, and as such, comparison against the cumulative sound exposure level criteria is not relevant.

7.6.2 Exposure criteria for continuous sound

Different species groups perceive and respond to sound differently, and so various exposure criteria for the different types of impacts and species groups are considered. These noise effect thresholds, based on current best available science, were used in the impact and risk assessment:

- frequency-weighted accumulated sound exposure levels (SEL_{24h}) from the US National Oceanic and Atmospheric Administration (NOAA) Technical Guidance (Ref. 214) for the onset of permanent threshold shift (PTS)[31] and temporary threshold shift (TTS)[32] in marine mammals (Table 7-3)
- unweighted SPL for behavioural threshold for marine mammals based on NOAA (Ref. 164) (Table 7-3)
- sound exposure guidelines for fish, fish eggs and larvae (including plankton) (Ref. 86) (Table 7-3)
- frequency-weighted accumulated sound exposure levels (SEL_{24h}) from Finneran et al. (Ref. 85) for the onset of PTS and TTS in marine turtles (Table 7-3).

Recent Commonwealth guidance has defined ‘injury to Blue Whales’ as both PTS and TTS hearing impairment, as well as any other form of physical harm arising from anthropogenic sources of underwater noise (Ref. 87).

7.6.3 Modelling outputs for continuous sound

Horizontal maximum distances (R_{max}) from the sound source to the relevant noise effect criteria for marine mammals, turtles, and fish are shown in Table 7-4 (Ref. 84). Where distances to noise effect criteria varied between the modelled scenarios, the largest of these has been reported in Table 7-4.

The SEL_{24h} is a cumulative metric that reflects the dosimetric impact of noise levels within 24 hours based on the assumption that a receptor is consistently exposed to predicted noise levels at a fixed position. Realistically, marine fauna are unlikely to remain stationary for a 24 hour period. Therefore, a modelled exposure area for the SEL_{24h} criteria does not mean that marine fauna travelling within this area will be impaired, but rather that they could be exposed to the sound level associated with impairment (either PTS or TTS) if they remained within the ensonified location for 24 hours.

[31] *PTS is a physical injury to an animals hearing organs.*

[32] *TTS is a temporary reduction in animals hearing sensitivity due to receptor hair cells in the cochlea becoming fatigued.*

Table 7-3: Noise effect criteria for continuous sound for different types of impacts and species groups

Receptor	Mortal or potential mortal injury	Recoverable injury	Permanent threshold shift	Temporary threshold shift	Masking	Behavioural
Low-frequency cetaceans	N/A	N/A	SEL_{24h}: 199 dB re 1 µPa2s	SEL_{24h}: 179 dB re 1 µPa2s	N/A	SPL: 120 dB re 1 µPa
High-frequency cetaceans	N/A	N/A	SEL_{24h}: 198 dB re 1 µPa2s	SEL_{24h}: 178 dB re 1 µPa2s	N/A	SPL: 120 dB re 1 µPa
Very high-frequency cetaceans	N/A	N/A	SEL_{24h}: 173 dB re 1 µPa2s	SEL_{24h}: 153 dB re 1 µPa2s	N/A	SPL: 120 dB re 1 µPa
Sirenians	N/A	N/A	SEL_{24h}: 206 dB re 1 µPa2s	SEL_{24h}: 200 dB re 1 µPa2s	N/A	SPL: 120 dB re 1 µPa
Marine turtles	N/A	N/A	SEL_{24h}: 220 dB re 1 µPa2s	SEL_{24h}: 200 dB re 1 µPa2s	N/A	N/A
Fish (no swim bladder) (relevant to sharks)	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	N/A	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish (swim bladder not involved in hearing)	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	N/A	(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish (swim bladder involved in hearing)	(N) Low (I) Low (F) Low	SEL48h: 170 dB	N/A	SEL12h: 158 dB	(N) High (I) High (F) High	(N) High (I) Moderate (F) Low
Fish eggs and fish larvae (relevant to plankton)	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	N/A	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low	(N) High (I) Moderate (F) Low

Relative risk (high, moderate, low) is given for fauna at 3 distances from the source (near [N], intermediate [I] and far [F]).

Table 7-4: Modelled maximum horizontal distances (R_{max}) from modelled scenarios to reach noise effect criteria for continuous sound

Receptor	Well location	Mortal or potential mortal injury	Recoverable injury	Permanent threshold shift	Temporary threshold shift	Masking	Behavioural
Low-frequency cetaceans	1	N/A	N/A	SEL_{24h}: 0.13 km	SEL_{24h}: 1.04 km	N/A	SPL: 13.0 km
	2			SEL_{24h}: 0.14 km	SEL_{24h}: 1.65 km		SPL: 13.2 km
High-frequency cetaceans	1	N/A	N/A	SEL_{24h}: 0.06 km	SEL_{24h}: 0.12 km	N/A	SPL: 13.0 km
	2			SEL_{24h}: 0.05 km	SEL_{24h}: 0.13 km		SPL: 13.2 km
Very high-frequency cetaceans	1	N/A	N/A	SEL_{24h}: 0.18 km	SEL_{24h}: 1.63 km	N/A	SPL: 13.0 km
	2			SEL_{24h}: 0.18 km	SEL_{24h}: 1.38 km		SPL: 13.2 km
Marine turtles	1	N/A	N/A	SEL_{24h}: 0.05 km	SEL_{24h}: 0.11 km	N/A	N/A
	2			SEL_{24h}: 0.05 km	SEL_{24h}: 0.10 km		
Fish (no swim bladder) (relevant to sharks)		N/A	N/A	N/A	N/A	N/A	N/A
Fish (swim bladder not involved in hearing)		N/A	N/A	N/A	N/A	N/A	N/A
Fish (swim bladder involved in hearing)		N/A	SPL for 48 h: –	N/A	SPL for 12 h: 0.11 km	N/A	N/A
Fish eggs and fish larvae (relevant to plankton)		N/A	N/A	N/A	N/A	N/A	N/A

A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).

7.6.3.1 Pygmy Blue Whale exposure modelling

In addition to the acoustic modelling study, JASCO undertook an acoustic exposure analysis for migrating Pygmy Blue Whales, which describes the modelled predictions of sound levels that individual Pygmy Blue Whales may receive during the activities (Ref. 84).

Sound exposure distribution estimates are determined by moving large numbers of simulated animals ('animats') through a modelled time-evolving sound field, computed using specialised sound source and sound propagation models (Ref. 84). This approach provides the most realistic prediction of the maximum expected SPL, and the temporal accumulation of sound exposure level (SEL_{24h}) for comparison against the relevant thresholds (Ref. 84).

The JASCO Animal Simulation Model Including Noise Exposure (JASMINE) was used to model Pygmy Blue Whales movement through the predicted sound field. Biologically meaningful movement rules were applied to each animat in the model to represent Pygmy Blue Whale behaviours. This included swim speeds, direction, diving and foraging depth, dive depths (for both migratory dives near the surface and deeper exploratory or feeding dives), and time spent at or near the surface before diving again. The animats, were set to simulate the real-world movements of migrating Pygmy Blue Whales within the migratory BIA. The spatial distribution of animats was restricted to the Pygmy Blue Whale BIA for the simulations (Ref. 84).

The same noise effect criteria as defined for low-frequency cetaceans in Section 7.6.2 were used in this Pygmy Blue Whale exposure modelling.

The modelled 95th percentile exposure ranges ($ER_{95\%}$) from the sound source to the relevant noise effect criteria are shown in Table 7-5 (Ref. 84). For comparison, the horizontal maximum distances (R_{max}) from the acoustic modelling are also shown in Table 7-5.

The $ER_{95\%}$ to behavioural and TTS effect criteria are substantially lower than distances predicted by acoustic modelling (Table 7-5). Acoustic modelling is inherently more conservative as it does not incorporate the complex interactions of both a moving sound field and moving receivers (Ref. 84).

Table 7-5: Modelled 95th percentile exposure ranges ($ER_{95\%}$) and probability of exposure, compared to modelled maximum horizontal distances (R_{max}) for Pygmy Blue Whales

Modelling	Parameter	Well location[33]	Permanent threshold shift	Temporary threshold shift	Behavioural
Acoustic modelling	R_{max}	1	SEL_{24h}: 0.13 km	SEL_{24h}: 1.04 km	SPL: 13.6 km
		2	SEL_{24h}: 0.14 km	SEL_{24h}: 1.65 km	SPL: 13.2 km
Exposure modelling	$ER_{95\%}$	1	SEL_{24h}: –	SEL_{24h}: 0.09 km	SPL: 4.23 km
		2	SEL_{24h}: –	SEL_{24h}: 0.10 km	SPL: 4.26 km
	P_{exp}	1	SEL_{24h}: –	SEL_{24h}: 15%	SPL: 52%
		2	SEL_{24h}: –	SEL_{24h}: 8%	SPL: 55%

A dash indicates the threshold was not reached within the limits of the modelling resolution (20 m).

[33] *Well location 1 was modelled based on 990 m water depth, Well location 2 was modelled based on 250 m water depth.*

7.6.4 Risk assessment

Underwater sound emissions—continuous

Source

Activities identified as having the potential to result in underwater sound emissions are:

- drilling, well intervention and/or well abandonment activities within either OA
- field support—use of DP by vessels within either OA during the drilling, well intervention and/or well abandonment activities
- field support—helicopter operations within either OA during the drilling, well intervention and/or well abandonment activities.

Marine fauna may be exposed to several sources of sound emissions during the activities carried out as part of this EP. The potential sources of continuous sound emissions are summarised below:

Continuous sound (vessel operations)

Studies of underwater sound generated from offshore vessels when holding position (on DP) demonstrate measured SPL up to 120 dB re 1 µPa at ~3–4 km from the sound source (Ref. 110).

Continuous sound (MODU and drilling activities)

Modelling undertaken for drilling activities indicates SPLs at 120 dB re 1 µPa occurred at up to ~13 km from the sound (Ref. 84).

Continuous sound (helicopter operations)

Sound emitted from helicopter operations is typically below 500 Hz (Ref. 95). The peak-received level diminishes with increasing helicopter altitude, but the duration of audibility often increases with increasing altitude. Estimates of SPL for helicopters range 149–162 dB re 1 µPa (Ref. 53; Ref. 64).

Potential impacts and risks

Impacts	C	Risks	C
Underwater sound emissions may result in: localised and temporary change in ambient underwater sound level.	5	A change in ambient underwater sound may result in: • behavioural disturbance	5
		• auditory impairment, temporary threshold shift (TTS), permanent threshold shift (PTS), recoverable or non-recoverable injury to marine fauna	–
		• changes to cultural heritage values.	5

Consequence evaluation

Localised and temporary change in ambient underwater sound

Anthropogenic underwater sound emitted during the drilling, well intervention and/or well abandonment activities will result in a change in ambient underwater sound levels.

Underwater broadband ambient sound spectrum levels range from 45–60 dB re 1 µPa in quiet regions (light shipping and calm seas) to 80–100 dB re 1 µPa for more typical conditions, and >120 dB re 1 µPa during periods of high winds, rain or 'biological choruses' (many individuals of the same species vocalising near simultaneously in reasonably close proximity to each other) (Ref. 163). Low-frequency ambient sound levels (20–500 Hz) are frequently dominated by distant shipping plus some whale species. Light weather-related sounds will be in the 300–400 Hz range, with wave conditions and rainfall dominating the 500–50,000 Hz range (Ref. 163).

Project Vessels

The MODU and support vessels will be present within the Gorgon and Jansz OAs during the drilling, well intervention and/or well abandonment activities. It is expected that each well activity will take ~65 days (Section 3.1.2). However, this duration is indicative and subject to potential operational delays (e.g. weather, unplanned contingencies) and final design considerations (e.g. tree option selection). Studies of underwater sound generated from offshore vessels when holding position (on DP) demonstrate measured SPL 120 dB re 1 µPa at ~4 km from the sound source respectively (Ref. 110). When underway at ~12 knots vessel sound of 120 dB re 1 µPa was recorded at 0.5-1 km (Ref. 110). Generally, during operations within the scope of this

Underwater sound emissions—continuous
EP, the vessels will be moving at low speeds (<4–5 knots), producing lower underwater sound emissions than those recorded in the study. *MODU and drilling activities* Acoustic modelling for the drilling activities indicates SPLs at 120 dB re 1 µPa occurred at up to ~13.6 km from the sound source (Ref. 84). *Field support* Sound emitted from helicopter operations is typically below 500 Hz (Ref. 95). The peak-received level diminishes with increasing helicopter altitude, but the duration of audibility often increases with increasing altitude. Estimates of SPL for helicopters range 149–162 dB re 1 µPa (Ref. 51; Ref. 64). Richardson et al. (Ref. 51) report that helicopter sound was audible in air for 4 minutes before it passed over underwater hydrophones, but detectable under water for only 38 seconds at 3 m depth, and 11 seconds at 18 m depth. Given the details above, the consequence of drilling, vessel or helicopter operations causing a change in ambient underwater sound has been assessed as Minor (5) as it will result in a localised and short-term environmental impact.
Marine Mammals *Behavioural disturbance* Acoustic modelling for vessels indicate that the R_{max} from the source to SPL behavioural noise effect criteria for all cetaceans was 13.6 km (Table 7-4). Animat exposure modelling (i.e. taking into account moving marine fauna) indicate that a Pygmy Blue Whale would need to be within ~4.23 km of the acoustic source to be exposed to sound level above the noise effect criteria for behavioural disturbance (Table 7-5). As identified in Section 4.3.3.1, several marine mammal species listed as threatened and/or migratory under the EPBC Act have the potential to occur within 13.6 km of the Gorgon and Jansz OAs (within the Sound EMBAs). The threatened and/or migratory cetaceans that may be present within both Sound EMBAs are low-frequency and high-frequency cetaceans (Section 4.3.3.1). High-frequency cetaceans (e.g. dolphins, beaked whales) and very high-frequency cetaceans (e.g. toothed whales) may potentially occur within the ensonified area (Section 4.3.3) but are not listed as threatened and/or migratory under the EPBC Act. Within the Gorgon and Jansz Sound EMBAs, low-frequency cetaceans (e.g. baleen whales) that may be present include the following protected species: Blue, Bryde's, Fin, and Sei Whales (Section 4.3.3). All cetacean species (for all hearing groups) are expected to be transiting through the area; however no areas of known aggregation within the ensonified areas have been identified. Except for Pygmy Blue Whales and Humpback Whales, there are no known biologically important areas for other cetacean species within or adjacent to the Gorgon and Jansz Sound EMBAs; and it is expected that either of these species present within the Sound EMBAs would be transitory in nature. As such the following consequence evaluation for low-frequency cetaceans focusses on Pygmy Blue and Humpback Whales. A recent study of Pygmy Blue Whales incorporating data collected from both passive acoustic monitoring and satellite telemetry data, was analysed and determined the 'most important areas' for migration along the WA coast as an almost continuous stretch from southern WA to around the latitude of Rowley Shoals, and thereafter was more dispersed (Ref. 172). The defined migration BIA for Pygmy Blue Whales overlaps with the western half of the Gorgon OA and Sound EMBA and the entire Jansz OA and Sound EMBA (Figure 4-3).The drilling, well intervention and/or well abandonment activities within scope of this EP are yet to be scheduled, therefore the activities could overlap with the migration periods. However, although the defined BIA for Pygmy Blue Whales overlaps the Gorgon and Jansz Sound EMBAs (Figure 4-3 and Figure 4-4) it is expected, based on satellite tracking and acoustic detection studies, that Pygmy Blue Whales are likely to travel predominantly to the north-west of both the Gorgon and Jansz Sound EMBAs in deeper waters, particularly on their southern migration (November to December), but also during the northern migration (April to August). Data has shown that after passing the North West Cape Pygmy Blue Whales travel further offshore (238±14 km) into progressively deeper waters (2,617±143.5 m) (Ref. 221). Furthermore, the migration BIA near the drilling, well intervention and/or well abandonment activities is not considered to be a 'confined migratory pathway[34].'Possible Foraging Areas', as defined within the *Conservation Management Plan for the Blue Whale* (Ref. 50), and characterised as foraging BIAs, occur ~145 km south-west (off Exmouth) and >850 km north-east (Scott Reef) of the Sound EMBAs. While foraging BIAs have not been identified along the NWS, recent analysis indicates that there may be short interspersed periods of foraging occurring along the shelf edge during migration (Ref. 172). Thums et al. predicted foraging (and/or resting/breeding) areas for Pygmy Blue Whales. The predicted foraging areas intersect both the Gorgon and Jansz Sound EMBAs (Figure 4-4). Thums et al. indicated greatest numbers of Pygmy Blue Whales during April to July (northern migration), and November and December (southern migration) (Ref. 172).

[34] *Confined migratory pathways are typically constrained by a physical (or other) barrier, and create a narrow or restricted bottleneck through which most of the population must pass*

Underwater sound emissions—continuous

Animat modelling predicted a maximum horizontal distance of 4.26 km to the behavioural noise effect criteria (Table 7-4) from the proposed activities. This distance will be limited to the OA for both Gorgon and Jansz. No critical habitat (feeding, breeding or resting) occur within the Gorgon and Jansz OAs. Given the open-water environment, absence of critical habitat (feeding, breeding or resting), mobile marine fauna behaviours (not sedentary) and the limited number of vessels in the field, any behavioural effects on Pygmy Blue Whales are likely to be localised and short-term. Continuous underwater sound from the proposed activities is not expected to result in a significant change to migration behaviours or displace species outside the BIAs. Therefore the proposed actions are consistent with the *Conservation Management Plan for the Blue Whale* (Ref. 50).

The Humpback Whale migration BIA overlaps the Gorgon Sound EMBA (Section 4.3.3.1.1), with migration occurring between June and October, and as such there is the potential for whales to be present within this area during the predicted migration period. Given the drilling, well intervention and/or well abandonment activities within scope of this EP are yet to be scheduled, the activity could overlap with the migration period. Studies (Ref. 306) suggest that northbound Humpback Whales tend to travel around the 200 m water depth contour (i.e. potentially within the Gorgon Sound EMBA and the migration BIA), while southbound Humpback Whales tend to travel closer to Barrow Island and generally occur between 50 m and 200 m water depths (i.e. outside the Gorgon Sound EMBA and within the migration BIA). Notably, the migration BIA near the drilling, well intervention and/or well abandonment activities is not considered a 'confined migratory pathway'[27].

Given the open-water environment and the limited number of vessels in the field, any behavioural effects on Humpback Whales from continuous underwater sound from the proposed activities are likely to be localised and short-term. Continuous underwater sound from the proposed activities are not expected to result in a significant change to migration behaviours or displace species outside the BIAs.

Estimates of SPL for helicopters range 149–162 dB re 1 µPa (Ref.51; Ref. 64), which is above the noise exposure criterion for behavioural disturbance. However, the spatial and temporal extent of the potential exposure to underwater sound from helicopters is limited (e.g. 38 seconds at 3 m depth, and 11 seconds at 18 m depth; Ref. 51). The helicopter operations covered under this EP (i.e. crew transfers) are also expected to be infrequent. Therefore, given the limited nature of the exposure, potential impacts from helicopters on cetacean behaviour are not evaluated further.

Consequently, only localised short-term behavioural impacts to transient individuals have the potential to arise from these activities and are therefore evaluated as Minor (5).

TTS and PTS

Acoustic modelling indicated that the R_{max} from the source to TTS and PTS criteria at Well Site 1 (representative of the Gorgon field) for low-frequency cetaceans was 1.04 km and 0.13 km respectively; 0.13 km and 0.05 km respectively for high-frequency cetaceans; and for very high-frequency cetaceans 1.63 km and 0.18 km (Table 7-4).

Acoustic modelling indicated that the R_{max} from the source to TTS and PTS criteria at Well Site 2 (representative of the Jansz field) for low-frequency cetaceans was 1.65 km and 0.14 km respectively; 0.13 km and 0.05 km respectively for high-frequency cetaceans was; and for very high-frequency cetaceans 1.63 km and 0.18 km (Table 7-4).

Animat exposure modelling indicated that the maximum distance to the TTS noise criteria for Pygmy Blue Whales was 100 m or less for the 2 well locations. The PTS noise effect criteria was not predicted to be exceeded (Table 7-5; Ref. 84).

Note: The SEL_{24h} is a cumulative metric that assumes a receptor is continuously exposed to the relevant noise effect criteria for a 24-hour period. TTS and PTS for low-frequency cetaceans from continuous sound generated by the proposed activities is not expected to occur because exceedance of noise exposure criteria requires the animals to remain near the source over a 24-hour period. Because marine mammals (if present) are expected to be transitory through the area, the risk of auditory impairment is not considered credible, and has not been evaluated further.

The helicopter operations covered under this EP (i.e. crew transfers) are expected to be infrequent. Therefore, exposure to continuous sound from this source for an extended period (e.g. 24 hours) is not credible, and comparison against an accumulated sound exposure levels is not relevant, and no further evaluation is required.

Marine Reptiles

Seasnakes

The threatened Short-nosed Seasnake or Leaf-scaled Seasnake are not expected to be present within the Sound EMBA given known habitat preferences for shallow water and reef habitat; underwater sound has also not been identified as a threat for either species (Ref. 317). Other EPBC marine listed seasnake species may occur in broader habitats within the NWMR; however, noise pollution has not been identified as a pressure for

Underwater sound emissions—continuous

seasnake species (Ref. 306). As such, underwater sound is not considered to be a significant factor in seasnake behaviour or survival.

Marine Turtles – TTS and PTS

The acoustic modelling for the activity indicates that the R_{max} from the source to PTS noise effect criteria was ~50 m, and to the TTS noise effect criteria was ~100 m from the sound source (Table 7-4). These results applied to both Well Site 1 and 2.

Note that the SEL_{24h} is a cumulative metric that assumes a receptor is continuously exposed to the relevant noise effect criteria for a 24-hour period. Specifically for marine turtles, this requires them to remain within ~100 m of the sound source for at least a 24-hour period before TTS auditory impairments may occur, and ~50 m of the sound source for at least a 24-hour period before PTS auditory impairments may occur. Because marine turtles (if present) are expected to be transitory through the area, the risk of auditory impairment is not considered credible as it requires turtles to remain in the immediate vicinity (~50 m) of the vessel over a 24-hour period, and has not been evaluated further.

The helicopter operations covered under this EP (i.e. crew transfers) are expected to be infrequent. Therefore, exposure to continuous sound from this source for an extended period (e.g. 24 hours) is not credible, and comparison against an accumulated sound exposure levels is not relevant, and no further evaluation is required.

Fish including sharks and rays

Behavioural disturbance

Continuous sound sources have been identified as a moderate risk of causing behavioural changes, a high risk of causing masking changes, within the near and intermediate vicinity of a sound source for all fish groups (Table 7-3). Continuous sound of any level that is detectable by fishes can mask signal detection, and thus may have a pervasive effect on fish behaviour. However, the consequences of this masking and any attendant behavioural changes for the survival of fishes are unknown (Ref. 86). It is expected that most fish (including sharks and rays) will exhibit avoidance behaviour from a sound source if it reaches levels that may cause behavioural or physiological effects.

As identified in Section 4.3.3.3, several fish species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Sound EMBA. A foraging BIA for the Whale Shark also overlaps with the Sound EMBA. As identified in Section 4.5.1, the Sound EMBA overlaps with the Montebello Marine Park and natural values of this AMP include species listed as threatened, migratory, or marine under the EPBC Act, as well as any identified BIAs for regionally significant marine fauna.

Whale Shark migration along the WA coast occurs mainly between July and November (Section 4.3.3.1.2). The drilling, well intervention and/or well abandonment activities within scope of this EP are yet to be scheduled, as such there is a potential to overlap with the Whale Shark migration period. However, the *Conservation Advice for Whale Sharks* (*Rhincodon typus*) (Ref. 47) does not identify sound emissions as a threat to the species. As such, it is expected that the potential effects to Whale Sharks associated with underwater sound will be the same as for other pelagic fish species.

Pelagic fish species are expected to be transient through the Sound EMBA. If the fish are within the immediate vicinity of the sound source, behavioural responses are expected to be limited to an initial startle reaction before either returning to normal or moving away from the area (Ref. 110). Demersal fish species may reside around existing subsea infrastructure (i.e. if it is providing suitable artificial habitat) within the Sound EMBA. However, given the water depths within the Sound EMBA, the predicted sound levels at the seabed are expected to be below impact thresholds.

Because there is limited potential exposure to migrating Whale Sharks or other listed fish from underwater continuous sound from the moving support vessels, it is expected that there would also be no long-term or significant impacts to the values of the Montebello Marine Park.

Consequently, only localised short-term behavioural impacts to transient individuals have the potential to arise from these activities and therefore are evaluated as Minor (5).

TTS and recoverable injury

Continuous sound sources have been identified as moderate risk within the near vicinity of a sound source and, as low risk within the intermediate and far vicinity of a sound source of causing injury or death to fish with no swim bladders, or those with bladders not involved in hearing (Table 7-3).

For fish species with a swim bladder involved in hearing, acoustic modelling indicated that the maximum distance from the source the TTS criterion was 0.11 km (Table 7-4). The criterion for recoverable injury was not predicted to be exceeded.

Pelagic fish species are expected to be transient through the OAs and Sound EMBAs. Given their transient nature, these fish are not expected to remain close (<110 m) to a sound source for extended periods (12 hours) such that an auditory impairment due to continued sound exposure would occur.

Underwater sound emissions—continuous
On this basis, neither TTS nor recoverable injury to fish are considered credible and are therefore not considered further.
Changes to cultural heritage values There are no World, National, or Commonwealth heritage listed places or sites within the OA (Section 4.6). As identified from literature and/or consultation (Section 4.3.6.2.1), One of the specific tangible values of Sea Country identified through consultation was marine fauna (e.g. whales, turtles; Table 4-14). The consequence evaluations to these receptors are provided above. Intangible cultural heritage refers to the "practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage" (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2. No impact pathway to a change in access to Country from the emissions of continuous (non-impulsive) sound within the OA is anticipated. The consequence evaluation to marine fauna is provided above, and were assessed as having a localised and minor environmental impact, and is not expected to affect the overall population of the species. Further, as described in the above evaluations, the source of underwater sound emissions within the OA (i.e. MODU and vessels) is temporary and is not expected to affect the long-term underwater soundscape of the marine environment. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected from underwater sound emissions within the OA. Given the offshore location of the OA Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to cultural heritage values attributed to the offshore marine area from underwater sound emissions within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Minor (5).
Plankton *Behavioural disturbance* Plankton is a collective term for all marine organisms that cannot swim against a current. This group is diverse and includes phytoplankton (plants) and zooplankton (animals), as well as fish and invertebrate eggs and larvae. Continuous sound sources have been identified as a high risk of causing masking or behavioural changes to plankton close to the sound source; this risk decreases with increasing distance from the source (Table 7-3). Any effects to plankton have to be assessed in the context of natural mortality rates, which are generally considered high and variable. Plankton also have a patchy distribution linked to localised and seasonal productivity that produces sporadic bursts in populations (Ref. 60). Sound emissions on sparse plankton populations are not expected to cause a significant change in behaviour at a measurable level. Therefore, the potential behavioural impacts from sound emissions on plankton are not evaluated further. *TTS and recoverable injury* Continuous sound sources have been identified as low risk of causing injury or death to plankton (Table 7-3), and as such are not discussed further.
ALARP decision context justification
Offshore commercial vessel operations and petroleum activities are commonplace and well-practised nationally and internationally. Applying control measures to manage impacts and risks arising from this aspect is well defined, understood by the industry, and is considered standard industry practice. During relevant persons consultation, no objections or claims were raised regarding underwater sound emissions arising from the activity. Although some species that are known to be sensitive to underwater sound and have the potential to be exposed to underwater noise above exposure criteria during these activities, the impacts and risks arising from underwater sound emissions are considered lower-order impacts and risks in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.

Underwater sound emissions—continuous		
Good practice control measures		
Control measure	**Description**	
EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans	The requirements to manage interactions between vessels and cetaceans are detailed in the EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans. These regulations describe strategies to ensure cetaceans are not harmed during offshore interactions with people. By implementing these control measures and managing interactions with cetaceans near the vessels, the potential impacts from underwater sound are limited.	
Helicopters under transit within the OA	For helicopters under transit within the OA, the following cetacean interaction requirements will be maintained by the helicopters: • height and distance from cetaceans as described in EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans (Cth).	
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).	
Additional control measures and cost–benefit analysis		
Control measure	**Benefit**	**Cost**
Petroleum activity schedule—Adjust to reduce likelihood of presence of EPBC listed threatened and/or migratory species	By altering the timing of the petroleum activity to reduce overlap with the predicted seasonal presence of protected marine fauna within the OAs may consequently reduce the likelihood (and residual risk) of auditory impairment or injuries occurring.	Although no planned activities have been scheduled, based on the known seasonal presence of protected marine fauna within the area, overlap with the predicted presence of all protected marine fauna is likely to be unavoidable. Therefore, this control measure has been not been adopted for use.
Likelihood and risk level summary		
Likelihood	Due to the nature of the petroleum activity and the prediction of localised and temporary behaviour disturbance, and the overlap with known biologically important areas for some fauna, the likelihood of exposing receptors resulting in the identified consequence was considered Unlikely (4).	
Risk level	Low (8)	
Principles of ESD	The impacts and risks associated with this aspect are limited to localised and temporary behavioural disturbance to individuals, which is not expected to result in effects at a population level that would prevent their long-term recovery or survival. On the assumption that this potential impact occurs during a sensitive life stage (such as migration), CAPL would not expect these activities to affect migration, internesting, or foraging behaviours, nor impact on individuals or the wider population. As such, this aspect is not considered as having the potential to affect biological diversity and ecological integrity. The consequence associated with this aspect is Minor (5). Therefore, no further evaluation against the Principles of ESD is required.	
Relevant environmental legislation and other requirements	Legislation and other requirements considered applicable for this aspect include: • EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans • *Conservation Management Plan for the Blue Whale 2015–2025* (Ref. 50) • *Conservation Advice Balaenoptera borealis Sei Whale* (Ref. 49) • *Conservation Advice Balaenoptera physalus Fin Whale* (Ref. 49) • *Conservation Advice Rhincodon typus Whale Shark* (Ref. 47)	

<table>
<tr><th colspan="3">Underwater sound emissions—continuous</th></tr>
<tr><td></td><td colspan="2">• Recovery Plan for Marine Turtles in Australia (Ref. 46)
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.</td></tr>
<tr><td></td><td>Requirement</td><td>Demonstration</td></tr>
<tr><td></td><td>EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans
Caution and no approach zones for interacting with cetaceans from vessels.
Vertical and horizontal distances for helicopter operations.</td><td>Requirements of Regulations 8.05 and 8.06 for vessels, and 8.07 for aircraft, interacting with cetaceans has been incorporated into the EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans control measure.</td></tr>
<tr><td></td><td>Conservation Management Plan for the Blue Whale 2015–2025
Management action A.2.3: Anthropogenic noise in biologically important areas will be managed such that any Blue Whale continues to use the area without injury, and is not displaced from a foraging area</td><td>The Gorgon and Jansz OAs, and predicted distances to behavioural disturbance criteria, do not intersect with the foraging BIA for Pygmy Blue Whales. Therefore, this activity is not considered to be inconsistent with the Conservation Management Plan for the Blue Whale.</td></tr>
<tr><td></td><td>Recovery Plan for Marine Turtles in Australia
Management action A1.5: Manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to the survival
Management action A1.6: Manage anthropogenic activities in Biologically Important Areas to ensure that biologically important behaviour can continue</td><td>TTS and PTS to marine turtles from accumulated SEL_{24h} exposures to continuous sounds from vessels or helicopters is not predicted to occur. Therefore, this activity is not considered to be inconsistent with the Recovery Plan for Marine Turtles in Australia.</td></tr>
<tr><td></td><td>Conservation Advice for the Whale Shark 2015–2020
No specific conservation action identified.</td><td>N/A</td></tr>
<tr><td>Internal context</td><td colspan="2">No CAPL management processes or procedures were deemed relevant for this aspect.</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding underwater sound emissions arising from the activity.</td></tr>
<tr><td>Defined acceptable level</td><td colspan="2">These impacts and risks are inherently acceptable as they are considered lower-order impacts and risks in accordance with Table 5-3. In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.
However, in alignment with Section 5.6.2, where the aspect is listed as threat to a protected matter or identified as a concern to a listed conservation value, CAPL will define an acceptable level of impact that aligns with the objectives of these documents.
Objectives of the relevant documents are shown below:</td></tr>
<tr><td></td><td>Plan</td><td>Objective</td></tr>
<tr><td></td><td>Conservation Management Plan for the Blue Whale 2015–2025</td><td>Recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list.</td></tr>
</table>

Underwater sound emissions—continuous		
		Interim objective 4 Anthropogenic threats are demonstrably minimised.
	Recovery Plan for Marine Turtles in Australia	Recovery objective: The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list. Interim objective 3: Anthropogenic threats are demonstrably minimised.
	Therefore, CAPL has defined the following acceptable level of impact such that it is consistent with these documents: • impacts from the petroleum activity are managed such that it would not prevent the long-term recovery of protected species • no injury or death to Pygmy Blue Whales or marine turtles such that it would prevent the long-term recovery of the species • no auditory injury (TTS or PTS) to Pygmy Blue Whales within a BIA resulting from underwater sound from the petroleum activity • no displacement of Pygmy Blue Whales from foraging areas resulting from underwater sound from the petroleum activities • no displacement of marine turtles from habitat critical to the survival or a species resulting from underwater sound from the petroleum activities no disruption of biologically important behaviours of marine turtles within BIAs, resulting from underwater sound from the petroleum activities, such that it would prevent the long-term recovery of the species CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the risk to marine fauna, that the risk to values of the AMP are also subsequently managed to this acceptable level	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
EPO 7a) No injury to marine fauna from underwater sound emissions associated with the petroleum activity within the OA. (EPO 7b) No displacement of marine fauna, or disruption of biologically important behaviours of marine fauna, from biologically important areas or habitat critical to the survival of a species from underwater sound emissions within the OA associated with the petroleum activity.	**(EPS 2.1) Vessels under transit or on standby within the OA** Vessels under transit or on standby within the OA, will implement the following caution, no approach zones and separation distances, where practicable: • caution zone (300 m either side of whales and 150 m either side of dolphins)– vessels must operate at ≤6 knots within this zone, maximum of three vessels within zone, and vessels should not enter if a calf is present • no approach zone (300 m to the front and rear of whales and 100 m either side; 300 m for whale calves; 150 m to front and rear of dolphins and 50 m either side)–vessels should not enter this zone, and should not wait in front of the direction of travel or an animal or pod, or follow directly behind • a separation distance of 30 m from Whale Sharks and marine turtles;	(MC 2.1.1) Induction materials include relevant marine fauna caution and no approach zone requirements. (MC 2.1.2) Training records confirm personnel involved in offshore vessel activities have completed the induction. (MC 2.1.3) Vessel records show if marine fauna interaction occurred within caution, approach zones or separation distances, and what mitigation (e.g. divert or slow vessel) measure was implemented.

Underwater sound emissions—continuous		
(EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.	vessels must operate at ≤6 knots when moving away to maintain these separation distance.	
	(EPS 7.1) EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans Helicopters will implement the following, where practicable: • not operate a helicopter at a height lower than 1,650 feet or within a horizontal radius of 500 m for a cetacean • not approach a cetacean from head on.	(MC 7.1.1) Records indicate that the helicopter supply contractor has been made aware of commitments under EPBC regulations 8.07 (MC 7.1.2) Records show if marine fauna interaction occurred, and what mitigation (e.g. divert) measure was implemented
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation.	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

7.7 Underwater sound—impulsive

7.7.1 Acoustic modelling

In the absence of modelling, the estimates of sound pressure levels (SPL) from survey techniques have been used for the purposes of this consequence evaluation. Survey techniques are expected to emit various frequencies between 12 and 500 kHz.

The typical noise levels emitted from the source types includes:

- Multibeam echosounder (MBES): ~218 dB re 1 µPa RMS @ 1 m (Ref. 268); per pulse SEL 173–188 dB re 1 µPa^{2}s @ 1 m (Ref. 268)
- Side scanning sonar (SSS): ~229 dB re 1 µPa RMS @ 1 m (Ref. 268); per pulse SEL 200 dB re 1 µPa^{2}s @ 1 m (Ref. 268)
- VSP: ~195 dB re 1 µPa @ 1 m (Ref. 206)To inform the potential spatial extent of underwater sound emissions, an unweighted spherical spreading model (Ref. 51) has been used to predict distances to noise effect thresholds for different marine fauna.

It is acknowledged that the spherical spreading model is highly simplified, and does not consider directionality, reflection, refraction, or absorption of sound at the seabed. However, it is considered to provide a conservative indication of distances at which received sound levels from are likely to decrease to below relevant threshold values, and therefore is appropriate for use in impact and risk assessment.

For the purposes of impact assessment, the sound level modelled is 229 dB re 1 µPa RMS @ 1 m and this is considered to represent a conservative, greatest spatial extent of potential impacts from impulsive sound.

Exposure criteria for impulsive sound

Different species groups perceive and respond to sound differently, and so various exposure criteria for the different types of impacts and species groups are considered. These noise effect thresholds, based on current best available science, were used in the impact and risk assessment:

- peak pressure levels (PK) and frequency-weighted accumulated sound exposure levels (SEL24h) from the US National Oceanic and Atmospheric Administration (NOAA) Technical Guidance (Ref. 214) for the onset of permanent threshold shift (PTS) and temporary threshold shift (TTS) in marine mammals (Table 7-6)
- marine mammal behavioural threshold based on the current NOAA (Ref. 164) criterion for marine mammals of 160 dB re 1 µPa (SPL) for impulsive sound sources (Table 7-6)
- peak pressure levels (PK) and frequency-weighted accumulated sound exposure levels (SEL_{24h}) from Finneran et al. (Ref. 85) for the onset of PTS and TTS in marine turtles (Table 7-6)
- marine turtle behavioural response threshold of 166 dB re 1 µPa (SPL) (Ref. 86), as applied by the US National Marine Fisheries Service (NMFS), along with a sound level associated with behavioural disturbance 175 dB re 1 µPa (SPL) (Ref. 273; Ref. 268) (Table 7-6)
- sound exposure guidelines for fish, fish eggs and larvae (including plankton) (Ref. 272) (Table 7-6)
- peak-peak pressure levels (PK-PK) at the sea floor ($PK\text{-}PK_{seafloor}$) to help assess effects of noise on crustaceans [no effect sound level of 202 dB re 1 µPa, and maximum sound level of 209–213 dB re 1 µPa] and bivalves [maximum sound level of 212–213 dB re 1 µPa] through comparing to results in Day et al. (Ref. 268), Day et al. (Ref. 269), Day et al. (Ref. 270), Day et al. (Ref. 271) and Payne et al. (Ref. 272)
- for comparison to current literature, a no effect sound level for sponges and corals of 226 dB re 1 µPa ($PK_{seafloor}$), is reported for comparing to Heyward et al. (Ref. 283).

Recent Commonwealth guidance has defined ‘injury to Blue Whales’ as both PTS and TTS hearing impairment, as well as any other form of physical harm arising from anthropogenic sources of underwater noise (Ref. 87).

Table 7-6: Noise criteria for impulsive sound for different types of impacts and species groups

Receptor	Mortal or potential mortal injury	Recoverable injury	Permanent threshold shift	Temporary threshold shift	Masking	Behavioural
Low-frequency cetaceans	N/A	N/A	SEL_{24h}: 183 dB re 1 µPa2s PK: 219 dB re 1 µPa	SEL_{24h}: 168 dB re 1 µPa2s PK: 213 dB re 1 µPa	N/A	SPL: 160 dB re 1 µPa
Mid-frequency cetaceans	N/A	N/A	SEL_{24h}: 185 dB re 1 µPa2s PK: 230 dB re 1 µPa	SEL_{24h}: 170 dB re 1 µPa2s PK: 224 dB re 1 µPa	N/A	SPL: 160 dB re 1 µPa
High-frequency cetaceans	N/A	N/A	SEL_{24h}: 155 dB re 1 µPa2s PK: 202 dB re 1 µPa	SEL_{24h}: 140 dB re 1 µPa2s PK: 196 dB re 1 µPa	N/A	SPL: 160 dB re 1 µPa
Marine turtles	N/A	N/A	SEL_{24h}: 204 dB re 1 µPa2s PK: 232 dB re 1 µPa	SEL_{24h}: 189 dB re 1 µPa2s PK: 226 dB re 1 µPa	N/A	SPL: 166 dB re 1 µPa SPL: 175 dB re 1 µPa
Fish (no swim bladder) (relevant to sharks)	SEL_{24h}: >219 dB PK: >213 dB	SEL_{24h}: >216 dB PK: >213 dB	N/A	SEL_{24h}: >>186 dB	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish (swim bladder not involved in hearing)	SEL_{24h}: 210 dB PK: >207 dB	SEL_{24h}: 203 dB PK: >207 dB	N/A	SEL_{24h}:: >>186 dB	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish (swim bladder involved in hearing)	SEL_{24h}: 207 dB PK: >207 dB	SEL_{24h}: 203 dB PK: >207 dB	N/A	SEL_{24h}: 186 dB	(N) Low (I) Low (F) Moderate	(N) High (I) High (F) Moderate
Fish eggs and fish larvae (relevant to plankton)	SEL_{24h}: >210 dB PK: >207 dB	(N) Moderate (I) Low (F) Low	N/A	(N) Moderate (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low

7.7.2 Modelling outputs for impulsive sound

Results from the spherical modelling for MBES sound emissions (229 dB re 1 µPa RMS @ 1 m) are shown in Table 7-7. Conversions have then been applied to convert SPL RMS to unweighted SEL for impulsive sound (Ref.51; Ref 272).

Table 7-7: Predicted sound levels for highest impulsive sound emissions

Distance (m)	Impulsive SPL (dB re 1 µPa RMS)	Impulsive SEL^ (dB re 1 µPa2s)
1	229	216
50	195	182
100	189	176
200	183	170
300	179	166
400	177	164
500	175	162
1,000	169	156
2,000	163	140
3,000	159	146
4,000	157	144
5,000	155	142

Offshore seismic surveys generally comprise up to 20 air guns, each operating at ~2,000 psi and expelling a total volume of air of ~2,000 to ~5,000 cubic inches. At the source, pulses are between 220 and 240 dB, typically reducing to 170 dB within 1 km and ~150 dB within 10 km (Ref. 206). Comparatively, typical peak noise levels emitted from the VSP source is ~195 dB re 1 µPa @ 1 m (Ref. 206).

7.7.3 Risk assessment

Underwater sound			
Source			
Activities identified as having the potential to result in pulsed underwater sound emissions: • well evaluations—VSP operations			
Potential impacts and risks			
Impacts	**C**	**Risks**	**C**
Impulsive underwater sound emissions may result in: • localised and temporary change in ambient underwater sound level.	5	A change in ambient underwater sound may result in: • behavioural disturbance • auditory impairment, temporary threshold shift (TTS), permanent threshold shift (PTS), recoverable or non-recoverable injury to marine fauna • changes to cultural heritage values.	5 –

Underwater sound
Consequence evaluation
Localised and temporary change in ambient underwater sound Anthropogenic underwater sound emitted during VSP operations will result in a change in ambient underwater sound levels. Underwater broadband ambient sound spectrum levels range from 45–60 dB re 1 µPa in quiet regions (light shipping and calm seas) to 80–100 dB re 1 µPa for more typical conditions, and >120 dB re 1 µPa during periods of high winds, rain or 'biological choruses' (many individuals of the same species vocalising near simultaneously in reasonably close proximity to each other) (Ref. 163). Low-frequency ambient sound levels (20–500 Hz) are frequently dominated by distant shipping plus some great whale species. Light weather-related sounds will be in the 300–400 Hz range, with wave conditions and rainfall dominating the 500–50,000 Hz range (Ref. 163). VSP operations generates higher-intensity noise than routine drilling, vessel and field support operations, with peak output ~195 dB re 1 µPa @ 1 m. VSP noise output is unlikely to exceed 160 dB re 1 µPa at distances >350 m from the seismic source (Ref. 206). Given the details above, the consequence of VSP operations causing a change in ambient underwater sound has been assessed as Minor (5) as it will result in a localised and short-term environmental impact.
Marine Mammals *Behavioural disturbance* Results from spherical modelling estimate that SPL would be below behavioural noise effect criteria for all cetaceans (within all hearing groups) within ~3 km of the sound source (Table 7-7). The NMFS guidance for pulsed sound (such as VSP) to prevent temporary thresholds shifts in hearing in marine mammals is 180 dB re 1 µPa RMS with disturbance likely at 160 dB re 1 µPa RMS (Ref. 214). As identified in Section 4.3.3.1, several marine mammal species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Gorgon and Jansz Sound EMBAs. The threatened and/or migratory cetaceans that may be present within the Sound EMBAs are low-frequency and mid-frequency cetaceans (Section 4.3.3.1). The Humpback Whale migration BIA overlaps the Gorgon Sound EMBA (Section 4.3.3.1.1), with migration occurring between June and October. The defined migration BIA for Pygmy Blue Whales overlaps with the western half of the Gorgon OA and Sound EMBA and the entire Jansz OA and Sound EMBA with peak migration periods occurring April to August, and November to late December. As such, there is the potential for a larger number of cetaceans to be present during migration periods. However, given the short duration of VSP operations (<7 days) and the open-water environment of the Sound EMBAs (i.e. not a confined migratory pathway), it is not expected that the petroleum activities would result in a significant change to migration behaviours. Data from satellite tracking studies has also suggested that migration by Pygmy Blue Whales occurs in deeper waters and further offshore than the defined BIA (Section 4.3.3.1.1). 'Possible Foraging Areas', as defined within the *Conservation Management Plan for the Blue Whale* (Ref. 50), and characterised as foraging BIAs, occur ~145 km south-west (off Exmouth) and >850 km north-east (Scott Reef) of the Sound EMBAs. While foraging BIAs have not been identified along the NWS, recent analysis indicates that there may be short interspersed periods of foraging occurring along the shelf edge during migration (Ref. 172). Thums et al. predicted foraging (and/or resting/breeding) areas for Pygmy Blue Whales. The predicted foraging areas don not intersect both the Gorgon and Jansz Sound EMBAs for impulsive sound (Source: as determined by Thums et al. (Ref. 172) Figure 4-4). Thums et al. indicated greatest numbers of Pygmy Blue Whales during April to July (northern migration), and November and December (southern migration) (Ref. 172). If migrating cetaceans were present, it is not expected that exposure to these sound levels would result in a significant change to migration behaviours that would result in further impact at both individual or local population levels. As such, the only potential impacts expected would be short-term effects to individuals. Consequently, only localised short-term behavioural impacts to transient individuals have the potential to arise from these activities and are therefore evaluated as Minor (5). *TTS and PTS* *High-frequency cetaceans* Results from spherical modelling estimate that SPL would be below the impulsive sound PTS and TTS thresholds for marine mammals within ~0.05 km of the sound source (Table 7-7). Using single source SEL, results from spherical modelling estimates that SEL would be below the impulsive sound TTS and PTS thresholds for high-frequency cetaceans within ~2 km of the sound source (Table 7-7). Note that the SEL_{24h} is a cumulative metric that assumes a receptor is consistently exposed to the relevant noise effect criteria for a 24-hour period. Given the mobile (not sedentary) marine fauna, and the limited

Underwater sound

duration of survey activities (<7 days] these modelled outputs are likely to be an overly conservative and unlikely worst-case scenario.

High-frequency cetaceans are toothed whales specialised at hearing at high frequencies, such as the Pygmy Sperm Whale and Dwarf Sperm Whale. These species are not listed as threatened under the EPBC Act, but may occur within the Gorgon and Jansz Sound EMBAs (Appendix C). All cetacean species are expected to be transiting through the area; no areas of known aggregation within or around the Sound EMBAs have been identified. Given the transitory cetacean, high-frequency cetaceans would need to remain consistently within ~2 km for a 24-hour period, which is not considered credible, and no further evaluation has been undertaken.

Low-frequency cetaceans

Results from spherical modelling estimate that SPL would be below the impulsive sound PTS and TTS thresholds for marine mammals within ~0.05 km of the sound source (Table 7-7). Using single source SEL, results from spherical modelling estimates that SEL would be below the impulsive sound TTS and PTS thresholds for low-frequency cetaceans within ~0.3 km and 0.05 km of the sound source respectively (Table 7-7).

Note that the SEL_{24h} is a cumulative metric that assumes a receptor is consistently exposed to the relevant noise effect criteria for a 24-hour period. Given the absence of habitat for critical behaviours (feeding, breeding and resting) within each of the OAs, the transient behaviours of low-frequency cetaceans, and the limited duration of survey activities (<7 days) these modelled outputs are likely to be an overly conservative and unlikely worst-case scenario.

Low-frequency cetaceans are baleen whales specialised at hearing at low frequencies. Within the Sound EMBAs, low-frequency cetaceans include the following threatened species: Blue, Bryde's, Fin, and Sei Whales (Section 4.3.3.1). A migration BIA for the Pygmy Blue Whale overlaps the Gorgon and Jansz OAs (Section 4.3.3.1.1) and a migration BIA for the Humpback Whale overlaps the Gorgon OA. The following consequence evaluation for low-frequency cetaceans focusses on Pygmy Blue Whales as a representative case for worst-case consequence evaluation.

Pygmy Blue Whales

As detailed in Section 4.3.3.1.1, migrating Pygmy Blue Whales are likely to occur in the Exmouth – Montebello region from November through to late December (southern migration) and from April through to August (with a peak in May and June) (northern migration). As the activity is yet to be scheduled, there is the potential for overlap with the migration periods. However, as discussed in Section 4.3.3.1.1, although the defined BIA for Pygmy Blue Whales passes through the Gorgon and Jansz Sound EMBAs, it is expected based on recent satellite tracking and acoustic detection studies that the Pygmy Blue Whales are more likely to travel predominantly north-west of the Sound EMBAs in deeper waters further offshore.

The Conservation Management Plan for the Blue Whale (Ref. 50) includes a specific action that 'Anthropogenic noise in biologically important areas will be managed such that any Blue Whale continues to use the area without injury and is not displaced from a foraging area'. The Gorgon and Jansz OAs do not intersect with a foraging BIA for the Pygmy Blue Whale. The nearest foraging BIA occurs ~230 km south-west of the OA, offshore from the North West Cape; and as such is not exposed to underwater sound emissions resulting from activities under this EP.

Data from a recent study (Ref. 172) has identified 'most important areas' for foraging for the Pygmy Blue Whale based on proxy indicators; both the Gorgon and Jansz Sound EMBAs intersect these areas; however, neither of the OAs overlap these areas and as such nor do the predicted potential distances to any risk of TTS or PTS for Pygmy Blue Whales.

Because the area identified for probable foraging is outside the OAs, the risk of injury requires the animal to be within <300 m from the source, and the transient (not sedentary) nature of animals within the OA, it is not considered credible for TTS SEL_{24h} to occur. Furthermore, given the nature of survey activities (limited to <7 days), the duration of exposure (even to levels above the impact threshold) would be very limited. As such, the only potential impacts expected would be short-term behavioural effects to individuals, which were evaluated as Minor (5).

Marine Reptiles

Seasnakes

The threatened Short-nosed Seasnake or Leaf-scaled Seasnake are not expected to be present within the Sound EMBA given known habitat preferences for shallow water and reef habitat; underwater sound has also not been identified as a threat for either species (Ref. 315, Ref. 316). Other EPBC marine listed seasnake species may occur in broader habitats within the NWMR; however, noise pollution has not been identified as a pressure for seasnake species (Ref. 355). As such, underwater sound is not considered to be a significant factor in seasnake behaviour or survival.

Underwater sound

Turtles

Behavioural disturbance

Results from spherical modelling estimate that SPL would be below the impulsive sound behavioural threshold for turtles within ~0.5–2 km of the sound source (Table 7-7).

As identified in Section 4.3.3.2, several marine reptile species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Gorgon Sound EMBA. In addition, an internesting BIA and habitat critical to the survival of a species for Flatback Turtles overlaps with the Gorgon Sound EMBA. The Jansz OA and Sound EMBA is located further offshore and does not intersect any BIAs or habitat critical to the survival of a marine reptile species.

The Recovery Plan for Marine Turtles in Australia (Ref. 46) details that Flatback Turtles nest at the Montebello Islands from October to March, with the peak between November and January, which overlaps the activity timing. The Recovery Plan for Marine Turtles in Australia (Ref. 46) identifies an action for addressing key threats to the Pilbara Flatback Turtle stock of 'manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to the survival'.

However, as discussed in Section 4.3.3.2.1, although the defined internesting BIA and habitat critical to the survival of a species for Flatback Turtles overlaps the Gorgon OA and Sound EMBA, it is expected based on recent studies that Flatback Turtles are unlikely to occur within the OA during their internesting period due to the habitat suitable for internesting being in shallower and nearshore waters. There is no evidence to date to indicate Flatback Turtles swim out into deep offshore waters during the internesting period.

Given that the ensonified area for behavioural disturbance is not predicted to overlap with the habitat suitable for internesting, and that if marine turtles did occur further offshore within the Gorgon Sound EMBA, only localised short-term behavioural impacts to transient individuals have the potential to arise from these activities and are therefore evaluated as Incidental (6).

TTS and PTS

Results from spherical modelling estimate that SPL would be below the impulsive sound TTS thresholds for turtles within ~0.05 km of the sound source (Table 7-7). The SPL threshold for PTS is not reached. Using single source SEL, results from spherical modelling estimates that SEL would be below the impulsive sound PTS and TTS thresholds for turtles within ~0.05 km of the sound source respectively (Table 7-7).

It is expected that marine turtles would exhibit avoidance behaviour from the sound source. Given the short duration of survey activities (estimated to be approximately <7 days), the absence of habitat suitable for internesting, and as turtle species are expected to display transient behaviours within the Gorgon OA and Sound EMBA, any auditory impairment or injury is expected limited to a few individuals and are therefore evaluated as Minor (5).

Fish including sharks and rays

Behavioural disturbance

Impulsive sound sources have been identified as a high risk causing behavioural changes within the near vicinity of a sound source for all fish with no swim bladder or a bladder not involved in hearing; and high at both near and intermediate vicinity for fish that use their swim bladder for hearing (Table 7-7). There is a low risk of causing masking behaviours for all fish groups from impulsive noise sources (Table 7-7).

As identified in Section 4.3.3.3, several fish species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Gorgon and Jansz Sound EMBAs. A foraging BIA for the Whale Shark also overlaps with the Gorgon Sound EMBA.

Given the highly mobile nature of pelagic fish species, any behavioural avoidance responses and effects on distribution will be incidental, localised and of short duration, and are therefore evaluated as Incidental (6).

TTS and Recoverable injury

Using single source SEL, results from spherical modelling estimates that SEL would be below the impulsive sound TTS, mortal or potential mortal injury, or recoverable injury thresholds for fish within ~0.05 km of the sound source respectively (Table 7-7).

As identified in Section 4.3.3.3, several fish species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Gorgon and Jansz Sound EMBAs. A foraging BIA for the Whale Shark also overlaps with the Gorgon Sound EMBA.

Whale Shark migration along the WA coast occurs mainly between July and November (Section 4.3.3.3.1). The activities in this EP are yet to be scheduled, as such there may be potential temporal overlap with the Whale Shark migration period.

Whale Sharks' auditory sensitivity or susceptibility to sound-induced effects have not been tested. Like all elasmobranchs, they are lacking a swim bladder and have no air-filled chambers or accessory morphological structures to their hearing system that could serve as hearing specialisations. Like other shark species, they

Underwater sound
can be considered to have relatively insensitive hearing and less likely to be negatively affected by intense underwater sound. It is expected that the potential effects to Whale Sharks associated with underwater sound will be the same as for other pelagic fish species, resulting in minor and temporary behavioural change such as avoidance. Given the short duration of survey activities (estimated to be approximately (<7 days]) and as fish species are expected to display transient (not sedentary) behaviours within the Sound EMBAs, any auditory impairment or injury is expected to be localised and limited to individuals and are therefore evaluated as Minor (5).
Plankton Plankton is a collective term for all marine organisms that cannot swim against a current. This group is diverse and includes phytoplankton (plants) and zooplankton (animals), as well as fish and invertebrate eggs and larvae. The noise effect criteria for fish eggs and fish larvae has been used for the following consequence evaluation (Section 7.7.2, Table 7-6). *Behavioural disturbance* Impulsive sound sources have been identified as a moderate risk of causing behavioural changes to plankton close to the sound source; and there is low risk of causing behavioural change beyond this close proximity, and low risk of masking at all distances from the sound source (Table 7-6). Any effects to plankton have to be assessed in the context of natural mortality rates, which are generally considered high and variable. Plankton also have a patchy distribution linked to localised and seasonal productivity that produces sporadic bursts in populations (Ref. 60). Sound emissions on sparse plankton populations are unlikely to cause a significant change in behaviour at a measurable level. Therefore, the potential behavioural impacts from sound emissions on plankton are not evaluated further. *Mortal or potential injury* Any potential death or mortal injury effects to plankton have to be assessed in the context of natural mortality rates. Mortality or mortal injury impacts to plankton (including fish eggs and larvae) resulting from acoustic emissions are likely to be inconsequential compared to natural mortality rates. These have been reported to be very high, exceeding 50% mortality per day in some species and commonly exceeding 10% mortality per day (Ref. 284). In a review of mortality estimates (Ref. 285) the mean mortality rate for marine fish larvae was 0.24, a rate equivalent to a loss of 21.3% per day. In the experiment undertaken by McCauley et al. (Ref. 286) zooplankton mortality rate background levels were 19%, thus predicted impacts to zooplankton from the seismic survey are likely to be within natural mortality rates. Sætre and Ona (Ref. 378) calculated that under the 'worst-case' scenario, the number of larvae killed during a typical seismic survey was 0.45% of the total population, and they concluded that mortality rates caused by exposure to underwater sound are so low compared to natural mortality that the impact from seismic surveys should be regarded as insignificant. Furthermore, the study considered the effects of seismic surveys which constitute a considerably higher risk profile than the VSP operations covered in this EP, thereby providing a conservative prediction regarding direct impacts to plankton. The potential impacts to plankton from underwater sound emissions is assessed as a consequence level of Minor (5) as impacts will be localised and short term.
Changes to cultural heritage values There are no World, National, or Commonwealth heritage listed places or sites within the OA (Section 4.6). As identified from literature and/or consultation (Section 4.3.6.2.1), One of the specific tangible values of Sea Country identified through consultation was marine fauna (e.g. whales, turtles; Table 4-14). The consequence evaluations to these receptors are provided above. Intangible cultural heritage refers to the "practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage" (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2. No impact pathway to a change in access to Country from the emissions of continuous (non-impulsive) sound within the OA is anticipated. The consequence evaluation to marine fauna is provided above, and were assessed as having a localised and minor environmental impact, and is not expected to affect the overall population of the species. Further, as described in the above evaluations, the source of underwater sound emissions within the OA (i.e. MODU and vessels) is temporary and is not expected to affect the long-term underwater soundscape of the marine environment. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected from underwater sound emissions within the OA.

Underwater sound
Given the offshore location of the OA Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to cultural heritage values attributed to the offshore marine area from underwater sound emissions within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Minor (5).
ALARP decision context justification
Offshore VSP operations are commonplace and well-practised nationally and internationally. Applying control measures to manage impacts and risks arising from this aspect is well defined, understood by the industry, and is considered standard industry practice. During relevant persons consultation, no objections or claims were raised regarding underwater sound emissions arising from the activity. Although some species that are known to be sensitive to underwater sound have the potential to be exposed to underwater noise above exposure criteria during these activities, the impacts and risks arising from underwater sound emissions are considered lower-order impacts and risks in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect. However, as this aspect is listed as a key threat to protected matters under documents made or implemented under the EPBC Act, and can result in a credible impact or risk, additional control measures were also considered.
Good practice control measures

Control measure	Description
EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans	The requirements to manage interactions between vessels and cetaceans are detailed in the EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans. These regulations describe strategies to ensure whales are not harmed during offshore interactions with people. By implementing these control measures and managing interactions with cetaceans near the vessels, the potential impacts from underwater sound are limited.
VSP Procedures	**Marine Fauna Observer** At least one dedicated Marine Fauna Observer (MFO) (with no other duties) will be on active duty during daylight hours when actively undertaking VSP operations. **Pre-start procedures** Pre-start-up visual observations will be conducted out to the extent of the observation zone for at least 30 minutes before commencing soft start. **Shut-down procedures** The MFO on active duty will ensure observation and shut-down zones are adhered to, including the requirement to shut down VSP activity if any whales are sighted within the shut-down zone: • Observation zone: 3 km horizontal radius from the VSP acoustic source • Shut-down zone: 500 m horizontal radius from the VSP acoustic source **Start-up procedures:** A soft start-up procedure will commence if no whales have been sighted within the shut-down zone during the pre-start-up visual observations The soft start-up will include starting the VSP acoustic source at the lowest setting, with a gradual ramp-up of the acoustic source over a 20-minute period until the full operating power level is reached **Operations procedures:** Continuous visual observations of the extent of the observation zone from the VSP acoustic source to identify if any whales are present • If a whale is sighted within the observation zone, the operator of the acoustic source will be placed on standby to power down the acoustic source • If a whale is sighted within the shut-down zone, the acoustic source will be shut down completely **Low-visibility / night-time procedures**

<table>
<tr><th colspan="3">Underwater sound</th></tr>
<tr><td></td><td colspan="2">• During periods of low visibility, where the observations cannot be clearly conducted out to the extent of the observation zone (including night-time), the VSP source will be used as described above, provided that during the preceding 24-hour period:
– There have not been 3 or more whale-instigated shut-down situations
– A two-hour period of continual observation was undertaken in good visibility (out to the extent of the observation zone) and no whales were sighted.</td></tr>
<tr><td>EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans</td><td colspan="2">The requirements to manage interactions between vessels and cetaceans are detailed in the EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans. These regulations describe strategies to ensure whales are not harmed during offshore interactions with people.
By implementing these control measures and managing interactions with cetaceans near the vessels, the potential impacts from underwater sound are limited.</td></tr>
<tr><th colspan="3">Additional control measures and cost–benefit analysis</th></tr>
<tr><th>Control measure</th><th>Benefit</th><th>Cost</th></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">Baleen whales may exhibit behavioural avoidance when sound levels are at or above 160 dB re 1 µPa (Ref. 164). Baleen whales display a gradation of behavioural responses to pulsed sound, suggesting that acoustic discharges are audible to whales at considerable distances from the source, but that they are not disrupted from normal activities such as vessel operations (Ref. 165), particularly during migration.
As described above, other species such as turtles and fish are expected to initially practice avoidance behaviours in response to sound emissions, and thus the likelihood of underwater sound from these activities resulting in longer-term impact is very unlikely (Ref. 110; Ref. 166).
Although localised and temporary behavioural disturbance may occur, it is unlikely that this would result in any impact to a sensitive life stage of the fauna identified. Consequently, CAPL consider the likelihood of the consequence occurring as being Unlikely (4).</td></tr>
<tr><td>Risk level</td><td colspan="2">Low (8)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The impacts and risks associated with this aspect are limited to localised, short-term behavioural changes. On the assumption that this potential impact occurs during a sensitive life stage (such as migration), CAPL would not expect these activities to affect migration, internesting, or foraging behaviours, nor impact on individuals or the wider population. As such, this aspect is not considered as having the potential to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Minor (5).
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered applicable for this aspect include:
• EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans
• Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 50)
• Conservation Advice Balaenoptera borealis Sei Whale (Ref. 49)
• Conservation Advice Balaenoptera physalus Fin Whale (Ref. 49)
• Conservation Advice Rhincodon typus Whale Shark (Ref. 47)
• Recovery Plan for Marine Turtles in Australia (Ref. 46)
<table>
<tr><th>Requirement</th><th>Demonstration</th></tr>
<tr><td>EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans
Caution and no approach zones for interacting with cetaceans from vessels.</td><td>Requirements of Regulation 8.05 and 8.06 for vessels, and 8.07 for aircraft, interacting with cetaceans has been incorporated into the EPBC Regulations</td></tr>
</table></td></tr>
</table>

Underwater sound		
	Vertical and horizontal distances for helicopter operations.	**2000 – Part 8 Division 8.1 – Interacting with cetaceans** control measure.
	Conservation Management Plan for the Blue Whale 2015–2025 Management action A.2.3: Anthropogenic noise in BIAs will be managed such that any Blue Whale continues to use the area without injury, and is not displaced from a foraging area	This activity is not considered to be inconsistent with the *Conservation Management Plan for the Blue Whale*. The Sound EMBA does not intersect with designated Foraging Areas for the Pygmy Blue Whale. The nearest foraging BIA occurs ~230 km south-west of the Sound EMBA, offshore from North West Cape. A recent study has indicated areas of probable foraging along the NWS based on proxy indicators (Section 4.3.3.1.1), both the Gorgon and Jansz Sound EMBAs intersect these areas; however, neither of the OAs overlap these areas and as such nor do the predicted potential distances to any risk of TTS or PTS for Pygmy Blue Whales. TTS and PTS from accumulated SEL_{24h} exposures to continuous sounds from vessels or helicopters is not credible and thus is not predicted to occur. Therefore, continued use of the BIA without injury is expected.
	Conservation Advice Balaenoptera borealis Sei Whale No specific conservation action identified.	N/A
	Conservation Advice Balaenoptera physalus Fin Whale No specific conservation action identified.	N/A
	Conservation Advice Rhincodon typus Whale Shark No specific conservation action identified.	N/A
	Recovery Plan for Marine Turtles in Australia Management action A1.5: Manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to their survival. Management action A1.6: Manage anthropogenic activities in Biologically Important Areas to ensure that biologically important behaviour can continue.	The proposed activities are not considered to be inconsistent with the *Recovery Plan for Marine Turtles in Australia*. TTS and PTS from accumulated SEL_{24h} exposures to impulsive sounds from VSP operations is not credible and thus is not predicted to occur. Therefore, continued use of habitat critical to the survival of a species and BIAs without displacement or disruption to biologically important behaviours is expected.
Internal context	No CAPL management processes or procedures were deemed relevant for this aspect.	
External context	During relevant persons consultation, no objections or claims were raised regarding underwater impulsive sound emissions arising from the activity.	
Defined acceptable level	These impacts and risks are inherently acceptable as they are considered lower-order impacts and risks in accordance with Table 5-3. In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan. However, in alignment with Section 5.6.2, where the aspect is listed as threat to a protected matter or identified as a concern to a listed conservation value, CAPL will define an acceptable level of impact that aligns with the objectives of these documents. Objectives of the relevant documents are shown below:	

Underwater sound		
	Plan	**Objective**
	Conservation Management Plan for the Blue Whale 2015–2025	Recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list. Interim objective 4 Anthropogenic threats are demonstrably minimised.
	Recovery Plan for Marine Turtles in Australia	Recovery objective: The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list. Interim objective 3: Anthropogenic threats are demonstrably minimised.
	Therefore, CAPL has defined the following acceptable level of impact such that it is consistent with these documents: • impacts from the petroleum activity are managed such that it would not prevent the long-term recovery of protected species • no auditory injury (TTS or PTS) to Pygmy Blue Whales within a BIA resulting from underwater sound from the petroleum activities • no displacement of Pygmy Blue Whales from foraging areas resulting from underwater sound from the petroleum activities • no displacement of marine turtles from habitat critical to the survival or a species resulting from underwater sound from the petroleum activities • no disruption of biologically important behaviours of marine turtles within BIAs, resulting from sound from the petroleum activities CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
EPO 7a) No injury to marine fauna from underwater sound emissions associated with the petroleum activity. (EPO 7b) No displacement of marine fauna, or disruption of biologically important behaviours of marine fauna, from biologically important areas or habitat critical to the survival of a species from underwater sound emissions within the OA associated with the petroleum activity	**(EPS 7.2) Marine Fauna Observer** At least one dedicated Marine Fauna Observer (MFO) (with no other duties) will be on active duty during daylight hours when actively undertaking VSP operations	(MC 7.2.1) Records of MFO's presence during VSP operations
	(EPS 7.3) Pre-start procedures Pre-start-up visual observations will be conducted out to the extent of the observation zone for a period of at least 30 minutes before commencing soft start	(MC 7.3.1) VSP operations report verifies that pre-start-up visual observations were conducted
	(EPS 7.4) Shut-down procedures The MFO on active duty will ensure observation and shut-down zones are adhered to, including the requirement to shut down VSP activity if any whales are sighted within the shut-down zone: • Observation zone: 3 km horizontal radius from the VSP acoustic source • Shut-down zone: 500 m horizontal radius from the VSP acoustic source	(MC 7.4.1) VSP operations report verifies that observation and shut-down zones were adhered to
	(EPS 7.5) Start-up procedures: A soft start-up procedure will commence if no whales have been sighted within the shut-down zone during the pre-start-up visual observations	(MC 7.5.1) VSP operations report verifies that soft-star-up procedures commenced in pre-start-up visual observations and soft start-

Underwater sound		
(EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.	The soft start-up will include initiation of the VSP acoustic source at the lowest setting, with a gradual ramp-up of the acoustic source over a 20-minute period until the full operating power level is reached	up was implemented over a 20-minute period
	(EPS 7.6) Operations procedures: Continuous visual observations of the extent of the observation zone from the VSP acoustic source to identify if any whales are present • If a whale is sighted within the observation zone, the operator of the acoustic source will be placed on standby to power down the acoustic source • If a whale is sighted within the shut-down zone, the acoustic source will be shut down completely	(MC 7.6.1) VSP operations report verifies operational procedures were implemented
	(EPS 7.7) Low visibility / night-time procedures During periods of low visibility, where the observations cannot be clearly conducted out to the extent of the observation zone (including night-time), the VSP source will be used as described above, provided that during the preceding 24-hour period: • There have not been 3 or more whale-instigated shut-down situations – A 2-hour period of continual observation was undertaken in good visibility (out to the extent of the observation zone) and no whales were sighted.	(MC 7.7.1) VSP operations report verifies low-visibility procedures were implemented
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation.	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

7.8 Invasive marine pests

Invasive marine pests			
Source			
Activities identified as having the potential to introduce an invasive marine pest (IMP) are: • MODU—planned discharged of ballast water or presence of biofouling on the MODU within an OA during drilling, well intervention and/or well abandonment activities • field support—planned discharged of ballast water or presence of biofouling on the support vessels within an OA during drilling, well intervention and/or well abandonment activities.			
Potential impacts and risks			
Impacts	**C**	**Risks**	**C**
N/A	–	An introduction of an IMP has the potential to result in:	

Invasive marine pests			
		• displacement of, or compete with, native species.	2

Consequence evaluation

The MODU and support vessels will be present within either OA during drilling, well intervention and/or well abandonment activities, which are estimated to take up to ~65 days to complete per activity.

The Gorgon OA is ~265 km^2, with water depths of ~200–250 m. The Jansz OA is ~212 km^2, with water depths of ~1,315–1,350 m.

IMPs are considered to have little or no natural competition or predators, thus potentially outcompeting native species for food or space, preying on native species, or changing the nature of the environment. It is estimated that Australia has >250 established marine pests, and that approximately one in 6 introduced marine species becomes a pest (Ref. 88).

IMPs primarily occur in shallow waters with high levels of slow-moving or stationary shipping traffic (such as ports). The probability of successful IMP settlement and recruitment decreases in well-mixed, deep ocean waters away from coastal habitats. IMP colonisation also requires a suitable habitat in which to establish itself, such as rocky and hard substrates or subsea infrastructure. The Australian Government Bureau of Rural Sciences (BRS) established that the relative risk of an IMP becoming established around Australia decreases with distance from the coast. Modelling conducted by BRS (Ref. 89) estimates: 40% chance of colonisation at 3 nm, 30% chance at 12 nm, and 20% chance at 24 nm.

The Jansz OA is ~125 km from Barrow Island, and the Gorgon OA is ~60 km from Barrow Island.

The particular values and sensitivities within the OAs with the potential to be impacted by introduction of an IMP includes this KEF:

- Continental slope demersal fish communities (only intersecting the Gorgon OA)

Although this KEF has been identified as having the potential to be impacted from activities, any planned disturbance would be near existing infrastructure, and as described in Section 4.3.1, the benthic habitats within the OA mostly comprise unvegetated, soft, and unconsolidated sediments.

The OAs do not present a benthic habitat or community structure that is typically favourable to IMP survival. The OAs are in water depths of ~200–1,350 m, and rocky or hard outcrops are not known to occur; thus the typical requirements of hard substrate and light for IMP survival do not occur within the OAs.

Once established, IMPs can rarely be eradicated (Ref. 90) and therefore there is the potential for a long-term change in habitat structure. Highly disturbed shallow water and coastal marine environments (such as marinas) are more susceptible to colonisation than open-water environments, where the number of dilutions and the degree of dispersal is high (Ref. 91; Ref. 93; Ref. 94; Ref. 51). Although marine pests are identified as being of concern to marine reptile species under the North-west Marine Bioregional Plan (Ref. 59), the risk is associated with terrestrial based IMPs thus is not relevant to the activities covered under this EP.

If an IMP was introduced, and if it did colonise an area, there is the potential for that colony to spread outside the OAs resulting in a widespread long-term impact, therefore resulting in a Severe (2) consequence.

Changes to cultural heritage values

There are no World, National, or Commonwealth heritage listed places or sites within the OA (Section 4.6).

As identified from literature and/or consultation (Section 4.3.6.2.1), One of the specific tangible values of Sea Country identified through consultation was marine fauna (e.g. whales, turtles; Table 4-14). The consequence evaluations to these receptors are provided above.

Intangible cultural heritage refers to the “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage” (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2.

No impact pathway to a change in access to Country from an unplanned introduction and establishment of an IMP within the OA is anticipated. The consequence evaluation to benthic habitat is provided above; where if an IMP was introduced and was successful in colonising the area, was assessed as a wide-spread long-term impact. However, as described in the above evaluation the benthic habitats present within the OA and the distance from mainland coasts and ports, the OA is not likely to be suitable for IMP establishment. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected within the OA.

Given the offshore location of the OA Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to

Invasive marine pests	
cultural heritage values attributed to the offshore marine area is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Incidental (6).	
ALARP decision context justification	
Offshore vessel operations, and subsequent planned discharges, are commonplace and well-practised locally, nationally, and internationally. The causes resulting in an introduction of an IMP from a planned release of ballast water or the presence biofouling are well understood by the industry and CAPL. The control measures to manage the risks associated with the introduction of an IMP are well defined via legislative requirements that are considered standard industry practice. These control measures are well understood and implemented by the petroleum industry and CAPL. Specifically, CAPL has worked in the region for >10 years, thus has a demonstrated understanding of industry requirements and their operational implementation in these areas. The risk of introducing an IMP is considered a lower-order risk in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.	
Good practice control measures	
Control measure	**Description**
Quarantine procedure	CAPL's *Quarantine Procedure Marine Vessels* (Ref. 34) provides information about quarantine compliance to CAPL, contractors, and others associated with marine vessels. The procedure also ensures that the requirements of various legislative or relevant guidelines are met, including: • ballast water management in line with the *Australian Ballast Water Management Requirements (Ref. 4)* • undertaking biofouling risk assessments in line with the National *Biofouling Management Guidance for the Petroleum Production and Exploration Industry* (Ref. 9) and DPIRD Vessel Check system • requirements for biofouling management plans and/or biofouling record books, in accordance with the *Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Biofouling Guidelines)* MPEC.207(62) 2011 (Ref. 8) and *Australian Biofouling Management Requirements (Ref. 4)*. The quarantine procedure requires that all vessels complete and submit to CAPL a *Quarantine Questionnaire – Marine Vessels*, of which Section 3 addresses ballast water and Section 4 addresses biofouling, including that all relevant biofouling information (e.g. Biofouling Management Plan, Biofouling Record Book, evidence of last vessel clean to remove biofouling, antifouling certificates) is provided to enable suitable risk assessments to be completed before mobilising a vessel to a title area. Once CAPL are satisfied that the vessel meets marine quarantine requirements, CAPL will issue authorisation to mobilise via the *Quarantine Certificate – Vessel Mobilisation*.
Ballast water management	The *Australian Ballast Water Management Requirements* (Ref. 3) describes the management requirements for ballast water exchange, including: • non-discharge of 'high-risk' ballast water in Australian ports or waters • full ballast exchange outside Australian territorial seas • documentation of all ballast exchange activities.
Anti-fouling certificate	The *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006* enacts Marine Order 98 (Marine pollution – anti-fouling systems). This marine order describes the conditions for when an antifouling certificate is required.
Maritime Arrivals Reporting System (MARS)	Under the *Biosecurity Act 2015*, pre-arrival information must be reported through MARS before a vessel arrives in Australian waters. In accordance with the *Australian Biofouling Management Requirements* (*Ref. 4)*, from 15 June 2022, all operators of vessels intending to enter Australian territorial waters must also provide information relating to biofouling management as part of the pre-arrival reporting via MARS.
Relevant persons consultation—Ongoing consultation (First	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R,

<table>
<tr><th colspan="3">Invasive marine pests</th></tr>
<tr><td>Nations people and/or representative bodies)</td><td colspan="2">and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).</td></tr>
<tr><th colspan="3">Additional control measures and cost–benefit analysis</th></tr>
<tr><th>Control measure</th><th>Benefit</th><th>Cost</th></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">As activities are occurring in deeper Commonwealth waters (not within shallow coastal areas), and with the well-known and implemented IMP control measures in place, it is considered Rare (6) that an IMP would be introduced resulting in impacts to the ecological functions of benthic habitats within or close to the OA.</td></tr>
<tr><td>Risk level</td><td colspan="2">Low (7)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential risk associated with this aspect is a widespread long-term impacts to benthic communities, which are expected to comprise soft sediment communities. The introduction of an IMP to these communities has the potential to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Severe (2).
Therefore, further evaluation against the remaining Principles of ESD is required.
There is little uncertainty associated with this aspect as the activities and cause pathways are well known and the activities are well regulated and managed. The habitat within the OAs is known from baseline studies, thus the understanding of benthic habitat at these locations is well understood. As such, there is limited scientific uncertainty associated with this aspect; consequently, the precautionary principle has not been applied.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered relevant for this aspect include:
Commonwealth Biosecurity Act 2015
Commonwealth Protection of the Sea (Harmful Anti-fouling Systems) Act 2006 (enacted by Marine Order 98 [Marine pollution – anti-fouling systems])
Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Biofouling Guidelines) (Ref. 8)
Australian Ballast Water Management Requirements (Ref. 3)
Australian Biofouling Management Requirements (Ref. 4)
National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (Ref. 9)
<table>
<tr><th>Requirements</th><th>Demonstration</th></tr>
<tr><td>Biosecurity Act 2015 (Cth)
Pre-arrival reporting through MARS</td><td>Requirement for pre-arrival reporting has been incorporated into the MARS control measure.</td></tr>
<tr><td>Protection of the Sea (Harmful Anti-fouling Systems) Act 2006 (Cth)
Gives effect to Marine Order 98</td><td>Antifouling certifications (as per Division 2) have been incorporated into the antifouling certificate control measure</td></tr>
<tr><td>Australian Ballast Water Management Requirements
Best practice guidance for ballast water management within Australian seas, including legislative obligations under Biosecurity Act 2015 (Cth)</td><td>Requirement for ballast water exchange has been incorporated into the ballast water management control measure.
Proactive management of ballast water (e.g. use of ballast water management plan) has been incorporated into the quarantine procedure control measure</td></tr>
</table></td></tr>
</table>

Invasive marine pests		
	Australian Biofouling Management Requirements Best practice guidance for biofouling management within Australian seas, including legislative obligations under *Biosecurity Act 2015 (Cth)*	Requirement for pre-arrival reporting has been incorporated into the **MARS** control measure. Proactive management of biofouling (e.g. use of biofouling management plan) has been incorporated into the **quarantine procedure** control measure.
	Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Biofouling Guidelines) A biofouling management plan and record book to be available and maintained	Proactive management of biofouling (e.g. use of biofouling management plan) has been incorporated into the **quarantine procedure** control measure.
	National Biofouling Management Guidance for the Petroleum Production and Exploration Industry Undertake a biofouling risk assessment	Biofouling risk assessments for vessels have been incorporated into the **quarantine procedure** control measure
Internal context	The following CAPL management processes or procedures were deemed relevant for this aspect: • *Quarantine Procedure Marine Vessels* (Ref. 34). Control measures related to the above management process have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.	
External context	During relevant persons consultation, no objections or claims were raised regarding IMPs arising from the activity.	
Defined acceptable level	These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
(EPO 8) No introduction and establishment of invasive marine pests from MODU and vessel activities within the OA associated with the petroleum activity.	**(EPOS 8.1) Quarantine procedure** All MODUs and marine vessels undertaking activities within the OA must meet the relevant requirements of the *Quarantine Procedure Marine Vessels*, including: • *Quarantine Questionnaire – Marine Vessels* has been completed and submitted to CAPL • biofouling risk assessments are completed • biofouling management plans and/or biofouling record books are available.	(MC 8.1.1) The *Quarantine Certificate - Vessel Mobilisation* issued by CAPL confirms that relevant vessels meet requirements of the *Quarantine Procedure Marine Vessels.*
(EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.	**(EPOS 8.2) Ballast water management** International vessels will be required to comply with the key *Australian Ballast Water Management Requirements*, which are: • non-discharge of 'high-risk' ballast water in Australian ports or waters • full ballast exchange outside Australian territorial seas • documentation of all ballast exchange activities.	(MC 8.2.1) For international vessels, records show compliance with the Australian Ballast Water Management Requirements.
	(EPOS 8.3) Antifouling certificate	(MC 8.3.1) Inspection reports confirm that international antifouling

Invasive marine pests		
	Vessels greater than 400 GT with an antifoul coating are to maintain up-to-date international antifouling coating certification in accordance with *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006 (*Cth*)* and/or the International Convention on the Control of Harmful Anti-fouling Systems on Ships.	coating certifications are up to date.
	(EPOS 8.4) MARS Vessels entering into the Australian territorial sea from outside Australian territory will complete pre-arrival reporting (unless Excepted under Biosecurity Determination 2016), in accordance with the *Biosecurity Act 2015 (*Cth*).*	(MC 8.4.1) Records confirm that international vessels completed pre-arrival reporting (or can demonstrate meeting conditions for an exception).
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) **Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.**	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation**.**	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

7.9 Planned discharges—facility and vessel operations

Planned discharges—facility and vessel operations

Source

Activities identified as having the potential to result in planned facility and vessel-related discharges are:

- MODU—general MODU operations within an OA during drilling, well intervention and/or well abandonment activities
- field support—general vessel operations within an OA during drilling, well intervention and/or well abandonment activities.

Discharges may include sewage, greywater, food wastes, cooling water, deck wash-water, or oily bilge water.

Potential impacts and risks

Impacts	C	Risks	C
Planned discharge from vessel operations may result in: • localised and temporary reduction in water quality.	6	A change in ambient water quality has the potential to result in: • changes to predator–prey dynamics.	6

Consequence evaluation

Localised and temporary reduction in water quality

The MODU and support vessels would be present within the OAs during the well abandonment, intervention and drilling activities, which are expected to take up to ~65 days to complete per activity.

The Gorgon OA is ~265 km^2, with water depths of ~200–250 m. The values and sensitivities with the potential to be exposed to changes in surface water quality include:

- Humpback Whale (migration BIA)
- Pygmy Blue Whale (distribution and migration BIA)

Planned discharges—facility and vessel operations

- Whale Shark (foraging BIA)
- Wedge-tailed Shearwater (breeding with a foraging buffer BIA)
- Flatback Turtle (internesting BIA)
- Continental slope demersal fish communities (KEF)

The Jansz OA is ~212 km^2, with water depths of ~1,315–1,350 m. The values and sensitivities with the potential to be exposed to changes in surface water quality include:

- Pygmy Blue Whale (distribution and migration BIA)

Open marine waters are typically influenced by regional wind and large-scale ocean current patterns resulting in the rapid mixing of surface and near-surface waters—where MODU and vessel discharges occur (Ref. 12). Therefore, nutrients from sewage, or other similar discharges will not accumulate or lead to eutrophication due to the highly dispersive environment This outcome was verified by sewage discharge monitoring for another offshore project (Ref. 308), which determined that a 10 m^3 sewage discharge reduced to ~1% of its original concentration within 50 m of the discharge location. In addition, monitoring at distances 50 m, 100 m, and 200 m downstream, and at 5 different water depths, confirmed that discharges were rapidly diluted and no elevations in water quality monitoring parameters (e.g. total nitrogen, total phosphorous, and selected metals) were recorded above background levels at any station. This modelling was based on volumes that are expected to be similar to those identified for this activity. Therefore, the extent of impacts is expected to be localised to the discharge location

Monitoring of desalination brine of continuous wastewater discharges (including cooling water) undertaken by Woodside for its Torosa South-1 drilling program in the Scott Reef complex found that discharge water temperature decreases quickly as it mixes with the receiving waters, with the discharge water temperature being <1 °C above ambient within 100 m (horizontally) of the discharge point, and 10 m vertically (Ref. 308). This modelling was based on volumes that are expected to be similar to those identified for this activity. Therefore, the extent of impacts is expected to be localised to the discharge location.

A bilge system safely collects, contains and disposes of oily water so that discharge of hydrocarbons to the marine environment is minimised or avoided. Bilge water is processed via an oil-water separator before being discharged to sea. Discharge is intermittent and occurs at or near surface waters. As such, oily bilge discharges are expected to readily dilute and disperse under the action of waves and currents in surface waters. In addition, once exposed to air, any volatile components of the oil will readily evaporate.

Testing of firefighting deluge systems onboard vessels often leads to a release of firefighting foams offshore. Toxicological effects from these types of foams is typically only associated with prolonged or frequent exposures, such as on land and in watercourses near firefighting training areas (Ref. 278; Ref. 279). These conditions are not consistent with the use under this EP where use of the systems may arise once or twice over the duration of this EP. In their diluted form (as applied in the event of a fire or test), firefighting foams are generally considered to have a relatively low toxicity to aquatic species (Ref. 280; Ref. 281) and further dilution of the foam mixtures in dispersive aquatic environments may then occur before there is any substantial demand for dissolved oxygen (Ref. 282).

Consequently, CAPL considers that the change in water quality from these standard discharges is limited to a localised area around the discharge point and quickly returns to ambient levels after completing the discharge; therefore, any impacts are Incidental (6).

Changes to predator–prey dynamics

The overboard discharge of sewage and macerated food waste creates a localised and temporary food source for scavenging marine fauna or seabirds, whose numbers may temporarily increase as a result, thus increasing the food source for predatory species.

However, the rapid consumption of this food waste by scavenging fauna, and physical and microbial breakdown, ensures that the impacts of food waste discharges are insignificant and temporary, and that all receptors that may potentially be in the water column are not impacted.

The values and sensitivities within the OAs with the potential to be affected by changes in predator–prey dynamics include:

- Whale Shark (foraging BIA)
- Wedge-tailed Shearwater (breeding / foraging)
- Continental slope demersal fish communities (KEF).

Effects on environmental receptors along the food chain—fish, reptiles, birds, and cetaceans—are not expected beyond the immediate vicinity of the discharge in open waters (Ref. 12).

Studies into the effects of nutrient enrichment from offshore sewage discharges indicate that the influence of nutrients in open marine areas is much less significant than that experienced in enclosed areas (Ref. 96) and suggest that zooplankton composition and distribution in areas associated with sewage dumping grounds are not affected. However, if any changes in phytoplankton or zooplankton abundance and composition occur,

Planned discharges—facility and vessel operations

they are expected to be localised, typically returning to background conditions within tens to a few hundred metres of the discharge location (Ref. 97; Ref. 98; Ref. 99).

As described above, plankton communities are not affected by sewage discharges, but if they were, such effects would be highly localised (expected to return to background conditions within tens to a few hundred metres of the discharge location). Consequently, subsequent indirect impacts to other marine fauna including Whale Sharks are not expected, and thus are not considered further.

Although fish and seabirds may be attracted to these discharges, any attraction and consequent change to predator–prey dynamics is expected to be limited to close to the release and thus is expected to result in localised impacts to species. Any increased predation is not expected to result in more than a limited environmental impact; therefore, the consequence is Incidental (6).

Changes to cultural heritage values

There are no World, National, or Commonwealth heritage listed places or sites within the OA (Section 4.6).

As identified from literature and/or consultation (Section 4.3.6.2.1), One of the specific tangible values of Sea Country identified through consultation was marine fauna (e.g. whales, turtles; Table 4-14). The consequence evaluations to these receptors are provided above.

Intangible cultural heritage refers to the “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage” (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2.

No impact pathway to a change in access to Country from planned vessel discharges within the OA is anticipated. The consequence evaluation to marine fauna is provided above, and were assessed as having a limited environmental impact, and is not expected to affect the overall population of the species. Further, as described in the above evaluations, the source of planned discharges within the OA (i.e. MODU and vessels) is temporary and is not expected to affect the long-term environmental quality of the ocean. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected from planned vessel discharges within the OA.

Given the offshore location of the OA Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to cultural heritage values attributed to the offshore marine area from planned vessel discharges within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Incidental (6).

ALARP decision context justification

Offshore commercial vessel operations, and subsequent planned discharges, are commonplace and well-practised locally, nationally, and internationally.

The control measures to manage the risk associated with these planned discharges are well defined via legislative requirements that are considered standard industry practice. These are well understood and implemented by the petroleum industry and CAPL.

The impacts and risks associated with these discharges are considered lower-order impacts and risks in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.

Good practice control measures

Control measure	Description
MARPOL 73/78 sewage discharge	Marine Order 96 (Sewage) gives effect to MARPOL 73/78 Annex IV. MARPOL is the International Convention for the Prevention of Pollution from Ships is aimed at preventing both accidental pollution and pollution from routine operations.
MARPOL 73/78 food waste discharge	Marine Order 95 (Marine pollution prevention – garbage) gives effect to MARPOL 73/78 Annex V, which details the conditions in which macerated and unmacerated food waste can be discharged to the environment.
MARPOL 73/78 oily bilge discharge	Marine Order 91 (Marine pollution prevention – oil) gives effect to MARPOL 73/78 Annex I, which details the conditions by which oily bilge is authorised to be discharged to the environment.

<table>
<tr><th colspan="3">Planned discharges—facility and vessel operations</th></tr>
<tr><td>Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)</td><td colspan="2">In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).</td></tr>
<tr><th colspan="3">Additional control measures and cost–benefit analysis</th></tr>
<tr><th>Control measure</th><th>Benefit</th><th>Cost</th></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">Given the nature and scale of this activity with standard control measures in place, it is considered Rare (6) that these discharges would result in any impact to the ecological function of the particular values and sensitivities present within the OA.</td></tr>
<tr><td>Risk level</td><td colspan="2">Very low (10)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential impacts and risks associated with this aspect are limited to a short-term direct reduction in water quality in a localised area, which is not considered as having the potential to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Incidental (6).
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered relevant for this aspect include:
Marine Order 91
Marine Order 95
Marine Order 96
MARPOL 73/78 Annex I, IV and V
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.</td></tr>
<tr><td></td><td>Requirement</td><td>Demonstration</td></tr>
<tr><td></td><td>Marine Order 96
Gives effect to Annex IV of MARPOL 73/78</td><td>Requirements for offshore discharge of sewage have been incorporated into the MARPOL 73/78 sewage discharge control measure</td></tr>
<tr><td></td><td>Marine Order 95
Gives effect to Annex V of MARPOL 73/78</td><td>Requirements for offshore discharge of food have been incorporated into the MARPOL 73/78 food waste discharge control measure</td></tr>
<tr><td></td><td>Marine Order 91
Gives effect to Annex I of MARPOL 73/78</td><td>Requirements for offshore discharge of oily bilge water from vessels have been incorporated into the MARPOL 73/78 oily bilge water discharge control measure</td></tr>
<tr><td>Internal context</td><td colspan="2">The following CAPL management processes or procedures were deemed relevant for this aspect:
Chevron Marine Standard Non Tankers: Corporate OE Standard (Ref. 29).
Control measures related to each of the above management processes or procedures have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.</td></tr>
<tr><td>External context</td><td colspan="2">No objections or claims were raised regarding this aspect</td></tr>
</table>

Planned discharges—facility and vessel operations		
Defined acceptable level	These impacts and risks are inherently acceptable as they are considered lower-order impacts and risks in accordance with Table 5-3. The potential impacts are below the level CAPL has defined as being unacceptable in accordance with Section 5.6, because: • the potential impacts are defined as ALARP Decision Context A and thus are broadly acceptable • the risk level is Low (10). In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
(EPO 9) Planned discharges from MODU and vessel operations within the OA during the petroleum activity will meet MARPOL requirements.	**(EPS 9.1) MARPOL 73/78 sewage discharge** Offshore discharge of sewage will be in accordance with MARPOL 73/78 Annex IV requirements, including: • vessel: – an IMO approved comminution and disinfection system to discharge (when discharges occur greater than 3 nm from the nearest land); or – an IMO approved Sewage Treatment Plant at any location; or • MODU: – An IMO approved Sewage Treatment Plant; and – sewage discharges are treated in the Sewage Treatment Plant prior to overboard discharge.	(MC 9.1.1) Records show sewage is discharged in accordance with MARPOL 73/78 Annex IV, including current International Sewage Pollution Prevention (ISPP) Certificate (for marine vessels >400 T or certified to carry more than 15 persons.
	(EPS 9.2) MARPOL 73/78 food waste discharge Offshore discharge of food waste will be in accordance with these MARPOL 73/78 Annex V requirements: • vessel waste – macerated to no greater than 25 mm and when the marine vessel is at least 3 nm from the nearest land; or – unmacerated when the marine vessel is at least 12 nm from the nearest land. • MODU waste – macerated to no greater than 25 mm when anchored onsite.	(MC 9.2.1) Records show food waste is discharged in accordance with MARPOL 73/78 Annex V.
	(EPS 9.3) MARPOL 73/78 oily bilge water discharge Oily bilge water will be discharged to marine environment only when the concentration is <15 ppm in accordance with MARPOL 73/78, Annex I:	(MC 9.3.1) Records show oily bilge water is discharged in accordance with MARPOL 73/78 Annex I, including current International Oil Pollution Prevention Certificate.

Planned discharges—facility and vessel operations		
	• through an IMO approved on board oil-water separator • when the marine vessel is *en route*.	
(EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.	**(EPS 2.2) consultation (First Nations people and/or representative bodies)** **Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.**	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation.	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

7.10 Planned discharges—drill cuttings and fluids

Planned discharges—drill cuttings and fluids

Source

Activities identified as having the potential to result in planned drilling-related discharges are:

- drilling and well interventions—planned and contingency activities (various discharges including drilling fluids and cuttings, spacer fluids, completions fluids, MEG and wellbore clean-up fluids)
- well abandonment—metal swarf cuttings, and wellbore content (comprising sea water and viscous sweeps, e.g. pre-hydrated bentonite).

Potential impacts and risks

Impacts	C	Risks	C
Planned drilling discharges may result in: • localised and temporary reduction in water quality • alteration/smothering of benthic habitat	5 4	A change in ambient water quality may result in: • indirect impacts to fauna arising from chemical toxicity	5

Consequence evaluation

Localised and temporary changes in water quality

Drilling-related discharges occur both at the sea floor (e.g. during drilling of the top-hole sections), and at the sea surface once the riser is installed (Section 3.2; Table 3-6). Planned discharge of cuttings and adhered fluids from the surface will occur intermittently during drilling.

Surface discharges will cause the largest (spatial) changes to water quality given influence by surface currents and wind speeds. Hinwood et al. (Ref. 42) details that when cuttings are discharged to the ocean from surface, the larger particles which represent ~90% of the mass of the cuttings and associated mud solids, form a plume that settles quickly to seabed close to the release point. Neff (Ref. 101) states that in well-mixed oceans waters (as is the case within the OAs), the drilling cuttings and fluid plume from a surface discharge is diluted by more than 100-fold within 10 m of the discharge point. Jones et al. (Ref. 356) conducted a study on drill cuttings and fluid discharges near Rankin Bank (located ~100 km east of the Gorgon OA) for a similar drilling program in shallower water depths (~78 m). The study used both modelling and ROV sampling and found that maximum total suspended solids (TSS) levels associated with drill cuttings and fluids plumes were <25 mg/L at 500 m from the drilling location and TSS levels up to 15 mg/L were possible out to 1,000 m; however, only over a period of minutes as successive discharges intermittently passed through the area. For context, during cyclones and storms TSS concentrations of tens or hundreds of mg/L over a few hours are common in tropical shallow-water reef environments (Ref. 357; Ref. 358). On this basis, CAPL expects that material changes to

Planned discharges—drill cuttings and fluids

water quality will be limited conservatively to within hundreds of metres of the discharge source and intermittently out to distances >1,000 m. Any impacts to benthic communities associated with a temporary and localised increase in TSS are expected to be negligible.

Given the mixing potential for these discharges influenced by oceanic currents, impacts to water quality will be limited in duration and water quality is expected to rapidly recover following cessation of the discharges. Given the potential for limited environmental impact close to the discharge point, CAPL has ranked this consequence as Minor (5).

Alteration/smothering of benthic habitat

Metal cuttings (swarf) will be generated from well abandonment activities (should these occur). They are generated at the sea floor, and will remain in situ at the seabed directly adjacent to the wellhead. Given the volumes of swarf that are generated (<0.01 m^3 per abandonment), the focus of impacts to seabed will focus on the discharges of drilling cuttings and associated fluids.

The main environmental disturbance from discharging drilling cuttings and fluids is associated with the smothering and burial of sessile benthic and epibenthic fauna (Ref. 42). Neff (Ref. 102) suggests that synthetic-based mud-coated cuttings tend to clump and settle rapidly as large particles over a small area near the discharge point and tend not to disperse rapidly, indicating that when drilling with synthetic-based muds (NADF), the extent of dispersion is expected to decrease, but thickness of cuttings piles is expected to increase.

Many studies have shown that the effects on seabed fauna and flora from the discharge of drilling cuttings with WBFs are subtle, although the presence of drilling fluids in the seabed close to the drilling location (<500 m) can usually be detected chemically (Ref. 103; Ref. 104; Ref. 105; Ref. 106). Jones et al. (Ref. 107; Ref. 108) compared pre- and post-drilling ROV surveys and documented physical smothering effects from WBF cuttings within 100 m of the well. Outside the area of smothering, fine sediment was visible on the sea floor up to at least 250 m from the well. Similarly, Gates and Jones (Ref. 201) compared pre- and post-drilling ROV transects, and identified that cuttings were visible extending over 100 m from the well 76 days after drilling completion, reducing to ~60 m from the well by 3 years after. Density of benthic megafauna within this disturbance area was lower than pre-drill transects (Ref. 201).

On this basis, CAPL expects that these discharges have the potential to alter or smother benthic habitat conservatively within 250-500 m of the release location. Beyond the 500 m impact area and out to 3,000 m from the release location, as noted in Ellis et al. (Ref. 359), slight elevations in insoluble barium (as $BaSO_4$) and other drilling constituents may be detected in sediments; however, impacts associated with smothering and alteration of habitats are expected to be negligible.

The benthic habitat within the OAs is expected to predominantly be soft substrate (Section 4.3.1). The Jansz OA does not intersect with an identified KEF for seabed disturbance. The particular values and sensitivities within the Gorgon OA with the potential to be impacted by seabed disturbance includes this KEF:

- Continental slope demersal fish communities

Although this KEF was identified as having the potential to be exposed, as described in Section 4.3.1, benthic habitat in the OA is expected to comprise soft sediment infauna communities (i.e. soft sediment, typically unvegetated, and with low benthic invertebrate habitation) that are widespread and homogenous in the region.

Bacteria and fauna present on the continental slope are the basis of the food web for demersal fish and higher-order consumers in this KEF system (Ref. 60). Although physical habitat modification is considered a pressure of potential for this KEF, this modification has been associated with fishing activities (Ref. 60).

In collaboration with the University of WA, the University of Sydney, and the University of Wollongong, CAPL has previously engaged the South East Asian Scientific and Environmental ROV Partnership Using Industrial Technology (SEA SERPENT) to conduct benthic surveys of the operational area. These surveys were conducted on various wells between 2010 and 2012, in water depths between 200 m and 1000 m. Specifically, surveys were undertaken of the GOR-3C well. GOR-3C is located in Title WA-37-L, with a water depth of 199 m, and was drilled with both water-based fluids and NADF (similar to the wells described in this EP). This benthic survey was conducted 34 days after drilling commenced.

The survey completed at GOR-3C is considered suitable to provide an indication of the potential extent of seabed deposition in the operational area, because the water depths are similar and current speeds are also comparable. The outcomes from these surveys were:

- For all well locations (including GOR-3C), the benthic environment was consistently identified as flat, featureless, with fine sediment
- The extent of cuttings piles were consistently identified to be associated with a 50–100 m radius from the wellhead
- Multivariate data analysis of pre- and post-spud surveys reveals no significant difference between the benthic activities of organisms under differing spoil conditions, indicating there is little (if any) impact to soft sediment benthic organisms.

Planned discharges—drill cuttings and fluids

The benthic surveys undertaken by CAPL indicate that a heavy cover of drilling cuttings and fluids are found within 20 m of the well, with moderate cover generally within 50–100 m, and light cover more than 100 m from the well (Ref. 208). In addition, these surveys observed that light drill spoil did not cause benthic infauna to have to re-establish their burrows, which indicates exposures further than 100 m are not expected to result in any smothering impacts (Ref. 208). These findings are supported by other studies around the world that indicate biological effects from seabed communities associated with the deposition of NADF drill cuttings are limited to ~500 m from a well site (Ref. 209; Ref. 210; Ref. 211).

Neff (Ref. 102) found that recolonisation of synthetic-based, mud-cuttings piles in cold-water marine environments began within one to 2 years of ceasing discharges once the hydrocarbon component of the cutting piles biodegraded. Ecological recovery of benthic communities usually begins shortly after drilling activities are complete and is often well advanced within a year (Ref. 109). Additional studies indicate that benthic infauna and epifauna recover relatively quickly, with substantial recovery in deepwater benthic communities within 3 to 10 years (Ref. 108).

The surveys at GOR-3C identified that even after 34 days from spud, bioturbation was observed in those areas covered by moderate drill spoil, indicating recovery is expected to occur rapidly for these wells (Ref. 208). Although effectiveness and recovery time may differ, those species present in soft sediment are well adapted to changes in substrate, especially burrowing species (Ref. 212), therefore recovery is expected to be quicker. A 10-year duration is considered suitable for providing a conservative indication of habitat recovery from this activity.

Shell Malaysia compared seabed conditions one month and one year after discharge of drill cuttings from shallow and deepwater wells drilled using synthetic-based muds (Ref. 202). The synthetic-based muds were either paraffin (e.g. Saraline 185V) or olefin based. Samples collected after drilling using paraffins as the synthetic base fluid showed limited areal coverage, predominantly within 150 m of discharge and at depths <6 cm (Ref. 202). The farther station at 250 m showed ~50% of the surface concentration at 150 m and *de minimus* deposition below 4 cm (Ref. 202).

Jones et al. (Ref. 107; Ref. 108) considered habitat recovery following deposition of WBF and cuttings. After 3 years, there was significant removal of cuttings particularly in the areas with relatively low initial deposition (Ref. 108). The area impacted by complete cuttings cover had reduced from 90 m to 40 m from the drilling location, and faunal density within 100 m of the well had increased considerably and was no longer significantly different from conditions further away.

This indicates there is the potential for smothering impacts over an area of ~0.79 km^2 per well (based on cutting piles with a 500 m radius).

Based on the spatial area covered by the continental slope demersal fish communities (KEF) (~33,182 km^2), there is the potential to disturb ~0.002% of the KEF from a single activity. However, any disturbance is expected to be limited to soft sediment infauna communities. These communities are known to recover over a longer time (Ref. 84); therefore, the potential impacts associated with these activities are considered to be limited to localised long-term degradation of habitat and thus Minor (5).Given the timeframe lapsed, the seabed habitats within the relevant licence permit areas may be considered as fully recovered from previous disturbances from production well developments by CAPL. As such any cumulative effects from the previous drilling campaigns by CAPL, within the relevant licence permit areas, are considered irrelevant for seabed disturbance.

Because soft sediment benthic communities are known to recover over a longer time (Ref. 110), the potential impacts associated with these activities are considered to be localised long-term degradation of habitat and thus the consequence is Moderate (4).

Indirect impacts to fauna arising from chemical toxicity

The whole fluids and fluid components of the WBFs currently in use are ‘non-toxic’ or ‘almost non-toxic’ (Ref. 42). Similarly, many drilling fluid additives that are likely to be used, such as barite, bentonite, or guar gum, are listed as ‘E’ Category fluids under the Offshore Chemical Notification Scheme (OCNS) and considered to pose little or no risk to the environment (PLONOR).

Barite comprises a significant component of drilling fluid systems and therefore barium has been frequently used as a tracer of drilling fluid discharges (Ref. 359). The Jones et al. study near Rankin Bank (Ref. 356), suggests a zone of high impact is likely to be observed 50–75 m in all directions from drilling locations and elevated sediment barium concentrations of up to 3 g/kg may be detected at 50 m, decreasing to 1.2 g/kg and 0.75 g/kg at 100 m and 200 m respectively. Other studies including Ellis et al. (Ref. 359) indicate barium sediment concentrations may be slightly elevated (tens of mg/kg) up to 3,000 m from drilling locations before decreasing to background levels.

There are no sediment quality guidelines for barium; however, the drilling additive barite has a low solubility in sea water (Ref. 360), has been referred to as practically inert from a toxicological perspective (Ref. 361) and remains on the Oslo and Paris (OSPAR) commission list of PLONOR substances.

Planned discharges—drill cuttings and fluids

Barite and bentonite may contain some heavy metal concentrations. Most of the metals detected in drilling muds are present primarily as trace impurities in barite, bentonite clay, or the sedimentary rocks (drill cuttings) in the formations penetrated by the drill bit (Ref. 203). The metals of environmental concern (because of their potential toxicity and persistence) that may be present in some drilling mud barites include cadmium, chromium, copper, mercury, lead, and zinc. These metals are present in barite primarily as inorganic, insoluble sulfide minerals (Ref. 203) and have limited environmental mobility and low bioavailability (Ref. 362). The Environmental, Health, and Safety Guidelines Offshore Oil and Gas Development (Ref. 205) set stock barite limits of 1 mg/kg and 3 mg/kg for mercury and cadmium respectively. These values are representative of the total heavy metal concentrations in barite (both soluble and insoluble) and a study investigating barite solubility and the release of trace metals to the marine environment recorded that <1% of the mercury and 15% of the cadmium dissolved from the barite after one-week exposure in sea water (Ref. 363). Given the low concentrations of heavy metals including mercury and cadmium in stock barite and due to the sparingly, low solubility of barite and metal sulfides in sea water, it is expected that environmental consequences associated with the presence of trace heavy metals in barite will be negligible.

Therefore, while trace levels of heavy metals may be released to the marine environment, and consequently have the potential to become bioavailable to, and bioaccumulate within, benthic invertebrates, the impact is considered to be limited given the limited concentrations and volumes of metals discharged.

During well intervention activities, small volumes of MEG will be released to the marine environment. MEG:water mix up to 80:20 by volume will be used to flush sea water and gas from subsea equipment. There will also be small amounts of a clear Roemex dye contained within the MEG:water mix that is used with an ultraviolet light to detect leaks. Due to the small volume of MEG:water mix being discharged at one time (0.8 m^3 the single largest release expected at one time) the risk is very low of there being any environmental impact due to the rapid dilution and dispersion rates, deepwater location (200 m to ~1,350 m), and the nature of the discharge being highly localised and non-continuous.

Therefore, as WBFs and MEG are inherently less toxic, NADFs were used for the remainder of this evaluation. Neff (Ref. 101) states that in well-mixed oceans waters (as is the case within the OA), the drilling cuttings and fluid plume is diluted by more than 100-fold within 10 m of the discharge, following dilution, concentrations would be well below acute impact levels. Conservatively, CAPL expects that changes to water quality, and subsequently the potential to cause acute and chronic impacts to marine fauna, is limited to within hundreds of metres of the discharge source.

The values and sensitivities with the potential to be exposed to chemical toxicity from cuttings with adhered drilling fluids in the Gorgon OA include:

- Continental slope demersal fish communities (KEF)
- Pygmy Blue Whale (distribution and migration BIA)
- Flatback Turtle (internesting buffer BIA)
- Whale Shark (foraging BIA).

The values and sensitivities with the potential to be exposed to chemical toxicity from cuttings with adhered drilling fluids in the Jansz OA include:

- Pygmy Blue Whale (distribution and migration BIA)

Marine fauna most sensitive to changes in water quality within 200 m of the discharge are species that are sedentary within the discharge plume and thus exposed for a prolonged time. Marine fauna found in the water column, such as fish, marine mammals, and marine reptiles, are expected to actively avoid discharge plumes and associated turbidity and toxicity within the water column and no site attached species are expected to occur given the absence of suitable habitat in these water depths.

On review, the *Conservation Management Plan for the Blue Whale,* the *Recovery Plan for Marine Turtles in Australia* (Ref. 46) and the *Conservation Advice Rhincodon typus Whale Shark* (Ref. 47) do not list water quality as a key threat to the species. The relevant BIAs do not suggest sedentary behaviour to occur within the OA. Consequently, only transient individuals would have the potential to be exposed to these discharges.

Based on the nature of receptors, extent of exposure and duration of the activity, these discharges are expected to result in localised, short-term impacts to a small number of individuals and thus CAPL has ranked the consequence as Minor (5).

Changes to cultural heritage values

As discussed in Section 4.6 there are no World, National, or Commonwealth heritage listed places or sites, and no protected UCH sites or artefacts have been identified within the OA. Therefore, no impacts to known protected seabed-based UCH (e.g. shipwrecks or archaeology), including First Nations UCH, are expected to occur.

Given known sea level history, only the shallower sections of the OA (which occurs in water depths >115m), would have been emergent land during the extended history of First Nations occupation of Australia. At the time of writing, CAPL understands through consultation with the relevant First Nations people and/or

Planned discharges—drill cuttings and fluids
representative bodies that there are no known artefacts or specific sites of cultural value associated with the seabed within the OA. As such, it is anticipated that tangible heritage features would not be significantly adversely affected from planned seabed disturbance within the OA. As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. One of the specific tangible values of Sea Country identified through consultation was the ocean (Table 4-14). The consequence evaluations to related receptors (i.e. marine environmental quality, benthic communities and habitats) are provided above. Intangible cultural heritage refers to the "practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage" (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2. No impact pathway to a change in access to Country from drill cuttings and fluids discharges within the OA is anticipated. The consequence evaluation to marine fauna is provided above, and were assessed as having a localised, short-term environmental impact, and is not expected to affect the overall population of the species. The consequence evaluation to benthic habitat is provided above, and it was assessed as localised long-term change. However, as described in the above evaluation the benthic habitats present within the OA are predominantly soft substrate. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected within the OA. Given the offshore location of the OA (Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to cultural heritage values attributed to the offshore marine area from planned discharges within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Incidental (6).
ALARP decision context justification
Offshore drilling operations, and the subsequent planned discharges, are a well understood and practised activity within the industry. The control measures to manage the impacts and risks associated with these planned discharges are considered standard industry practice. These are well understood and implemented by the petroleum industry and CAPL. Given the intermittent nature of the discharges, rapid dilution, absence of sensitive features, and transient nature of marine fauna in this area, the potential impact is expected to be Moderate based on impacts to marine habitats supporting the KEF within the OA. Although there is the potential for a moderate impact, CAPL's knowledge of benthic habitat within the OAs indicate the marine habitat is expected to be limited to soft sediment communities. The impacts and risks associated with these planned discharges are considered lower-order impacts and risks in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.
Good practice control measures

Control measure	Description
Hazardous materials selection process	As part of the hazardous materials selection process, hazardous materials that will be discharged to the environment will undergo a detailed environmental assessment, as per CAPL's *Hazardous Materials Management Procedure* (Ref. 30).
Wells fluid field guidelines offshore	Discharges will be managed as per CAPL's *Wells Fluid Field Guidelines Offshore 2020* (Ref. 111), including: • no whole NADF will be discharged to the environment • maintain a <10% w/w synthetic base fluid on wet cuttings discharged (averaged over the combined well sections drilled with NADF) • NADF will not be used to drill top holes • ensure that NADF displacement interfaces and tank wash discharges have <1% v/v residual synthetic base oil. These guidelines provide a guide to fluids management procedures, and ensure best practices are documented and applied across operations.
Stock barite management	Table 1 of the *Environmental, Health, and Safety Guidelines Offshore Oil and Gas Development* (Ref. 205) provides the following limits for barite:

Planned discharges—drill cuttings and fluids		
	• mercury: maximum 1 mg/kg dry weight in stock barite • cadmium: maximum 3 mg/kg dry weight in stock barite The Environmental, Health, and Safety Guidelines are considered reference documents containing general and industry specific examples of food international industry practice. CAPL has adopted the recommended stock barite mercury limit as a control measure to address reducing releases of mercury to the environment as also required by the Minimata Convention.	
Solids control equipment	The industry-standard cuttings treatment technology comprises a combination of shale shakers, cuttings dryers, and centrifuges. This arrangement reduces the overall volume of synthetic base oil adhered drilling fluids discharged on drill cuttings consistently to <6.9% w/w and addresses the Minamata Convention requirement to implement the best environmental practices to control releases of drill cuttings containing mercury.	
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).	
Additional control measures and cost–benefit analysis		
Control measure	**Benefit**	**Cost**
Only use WBF	WBF are inherently less toxic than NADF and therefore, limiting NADF to for use only to meet well objectives will result in a reduction of potential environmental impacts and risks.	NADF has been used in applications where wellbore instability has been observed, and helps inhibit hydrates, limits differential sticking, increases penetration rates, and is qualified for use at high bottom hole temperatures. CAPL has determined that using only a WBF system for the drilling program would be technically disadvantageous in instances where NADF use is required to account for potential conditions that may be encountered during the drilling program. Therefore, this control measure has not been adopted for use.
Submerged cuttings outlet	Setting the cuttings discharge outlet below the water line will reduce the dispersal distance of cuttings and drilling fluids.	Costs associated with implementing this control measure are not considered grossly disproportionate to the environmental benefit of reducing the dispersal distance of cuttings and drilling fluids. Therefore, the control measure has been adopted for use.
Additional solids control equipment – thermal desorption	Thermal desorption can result in very dry solids with residual synthetic base fluid on cuttings reduced to less than 1% w/w. This is the most viable equipment in reaching this level of performance, and thus is the most viable option in reducing the volume of drilling fluids adhered to cuttings and potential toxicity effects. However, this method also reduces cuttings particle sizes,	This technology is not currently used in Australia and may result in operational inefficiencies. Modification to existing MODUs would be either impracticable due to MODU design, or highly expensive. This technology is also energy intensive often requiring 1–1.5 MW of additional power, which may not be available on most MODUs.

Planned discharges—drill cuttings and fluids		
	resulting in increasing the plume extent and potential turbidity impacts.	Further assessment of deck space and loading, associated engineering, and modification would also be required. In addition, as a technically suitable WBF solution has been identified for the drilling program, NADF will be limited for use to meet well objectives only, further reducing the benefit of thermal desorption for this drilling program. The costs and additional risks of implementing this option are considered to outweigh the small environmental benefit gained, given the potential impact without selecting this control measure was evaluated as Minor (5). Therefore, the control has not been adopted.
Contain and transfer cuttings to shore for treatment	Containing and transferring cuttings to shore will reduce impacts and risks to benthic communities; however, this control measure is considered to provide a small environmental benefit, given the extent of impact from drilling cuttings discharges for each well has been conservatively estimated as 500 m from the release area. There are limited values and sensitivities in this area with the potential to be exposed, and recovery is expected over time.	This option has high costs associated with the 'skip and ship' of all cuttings, requiring additional load-outs, dedicated vessels and docking time, and increases in emissions associated with the logistics chain. This control measure may also result in significant port congestion associated with time delays from transferring cuttings from the vessel to trucks for transport to the disposal location. Transferring cuttings onshore is also expected to result in additional health, safety and environment (HSE) risks, as the number of lifts for these activities would significantly increase. The costs and additional risks of implementing this option are considered to outweigh the small environmental benefit gained, given the potential impact without selecting this control measure was evaluated as Minor (5). Therefore, the control has not been adopted
Unused bulk product managed as per Figure 7-1 at end of drilling campaign	Unused products (such as barite, cement and bentonite) may be discharged in bulk at the end of the activity if they cannot be taken back to shore or passed onto the next operator. Passing unused bulk product to the next operator is not always an option (e.g. where bulk barite does not meet the next operators acceptance criteria or there is no contract for the MODU at the end of the campaign). Transport and transfers of bulk products introduce costly technical requirements and additional HSE risks.	Notwithstanding the HSE risks introduced from needing to transfer and transport onshore, and the limited environmental benefit gained from restricting overboard discharge of unused bulk product at the end of a campaign, CAPL will manage unused bulk product in accordance with Figure 7-1. If unused bulk product cannot be passed on to the next operator an assessment will be undertaken to ensure discharge to the marine environment only occurs when there are no other safe or feasible options and impacts and

<table>
<tr><th colspan="3">Planned discharges—drill cuttings and fluids</th></tr>
<tr><td></td><td>Barite may contain some trace levels of heavy metals, including mercury. However, these metals are present primarily as inorganic, insoluble sulphide minerals and have limited environmental mobility and low bioavailability (Ref. 203).
While restricting overboard discharge would reduce the overall volume of discharge to the marine environment, with controls in place that limit the mercury concentrations in stock barite to ≤1 mg/kg dry weight, the low solubility and inert behaviour of barite in seawater, and the predominantly bare soft substrate habitats, the implementation of the no overboard discharge on unused bulk product management control is considered to be of limited environmental benefit and would not result in a reduction of residual risk of toxicity effects to benthic habitats or marine fauna.</td><td>risks associated with the discharge can be managed to ALARP and acceptable levels. Consequently, the control has been adopted.</td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">Due to the extent of potential water quality impacts, lack of sedentary sensitivities, and limited values and sensitivities within the OA, CAPL consider the likelihood of limited impacts to pelagic fauna occurring is Seldom (3).</td></tr>
<tr><td>Risk level</td><td colspan="2">Low (7)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The impacts and risks associated with these discharges are not considered as having the potential to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Moderate (4) and subsequently the potential for serious or irreversible environmental damage is not expected.
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered as relevant control measures include:
• Marine Bioregional Plan for the North-West Marine Region (Ref. 60).
• Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 50)
• Recovery Plan for Marine Turtles in Australia (Ref. 46)
• Conservation Advice Rhincodon typus Whale Shark (Ref. 47)
<table>
<tr><th>Requirement</th><th>Demonstration</th></tr>
<tr><td>Marine Bioregional Plan for the North-West Marine Region
No specific action identified</td><td>N/A</td></tr>
<tr><td>Conservation Management Plan for the Blue Whale 2015–2025
No specific action identified.</td><td>N/A</td></tr>
<tr><td>Recovery Plan for Marine Turtles in Australia
No specific action identified.</td><td>N/A</td></tr>
<tr><td>Conservation Advice Rhincodon typus Whale Shark
Conservation action: Assess the impacts of offshore installations and associated environmental changes (light spill, chronic noise, changed water temperature, localised nutrient levels) on</td><td>This section provides an impact assessment and consideration of control measures for change in water quality.
Therefore, this activity is not considered to be inconsistent with the Conservation Advice Rhincodon typus Whale Shark.</td></tr>
</table></td></tr>
</table>

<table>
<tr><th colspan="4">Planned discharges—drill cuttings and fluids</th></tr>
<tr><td></td><td colspan="2">whale sharks and mitigation options for these impacts</td><td></td></tr>
<tr><td></td><td colspan="2">Minimata Convention
Use best available techniques and best environmental practices to control releases from relevant sources.</td><td>This section provides an assessment of CAPL's consideration of the best available techniques and best environmental practices to control releases in line with the requirements of the Minamata Convention.</td></tr>
<tr><td>Internal context</td><td colspan="3">The following CAPL management processes or procedures were deemed relevant for this aspect:
• Hazardous Materials Management Procedure (Ref 30).
• Wells Fluid Field Guidelines Offshore 2020 (Ref. 111).</td></tr>
<tr><td>External context</td><td colspan="3">During relevant persons consultation, no objections or claims were raised regarding planned discharges from drilling operations arising from the activity.</td></tr>
<tr><td>Defined acceptable level</td><td colspan="3">These impacts and risks are inherently acceptable as they are considered lower-order impacts in accordance with Table 5-3. In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.
However, in alignment with Section 5.6.2, where the aspect is listed as threat to a protected matter or identified as a concern to a listed conservation value, CAPL will define an acceptable level of impact that aligns with the objectives of these documents.
Objectives of the relevant document are shown below:</td></tr>
<tr><td></td><td>Plan</td><td colspan="2">Objective</td></tr>
<tr><td></td><td>Conservation Management Plan for the Blue Whale 2015–2025</td><td colspan="2">Recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 4 Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td></td><td colspan="3">Therefore, CAPL has defined the following acceptable level of impact such that it is consistent with these documents:
• no injury or death to Pygmy Blue Whales such that it would prevent the long-term recovery of the species.
CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level.</td></tr>
<tr><th>Environmental performance outcome</th><th>Environmental performance standard</th><th colspan="2">Measurement criteria</th></tr>
<tr><td>(EPO 10) No impacts to benthic habitats or marine fauna outside the OA from planned discharges during the petroleum activity.</td><td>(EPS 10.1) Hazardous materials selection process
Fluids planned for discharge are subject to the hazardous materials selection process as per the CAPL Hazardous Materials Management Procedure.</td><td colspan="2">(MC 10.1.1) Hazardous materials selection process assessment records (or similar).</td></tr>
<tr><td>(EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.</td><td>(EPS 10.2) Wells fluid field guidelines offshore
Drilling fluids management procedures are implemented in accordance with the CAPL Wells Fluid Field Guidelines Offshore 2020, including:
• no whole NADF will be discharged to the environment</td><td colspan="2">(MC 10.2.1) Records show that drilling fluid management procedures were implemented.</td></tr>
</table>

Planned discharges—drill cuttings and fluids		
	• maintain a <10% w/w synthetic base fluid on dry cuttings averaged over the combined well sections drilled with NADF • NADF will not be used to drill top holes • ensure that NADF tank wash discharges have <1% v/v residual synthetic based oil.	
	(EPS 10.3) Stock barite management Mercury and cadmium concentrations in stock barite will be limited to: • mercury: maximum 1 mg/kg dry weight in stock barite • cadmium: maximum 3 mg/kg dry weight in stock barite.	(MC 10.3.1) Records confirm that stock barite meets the maximum mercury and cadmium concentration specifications.
	(EPS 10.4) Solids control equipment Volumes of drill fluids discharged will be minimised through the use of solids control equipment.	(MC 10.4.1) Records confirm solids control equipment is used and discharge volumes are tracked.
	(EPS 10.5) Submerged cuttings outlet Cuttings discharge outlet will be below the water line.	(MC 10.6.1) Records confirm the cuttings discharge point is set below the water line.
	(EPS 10.6) Unused bulk product Unused bulk product will be managed as per Figure 7-1 at end of drilling campaign	(MC 10.7.1) Records demonstrate that the process as shown in Figure 7-1 was followed for the management of unused bulk product.
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) **Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.**	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation**.**	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

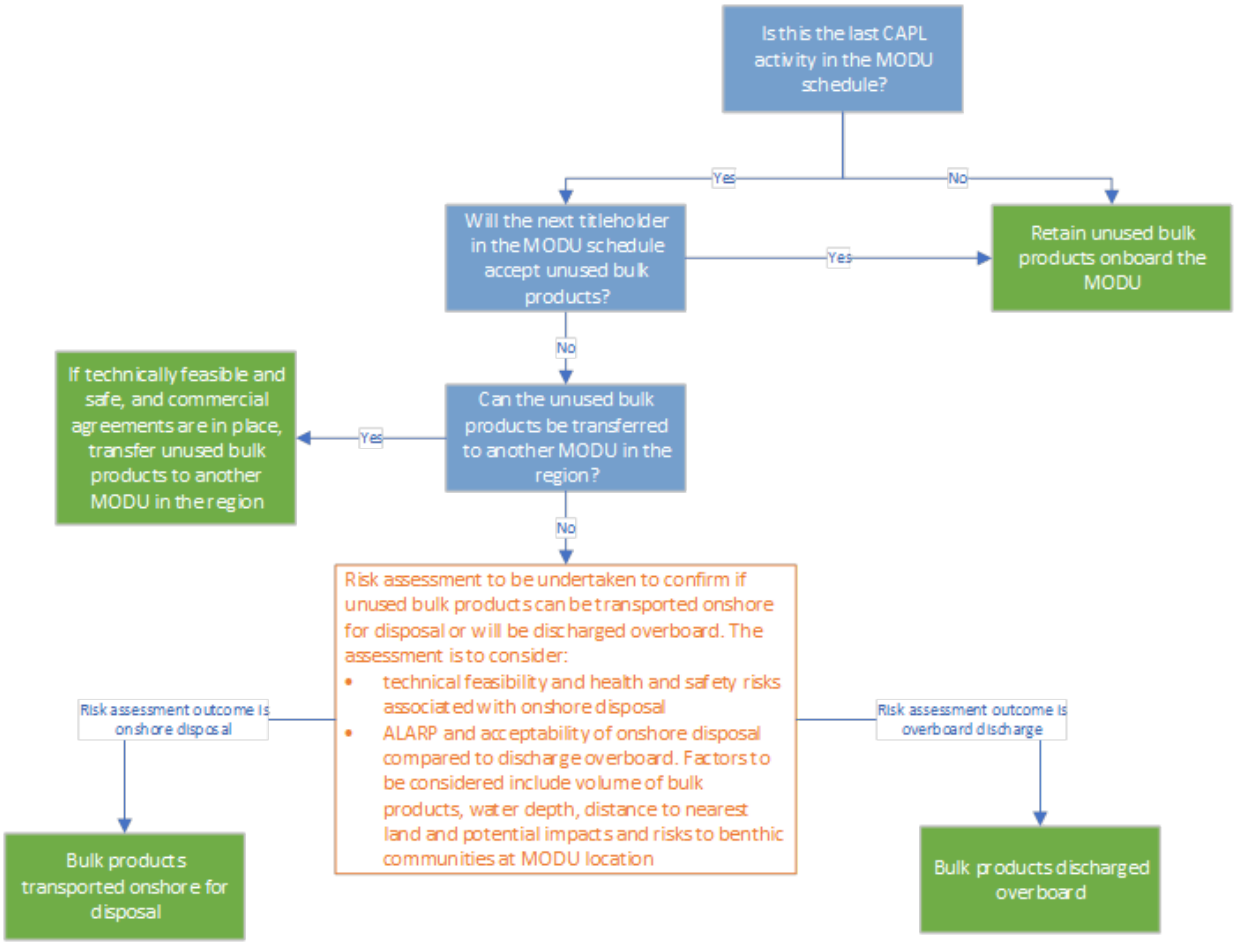


Figure 7-1: Process for management of unused bulk product

7.11 Planned discharges—cement

Planned discharges—cement

Source

Activities identified as having the potential to result in planned cement discharges are:

- drilling—cementing operations
- well abandonment—cement cuttings, contaminated cement discharge.

Potential impacts and risks

Impacts	C	Risks	C
Planned cement discharges may result in: • localised and temporary reduction in water quality • alteration/smothering of benthic habitat.	 6 4	N/A	-

Consequence evaluation

Localised and temporary reduction in water quality

Cement related discharges occur both at the sea floor (e.g. during drilling of the top-hole sections), and at the surface once the riser is installed (Section 3.2; Table 3-6). Cement discharges have the potential to result in a localised and temporary reduction in water quality from an increase of suspended material in the water column.

Surface discharges will cause the largest (spatial) changes to water quality given influence by surface currents and wind speeds.

Modelling of cement discharges for another offshore project (Ref. 79) was used as it provides an appropriate (but conservative) comparison of the potential extent of exposure from this activity. The modelling considered significantly larger slurry discharge than would occur for these activities. i.e. 2 T per event at a rate of 1.3 m^3/hour (equivalent to ~78 m^3/hour).

Two hours after the start of discharge, plume concentrations were determined to be between 5 and 50 mg/L with the horizontal and vertical extents of the plume ~150 m and 10 m, respectively. Five hours after ceasing the discharge, modelling indicates that the plume will have dispersed to concentrations <5 mg/L (Ref. 79). On this basis, CAPL expects that changes to water quality will be limited conservatively to within hundreds of metres of the discharge source.

The values and sensitivities with the potential to be exposed to increased turbidity in the water column in the Gorgon OA include:

- Pygmy Blue Whale (distribution and migration)
- Whale Shark (foraging)
- Flatback Turtle (internesting)
- Continental slope demersal fish communities (KEF).

The values and sensitivities with the potential to be exposed to increased turbidity in the water column in the Jansz OA include:

- Pygmy Blue Whale (distribution and migration BIA)

The environmental receptors with the potential to be exposed, and considered to be most sensitive to an increase in turbidity levels from this release, include pelagic fish (and larvae) associated with the continental slope demersal fish communities in the area around the well locations.

Jenkins and McKinnon (Ref. 309) reported that levels of suspended sediments >500 mg/L are likely to produce a measurable impact upon larvae of most fish species, and that levels of 100 mg/L will affect the larvae of some species if exposed for periods greater than 96 hours. Jenkins and McKinnon (Ref. 309) also indicate that levels of 100 mg/L are likely to affect the larvae of a number of marine invertebrate species and that fish eggs and larvae are more vulnerable to suspended sediments than older life stages.

The discharges associated with this activity are expected to be intermittent surface discharge of cement after flushing lines and equipment (with volumes from ~10 m^3 [planned volume per well] to ~48 m^3 [unplanned volume per well]). Particular values and sensitivities are not expected to be exposed for extended periods of time given their transient nature and the lack of sedentary fauna behaviours in the operational area. Given the expected rapid dispersion, there is limited potential for receptors to be exposed to levels above impact thresholds for the duration required to result in an impact.

Planned discharges—cement
Given the mixing potential for these discharges influenced by oceanic currents, and impacts to water quality will be limited in duration with water quality expected to rapidly recover following cessation of the discharges. Given the potential for limited environmental impact, CAPL has ranked this consequence as Incidental (6).
Alteration/smothering of benthic habitat Cement related discharges occur both at the sea floor (e.g. during drilling of the top-hole sections), and at the surface once the riser is installed (Section 3.2; Table 3-6). Cement discharges have the potential to smother the receiving benthic habitat. Most of these discharges occur during drilling activities and are associated with cementing of the conductor and surface casing strings. The potential impacts of smothering from a surface release are expected to be significantly less, due to small volumes, intermittent nature of these discharges, and high potential for dispersal by ocean currents. This is supported by comparative modelling completed previously for similar discharges (Ref. 79) which indicates that less than 0.1% of the cement solids from discharged cement slurry would be deposited on the seabed within 1.5 km of the point of discharge. Consequently, seabed release of cement is the focus of this assessment. Cement discharged at the seabed is not expected to disperse as it is designed to set in a marine environment and therefore will set in situ, limiting the impact to the area directly around the well. BP modelled a 200 T subsurface cement discharge (Ref. 79) and determined that impacts would be limited to a radius of ~10–20 m (depending on height) from the well, resulting in the potential for disturbance of 0.002 km^2. The values and sensitivities with the potential to be exposed to smothering and alteration of the seabed include • Continental slope demersal fish communities (KEF) Although this KEF was identified as having the potential to be exposed, as described in Section4.3.1, benthic habitat in the disturbance footprint is expected to comprise soft sediment infauna communities that are widespread and homogenous in the region (Ref. 60). Once discharged cement hardens, the area directly adjacent to the well locations (10–20 m) will be altered, resulting in the permanent disturbance of seabed habitat within this area (Ref. 79). This impact on soft sediment communities is not expected to affect the diversity or ecosystem function in this area, however, is considered a long-term, localised impact thus has been assigned a Moderate (4) consequence.
Changes to cultural heritage values As discussed in Section 4.6 there are no World, National, or Commonwealth heritage listed places or sites, and no protected UCH sites or artefacts have been identified within the OA. Therefore, no impacts to known protected seabed-based UCH (e.g. shipwrecks or archaeology), including First Nations UCH, are expected to occur. Given known sea level history, only the shallower sections of the OA (which occurs in water depths >115m), would have been emergent land during the extended history of First Nations occupation of Australia. At the time of writing, CAPL understands through consultation with the relevant First Nations people and/or representative bodies that there are no known artefacts or specific sites of cultural value associated with the seabed within the OA. As such, it is anticipated that tangible heritage features would not be significantly adversely affected from planned seabed disturbance within the OA. As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. One of the specific tangible values of Sea Country identified through consultation was the ocean (Table 4-14). The consequence evaluations to related receptors (i.e. marine environmental quality, benthic communities and habitats) are provided above. Intangible cultural heritage refers to the “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage” (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2. No impact pathway to a change in access to Country from cement discharges within the OA is anticipated. The consequence evaluation to benthic habitat is provided above, and it was assessed as localised long-term change. However, as described in the above evaluation impacts to soft sediment communities are not expected to affect the diversity or ecosystem function. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected within the OA. Given the offshore location of the OA (Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to

Planned discharges—cement		
cultural heritage values attributed to the offshore marine area from cement discharges within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Incidental (6).		
ALARP decision context justification		
Offshore drilling operations, and the subsequent planned discharges, are a well understood and practised activity within the industry. The control measures to manage the impacts and risks associated with these planned discharges are considered standard industry practice. These are well understood and implemented by the petroleum industry and CAPL. The impacts associated with these discharges are lower-order impacts in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.		
Good practice control measures		
Control measure	**Description**	
Hazardous materials selection process	As part of the hazardous materials selection process, hazardous materials that will be discharged to the environment will undergo a detailed environmental assessment, as per CAPL's *Hazardous Materials Management Procedure* (Ref. 30).	
Drilling and cementing procedures	It is standard industry practice for drilling and cementing procedures to be developed before activities commence. These procedures describe specific well locations, design, and fluid volumes. Specifically, the quantity of cement to be used for each cementing operation will be calculated, and the volumes mixed will not significantly (>30%) exceed the volumes identified in the cementing procedure. Managing excess cement incurs engineering effort and has associated costs. Therefore, reducing cement quantities to ALARP reduces material load-out costs and load-back of unused cement.	
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).	
Additional control measures and cost–benefit analysis		
Control measure	**Benefit**	**Cost**
N/A	N/A	N/A
Likelihood and risk level summary		
Likelihood	N/A	
Risk level	N/A	
Determination of acceptability		
Principles of ESD	The potential impacts associated with this aspect is limited to localised disturbance of benthic communities and pelagic receptors. Given the marine habitat expected to be present in this area, this impact is not considered to have the potential to affect biological diversity and ecological integrity. The consequence associated with this aspect is Moderate (4) and subsequently the potential for serious or irreversible environmental damage is not expected. Therefore, no further evaluation against the Principles of ESD is required.	
Relevant environmental legislation and other requirements	No legislation or other requirements were considered relevant to this aspect.	
Internal context	The following CAPL management processes or procedures were deemed relevant for this aspect:	

Planned discharges—cement		
	• *Hazardous Materials Management Procedure* (Ref 30). Control measures related to the above management procedure have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.	
External context	During relevant persons consultation, no objections or claims were raised regarding planned discharges from subsea operations arising from the activity.	
Defined acceptable level	These impacts are inherently acceptable as they are considered lower-order impacts in accordance with Table 5-3. In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan. CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
(EPO 10) No impacts to benthic habitats outside of the OA from planned discharges during the petroleum activity.	**(EPS 10.1) Hazardous materials selection process** Fluids planned for discharge are subject to the hazardous materials selection process as per the CAPL *Hazardous Materials Management Procedure.*	(MC 10.1.1) Hazardous materials selection process assessment records (or similar).
	(EPS 10.8) Drilling and cementing procedures Detailed drilling and cementing procedures will be developed prior to activities commencing.	(MC 10.8.1) Records show that drilling and cementing procedures were developed.
	(EPS 10.9) Drilling and cementing procedures Detailed drilling and cementing procedures will be implemented, including: • quantity of cement mixed for each operation will not significantly (>30%) vary from the volume calculated.	(MC 10.9.1) Records show that drilling and cementing procedures were implemented.
(EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.	**(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)** Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol**.**	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation**.**	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

7.12 Planned discharges—BOP fluids

Planned discharges—BOP fluids

Source

Activities identified as having the potential to result in planned BOP fluid discharges are:

- Drilling, well intervention and/or well abandonment activities —pressure and function testing of the BOP.

Potential impacts and risks

Impacts	C	Risks	C
Planned subsea BOP fluid discharges may result in: • localised and temporary reduction in water quality.	6	N/A	-

Consequence evaluation

BOP fluid discharges occur at the sea floor during both regular function and pressure testing (Section 3.2.5; Table 3-6). BOP fluid discharges are intermittent, non-continuous, and of short duration, and as such frequency of exposure is limited. These fluids have positive buoyancy, upon release the plume will dilute and disperse (Ref. 100).

As detailed in Section 3.2.5 the BOP control system discharges water-based hydraulic control fluids into the sea upon operation. A full function test, which closes and opens all rams and annulars, discharges ~2,500 L of diluted control fluid weekly. The control fluid is a water-soluble product and is diluted to ~1–3% with potable water. The control fluid is fully biodegradable and expected to readily disperse after discharge from the BOP to the marine environment.

Modelling undertaken for another offshore drilling project indicates that a release of BOP fluids during function testing is expected to reach a dilution of 3,000 times within a maximum displacement plume of 98 m (Ref. 100). Based on this information, it is expected concentrations of BOP control fluid would be ~10 ppm within 100 m of the BOP. Using a conservative ocean current speed of 0.1 m/s [noting that currents in the region can be up to 0.25 m/s (Ref. 112; Ref. 113)], fluids would be expected to travel 100 m (and thus reach concentrations of 10 ppm) in ~16 minutes.

On the expectation that a subsurface release of BOP fluids will result in changes to water quality within 100 m of the release location and recover rapidly within minutes of release, this discharge is expected to result in a limited impacts to water quality, thus have been ranked as an Incidental (6) consequence.

Changes to cultural heritage values

There are no World, National, or Commonwealth heritage listed places or sites within the OA (Section 4.6).

As identified from literature and/or consultation (Section 4.3.6.2.1), One of the specific tangible values of Sea Country identified through consultation was marine fauna (e.g. whales, turtles; Table 4-14). The consequence evaluations to these receptors are provided above.

Intangible cultural heritage refers to the “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage” (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2.

No impact pathway to a change in access to Country from BOP fluid discharges within the OA is anticipated. The consequence evaluation to marine fauna is provided above, and were assessed as having a limited environmental impact, and is not expected to affect the overall population of the species. Further, as described in the above evaluations, the source of planned discharges within the OA (i.e. MODU and vessels) is temporary and is not expected to affect the long-term environmental quality of the ocean. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected from planned vessel discharges within the OA.

Given the offshore location of the OA (Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to cultural heritage values attributed to the offshore marine area from BOP fluid discharges within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Incidental (6).

ALARP decision context justification

Offshore drilling operations, and the subsequent planned discharges, are a well understood and practised activity within the industry. The control measures to manage the impacts and risks associated with these

Planned discharges—BOP fluids		
planned discharges are considered standard industry practice. These are well understood and implemented by the petroleum industry and CAPL. The impacts associated with these discharges are considered lower-order impacts in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.		
Good practice control measures		
Control measure	**Description**	
Hazardous materials selection process	As part of the hazardous materials selection process, hazardous materials that will be discharged to the environment will undergo a detailed environmental assessment, as per CAPL's *Hazardous Materials Management Procedure* (Ref. 30).	
Equipment maintenance	Critical equipment will be identified (e.g. BOP) and maintained in accordance with manufacturers' specifications. Regular maintenance ensures the integrity of critical equipment is maintained, which ensures optimal performance and reduces the risk of failure.	
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).	
Additional control measures and cost–benefit analysis		
Control measure	**Benefit**	**Cost**
Monitor and record BOP dischargesN/A	Monitoring and recording BOP discharges to the ocean during the petroleum activity helps identify whether the estimates were accurate and strategies to reduce discharges may be identified.N/A	The cost to implement this control is negligible and therefore, control measure has been adopted for use.N/A
Likelihood and risk level summary		
Likelihood	Due to the localised and temporary nature of BOP fluids discharges within the OA, and with the control measures in place, the likelihood of impacts to values and sensitivities from BOP fluid discharges is Rare (6).	
Risk level	Very low (10)	
Determination of acceptability		
Principles of ESD	The potential impacts associated with this aspect is limited to a short-term direct reduction in water quality in a localised area, which is not considered as having the potential to affect biological diversity and ecological integrity. 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	No legislation or other requirements were considered relevant to this aspect.	
Internal context	The following CAPL management processes or procedures were deemed relevant for this aspect: • *Hazardous Materials Management Procedure* (Ref 30). Control measures related to the above management procedure have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.	
External context	During relevant persons consultation, no objections or claims were raised regarding these discharges arising from the activity.	

Planned discharges—BOP fluids		
Defined acceptable level	These impacts are inherently acceptable as they are considered lower-order impacts in accordance with Table 5-3. In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan. CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
(EPO 11) Reduce the risk of impacts to sensitive environmental receptors within the OA from planned discharges during the petroleum activity.	**(EPS 10.1) Hazardous materials selection process** Fluids planned for discharge are subject to the hazardous materials selection process as per the CAPL *Hazardous Materials Management Procedure* and Section 8.3.1.3.	(MC 10.1.1) Hazardous materials selection process assessment records (or similar).
	(EPS 11.1) Equipment maintenance Critical equipment will be maintained in accordance with manufacturers specifications.	(MC 11.1.1) Records confirm the BOP is maintained in accordance with manufacturer specifications.
	(EPS 11.2) Monitor and record BOP discharges BOP discharges into the ocean are monitored and recorded during the petroleum activity.	(MC 11.2.1) Records show that BOP discharges were monitored and recorded.
(EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.	**(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)** **Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.**	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation.	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

7.13 Unplanned release—waste

Unplanned release—waste
Source
Activities identified as having the potential to result in the unplanned release of waste are: • MODU—general MODU operations within an OA during drilling, well intervention and/or well abandonment activities • field support—general vessel operations within an OA during drilling, well intervention and/or well abandonment activities.

Unplanned release—waste

Potential impacts and risks

Impacts	C	Risks	C
N/A	–	Unplanned release of waste to the environment may result in: • marine pollution resulting in entanglement or injury of marine fauna.	6

Consequence evaluation

Waste accidently released to the marine environment may occur within the OAs. If hazardous or non-hazardous waste is lost overboard, the extent of exposure to the environment is limited.

Marine fauna most at risk from marine pollution include marine reptiles and seabirds, through ingestion or entanglement (Ref. 46; Ref. 114). Ingestion or entanglement has the potential to limit feeding or foraging behaviours and thus can result in marine fauna injury or death. In 2003, '[i]njury and fatality to vertebrate marine life caused by ingestion of, or entanglement in, harmful marine debris' was listed as a key threatening process under the EPBC Act (Ref. 114). However, the national Threat Abatement Plan (Ref. 114) identifies that harmful marine debris includes 'land-sourced garbage, fishing gear from recreational and commercial fishing abandoned or lost to the sea, and vessel-sourced, solid, non-biodegradable floating materials disposed of or lost at sea'. These types of waste is not associated with the activities described under this EP.

Given the restricted exposures and the limited quantity of waste with the potential to cause marine pollution that is expected to be generated from petroleum activities, it is expected that any impacts from marine pollution would result in limited impacts to individuals. Thus, CAPL ranked this consequence as Incidental (6).

Changes to cultural heritage values

There are no World, National, or Commonwealth heritage listed places or sites within the OA (Section 4.6).

As identified from literature and/or consultation (Section 4.3.6.2.1), One of the specific tangible values of Sea Country identified through consultation was marine fauna (e.g. whales, turtles; Table 4-14). The consequence evaluations to these receptors are provided above.

Intangible cultural heritage refers to the "practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage" (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2

No impact pathway to a change in access to Country from waste discharges within the OA is anticipated. The consequence evaluation to marine fauna is provided above, and were assessed as having a limited environmental impact, and is not expected to affect the overall population of the species. Further, as described in the above evaluations, the source of planned discharges within the OA (i.e. MODU and vessels) is temporary and is not expected to affect the long-term environmental quality of the ocean. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected from planned vessel discharges within the OA.

Given the offshore location of the OA (Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to cultural heritage values attributed to the offshore marine area from waste discharges within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Incidental (6).

ALARP decision context justification

Offshore commercial vessel operations, and the subsequent management of waste, are commonplace and well-practised activities within the industry. The control measures to manage the risk associated with the unplanned release of waste are well defined via legislative requirements that are considered standard industry practice. There is a good understanding of the release pathways, and the control measures required to manage these events are well understood and implemented by the petroleum industry and CAPL.

An unplanned release of waste is considered lower-order impacts in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.

Unplanned release—waste		
Good practice control measures		
Control measure	**Description**	
Marine Order 95 (Marine pollution prevention – garbage)	MARPOL 73/78 is the International Convention for the Prevention of Pollution from Ships and is aimed at preventing both accidental pollution, and pollution from routine operations. Specifically, MARPOL 73/78 Annex V requires that a garbage management plan and garbage record book is in place and implemented, and describes various requirements that are to be applied when managing waste offshore. Requirements include: • segregating waste on the MODU and support vessels • storing solid wastes in designated areas before sending them to shore for recycling, disposal, or treatment • waste receptacles that contain light-weight, solid waste will be covered to prevent waste from blowing overboard • no discharge of waste or plastic products from general operational or maintenance. Marine Order 95 (Marine pollution prevention – garbage) gives effect to MARPOL 73/78 Annex V.	
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).	
Additional control measures and cost–benefit analysis		
Control measure	**Benefit**	**Cost**
N/A	N/A	N/A
Likelihood and risk level summary		
Likelihood	Marine pollution arising from mismanaged waste offshore has occurred previously in the industry but is not expected to occur during these activities, given the control measures in place. As such, the likelihood of incidental consequences to values and sensitivities from an unplanned release of waste is considered Unlikely (4).	
Risk level	Very low (9)	
Determination of acceptability		
Principles of ESD	The potential risk associated with this aspect is limited to individuals and consequently is not expected to affect biological diversity and ecological integrity. 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 relevant to this aspect include: • Marine Order 95 • MARPOL 73/78 Annex V • *Threat Abatement Plan for the impacts of Marine Debris on Vertebrate Wildlife of Australia's Coasts and Ocean* (Ref. 114) • *Recovery Plan for Marine Turtles in Australia* (Ref. 46) • *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 69). • *Conservation Management Plan for the Blue Whale 2015*–2025 (Ref. 50) • *Conservation Advice Rhincodon typus Whale Shark* (Ref. 47). CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.	

Unplanned release—waste		
	Requirement	**Demonstration**
	Marine Order 95 Gives effect to Annex V of MARPOL 73/78	Requirements for the prevention of pollution from garbage have been incorporated into the Marine Order 95 (Marine pollution prevention – garbage control measure)
	Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans No specific action identified.	N/A
	Recovery Plan for Marine Turtles in Australia No specific management action identified.	N/A
	Wildlife Conservation Plan for Migratory Shorebird Ensure all areas important to migratory shorebirds in Australia continue to be considered in development assessment processes.	This section provides an impact assessment and consideration of areas important to migratory shorebirds. Therefore, the exploration drilling is not considered to be inconsistent with the *Wildlife Conservation Plan for Migratory Shorebird.*
	Conservation Management Plan for the Blue Whale No specific management action identified.	N/A
	Conservation Advice Rhincodon typus Whale Shark No specific conservation action identified.	N/A
Internal context	No CAPL management processes or procedures were deemed relevant for this aspect.	
External context	During relevant persons consultation, no objections or claims were raised regarding waste management arising from the activity.	
Defined acceptable level	These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan. However, in alignment with Section 5.6.2, where the aspect is listed as threat to a protected matter, or identified as a concern to a listed conservation value, CAPL will define an acceptable level of impact that aligns with the objectives of these documents. Objectives of the relevant documents are shown below:	

Unplanned release—waste			
	Plan	**Objective**	
	Conservation Management Plan for the Blue Whale 2015–2025	Recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list. Interim objective 4 Anthropogenic threats are demonstrably minimised.	
	Recovery Plan for Marine Turtles in Australia	Recovery objective: The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list. Interim objective 3: Anthropogenic threats are demonstrably minimised.	
	Therefore, CAPL has defined the following acceptable level of impact such that it is consistent with these documents: • no injury or death to Pygmy Blue Whales, marine turtles, seabirds or migratory shorebirds from unplanned release of solid wastes from the petroleum activities such that it would prevent the long-term recovery of the species		
Environmental performance outcome	**Environmental performance standard**		**Measurement criteria**
(EPO 12a) No unplanned release of waste to the environment during the petroleum activity. (EPO 12b) No injury or mortality to marine fauna from an unplanned release of waste within the OA associated with the petroleum activity. (EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.	**(EPS 12.1) Marine Order 95 (Marine pollution prevention – garbage)** Marine vessels >100 T (or certified to carry >15 persons) will have a Garbage Management Plan on board, in accordance with MARPOL 73/78 Annex V.		(MC 12.1.1) OVIS report / ABU Marine OE Inspection Checklist verifies that a Garbage Management Plan is on board marine vessels >100 T or certified to carry >15 persons.
	(EPS 12.2) Marine Order 95 (Marine pollution prevention – garbage) Marine vessels >400 T (or certified to carry >15 persons) will have a Garbage Record Book on board, in accordance with MARPOL 73/78 Annex V.		(MC 12.2.1) Current and completed Garbage Record Book (for marine vessels >400 T or certified to carry >15 persons.
	(EPS 12.3) Marine Order 95 (Marine pollution prevention – garbage) For waste that is incinerated on board a marine vessel, the incinerator is to be IMO-approved and the waste incinerated is to be recorded in accordance with MARPOL 73/78 Annex V.		(MC 12.3.1) Current IAPP Certificate (for marine vessels >400 T or certified to carry >15 persons). (MC 12.3.2) Current and completed Garbage Record Book (for marine vessels >400 T or certified to carry >15 persons).
	(EPS 12.4) Marine Order 95 (Marine pollution prevention – garbage) A Garbage Management Plan will be implemented, including: • segregating waste on the MODU and support vessels • storing solid wastes in designated areas before sending them to shore for recycling, disposal, or treatment		(MC 12.4.1) Records demonstrate compliance against the Garbage Management Plan requirements.

Unplanned release—waste		
	• waste receptacles that contain light-weight, solid waste will be covered to prevent waste from blowing overboard • no discharge of waste or plastic products from general operational or maintenance.	
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation.	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.

7.14 Unplanned release—minor loss of containment

Unplanned release—minor loss of containment

Source

Drilling, well intervention and/or abandonment operations and supporting vessel operations includes handling, using, and transferring hazardous materials, and has the potential to result in a minor loss of containment (LOC) event. Based on the activities described in this EP, the following potential LOC scenarios were identified:

- using, handling, and transferring hazardous materials and chemicals onboard (<1 m^3)[1]
- transferring hazardous materials between MODU and support vessels (50 m^3)[2]
- hydraulic line failure from equipment (<1 m^3)
- riser failure (~20 m^3 Base Oil)
- emergency disconnect (~46 m^3 NADF).

[1] A range of hydrocarbons and other hazardous chemicals/materials are expected to be present on vessels and/or MODU; however, the maximum credible volume associated with a single-point failure was estimated to be ~1 m^3 based on the loss of an entire intermediate bulk container due to rupture while handling.

[2] AMSA (Ref. 115) suggests the maximum credible spill volume from a refuelling incident with continuous supervision is approximately the transfer rate × 15 minutes. Assuming failure of dry-break couplings and an assumed 200 m^3/h transfer rate (based on previous operations), this equates to an instantaneous spill volume of ~50 m^3. Assuming the same equipment is used to complete bulk transfers of any bulk liquid (such as NADF), a similar volume (50 m^3) could be expected for an accidental release of drilling fluid during transfer. This is considered conservative because transfer rates are typically slower than the peak transfer rates (described above).

Potential impacts and risks

Impacts	C	Risks	C
N/A	–	Unplanned release of hazardous material to the environment may result in: • indirect impacts to fauna arising from chemical toxicity.	5

Unplanned release—minor loss of containment

Consequence evaluation

Upon release, a loss of 50 m^3 of a hazardous product would be expected to change the water quality of both surface and pelagic waters.

The environmental impacts associated with a surface release of 50 m^3 of marine diesel oil (MDO) or other hazardous materials (e.g. Base Oil or NADF) are expected to be much less than those associated with a loss of hydrocarbons from a vessel collision (Section 7.15), and thus are not evaluated further here.

The particular values and sensitivities with the potential to be exposed to decreased water quality from an unplanned LOC release within the OAs include:

- Flatback turtle (internesting buffer BIA)
- Wedge-tailed Shearwater (breeding BIA)
- Whale Shark (foraging BIA)
- Humpback Whale (migration BIA)
- Pygmy Blue Whale (distribution and migration BIA)
- continental slope demersal fish communities (KEF)
- commercial fisheries.
- Montebello Marine Park

Based on the nature of these unplanned releases, which are non-continuous and expected to occur in a location where no specific sedentary behaviours for values and sensitivities have been identified, the extent and severity of any potential impact is expected to be limited.

Given the nature of unplanned releases covered under this EP and the transient nature of identified values and sensitivities, fauna would need to pass directly through the plume almost immediately upon release to be impacted.

Any potential impact from such an event is expected to be short term and limited to a small number of individuals, thus the consequence level was determined as Minor (5).

Changes to cultural heritage values

There are no World, National, or Commonwealth heritage listed places or sites within the OA (Section 4.6).

As identified from literature and/or consultation (Section 4.3.6.2.1), One of the specific tangible values of Sea Country identified through consultation was marine fauna (e.g. whales, turtles; Table 4-14). The consequence evaluations to these receptors are provided above.

Intangible cultural heritage refers to the “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage” (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2.

No impact pathway to a change in access to Country from a unplanned minor LoC within the OA is anticipated. The consequence evaluation to marine fauna is provided above, and were assessed as having a limited environmental impact, and is not expected to affect the overall population of the species. Further, as described in the above evaluations, the source of planned discharges within the OA (i.e. MODU and vessels) is temporary and is not expected to affect the long-term environmental quality of the ocean. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected from planned vessel discharges within the OA.

Given the offshore location of the OA (Gorgon, which is ~65 km northwest from Barrow Island, and ~130 km from the mainland; Jansz, which is ~125 km northwest from Barrow Island, and ~200 km from the mainland; Figure 2-1) and duration of any activity carried out under this EP (~65 days), a significant adverse change to cultural heritage values attributed to the offshore marine area from a unplanned minor LoC within the OA is not predicted to occur. As such, CAPL has ranked the consequence for cultural heritage values as Incidental (6).

ALARP decision context justification

Offshore drilling operations are commonplace and well-practised industry activities. The control measures to manage the risk associated with LOC scenarios from these activities are well defined via legislative requirements that are considered standard industry practice. There is a good understanding of potential spill sources, and the control measures required to manage these are well understood and implemented by the petroleum industry and CAPL.

Unplanned release—minor loss of containment	
The risks associated with this minor LOC are considered lower-order risks in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.	
Good practice control measures	
Control measure	**Description**
Marine Standard	The Marine Standard (Ref. 29) ensures that various legislative requirements and CAPL standards are met. Specifically, premobilisation inspections may include: • visual checks of accessible equipment and hydraulic hoses for defects • confirmation that dry-break couplings or similar automated stop devices are available for use on marine vessels that are refuelled at sea • secondary containment is available for hydrocarbons and chemicals stored on the deck of marine vessels • bunkering procedures are available.
Bulk transfer management	Bulk transfers of NADF from vessels to MODU will be undertaken in accordance with CAPL's *Wells Fluid Field Guidelines Offshore 2020* (Ref. 111) and the relevant MODU contractor procedure. The requirements include: • Job Safety Analysis (JSA) to be held before all transfers to or from vessels • review and assess the weather forecast, ensuring prevailing and anticipated weather conditions are within capabilities of vessel and working limits communications established and continuous watch maintained for the duration of transfer.
Equipment maintenance	Critical equipment will be identified (e.g. slip joint packers, seals, dry-break couplings) and maintained in accordance with manufacturers' specifications. Regular maintenance ensures the integrity of critical equipment is maintained, which ensures optimal performance and reduces the risk of failure.
Permit system	CAPL will implement a permit system to control the isolation of overboard drainage aboard the MODU where there is potential for unplanned release of hazardous materials.
Riser analysis and inspection	A riser analysis will be conducted to ensure that its design is suitable for the drilling program and a visual inspection (via ROV) will be conducted to help identify any potential faults before a failure / spill event occurs.
Ship Oil Pollution Emergency Plan (SOPEP) / Shipboard Marine Pollution Emergency Plan (SMPEP)	MARPOL 73/78 Annex I and Marine Order 91 (Marine pollution prevention – oil) requires that each vessel has an approved SOPEP in place. To prepare for a spill event, the SOPEP details: • response equipment available to control a spill event • review cycle to ensure that the SOPEP is kept up to date • testing requirements, including the frequency and nature of these tests. In the event of a spill, the SOPEP details: • reporting requirements and a list of authorities to be contacted • activities to be undertaken to control the discharge of oil • procedures for coordinating with local officials.
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).

<table>
<tr><th colspan="4">Unplanned release—minor loss of containment</th></tr>
<tr><th colspan="4">Additional control measures and cost–benefit analysis</th></tr>
<tr><th>Control measure</th><th colspan="2">Benefit</th><th>Cost</th></tr>
<tr><td>N/A</td><td colspan="2">N/A</td><td>N/A</td></tr>
<tr><th colspan="4">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="3">The likelihood that a LOC event results in a Minor (5) consequence was determined to be Remote (5). With the control measures in place, it was considered very unlikely that a large LOC event associated with this activity would occur, and even more unlikely that such an event would impact any of the identified values and sensitivities, which are known to be transient and unlikely to be present at the exact location of the LOC.</td></tr>
<tr><td>Risk level</td><td colspan="3">Very low (9)</td></tr>
<tr><th colspan="4">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="3">The potential risk associated with this aspect would be short-term, apply to some individuals, and consequently is not expected to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Minor (5).
Therefore, no additional evaluation against the Principles of ESD is required.</td></tr>
<tr><td rowspan="4">Relevant environmental legislation and other requirements</td><td colspan="3">Legislation and other requirements considered relevant for this aspect include:
• Marine Order 91, Marine pollution prevention – oil
• MARPOL 73/78
• North-west Marine Parks Network Management Plan 2018 (Ref. 256).
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.</td></tr>
<tr><td>Requirement</td><td colspan="2">Demonstration</td></tr>
<tr><td>Marine Order 91
Gives effect to Annex I of MARPOL 73/78</td><td colspan="2">Requirements for a vessel to have a SOPEP have been incorporated into the SOPEP/Shipboard Marine Pollution Emergency Plan control measure</td></tr>
<tr><td>North-west Marine Parks Network Management Plan
The Plan requires that ‘actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with mining operations authorised under the OPGGS Act may be conducted in all zones. The Director should be notified in the event of an oil pollution incident that occurs within, or may impact upon, an Australian Marine Park and, so far as reasonably practicable, prior to a response action being taken within a marine park.’</td><td colspan="2">The Montebello Marine Park is a multiple use zone (IUCN VI). The control measures identified for managing an unplanned release provide for the response to, and environmental monitoring and remediation of, an oil pollution incident.
Requirements to report oil pollution incidents that occur within, or may impact upon, an AMP is included in Section 8.4.2.
Therefore, this activity is not considered to be inconsistent with the North-west Marine Parks Network Management Plan.</td></tr>
<tr><td>Internal context</td><td colspan="3">The following CAPL management processes or procedures were deemed relevant for this aspect:
• Marine Standard (Ref. 29)
• Wells Fluid Field Guidelines Offshore 2020 (Ref. 111).</td></tr>
<tr><td>Defined acceptable level</td><td colspan="3">These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.</td></tr>
</table>

<table>
<tr><th colspan="3">Unplanned release—minor loss of containment</th></tr>
<tr><td></td><td colspan="2">However, in alignment with Section 5.6.2, where the aspect is listed as threat to a protected matter or identified as a concern to a listed conservation value, CAPL will define an acceptable level of impact that aligns with the objectives of these documents.
Objectives of the relevant documents are shown below:
<table><tr><th>Plan</th><th>Objective</th></tr><tr><td>North-west Marine Parks Network Management Plan 2018</td><td>As per Section 4.5.1.</td></tr></table>
Therefore, CAPL has defined the following acceptable level of impact such that it is consistent with these documents:
• no adverse change to the values of the Montebello Marine Park.
CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the unplanned release, that the risk to values of the AMP are also subsequently managed.</td></tr>
<tr><th>Environmental performance outcome</th><th>Environmental performance standard</th><th>Measurement criteria</th></tr>
<tr><td rowspan="4">(EPO 13) No unplanned release of hydrocarbons or hazardous materials to the environment during the petroleum activity.

(EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity.</td><td>(EPS 1.3) Marine Standard
Prior to commencement of the petroleum activity, the following will be undertaken during a pre-mobilisation vessel inspection, as per the Marine Standard:
• visual checks of accessible equipment and hydraulic hoses for defects
• confirmation that dry-break couplings or similar automated stop devices are available for use on marine vessels that are refuelled at sea
• confirmation that secondary containment is available for hydrocarbons and chemicals stored on the deck of marine vessels.</td><td>(MC 1.3.2) OVIS report / ABU Marine OE Inspection Checklist confirms that equipment and hydraulic hoses are visually free of defects, dry-break couplings or similar are available for use, and, and secondary containment is available on the deck of the marine vessel.</td></tr>
<tr><td>(EPS 13.1) Bulk transfer management
Bulk transfers of NADF are implemented in accordance with the CAPL Wells Fluid Field Guidelines Offshore 2020 and the relevant MODU contractor procedure.
The requirements include:
• JSA to be held before all transfers to or from vessels
• review and assess the weather forecast, ensuring prevailing and anticipated weather conditions are within capabilities of vessel and working limits
• communications established and continuous watch maintained for the duration of transfer..</td><td>(MC 13.1.1) Records confirm that bulk transfers of NADF were conducted in accordance with the Chevron Australia Wells Fluid Field Guidelines Offshore 2020.</td></tr>
<tr><td>(EPS 11.1) Equipment maintenance
Critical equipment (e.g. slip joint packers, seals, dry break couplings) will be maintained in accordance with manufacturers specifications.</td><td>(MC 11.1.2) Records confirm critical equipment is maintained in accordance with manufacturer specifications.</td></tr>
<tr><td>(EPS 13.2) Permit system</td><td>(MC 13.2.1) Where required, records confirm the</td></tr>
</table>

Unplanned release—minor loss of containment		
	Implement a permit system to control the isolation of overboard drainage aboard the MODU and vessels, where there is potential for unplanned discharge of hazardous materials.	implementation of a permit system
	(EPS 13.3) Riser analysis and inspection A riser analysis and visual inspection will be conducted to help identify any potential faults.	(MC 13.3.1) Records confirm a riser analysis and inspection is conducted.
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol.	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation.	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.
(EPO 14) Reduce the risk of impacts to the environment from the unplanned release of hydrocarbons or hazardous materials during the petroleum activity	**(EPO 14.1) SOPEP** Marine vessels >400 T will carry on board a SOPEP in accordance with MARPOL 73/78 Annex I – Prevention of Oil Pollution.	(MC 14.1.1) OVIS report / ABU Marine OE Inspection Checklist confirms an approved SOPEP is on board marine vessels >400 T.
		(MC 14.1.2) Inspection records (or similar) show drills conducted in accordance with SOPEP.
		(MC 14.1.3) Inspection records (or similar) show spill kits available in accordance with SOPEP.
	(EPO 14.2) SOPEP In the event of a vessel-based spill event, emergency response activities will be implemented in accordance with the vessel SOPEP (or equivalent).	(MC 14.2.1) Records confirm that emergency response activities were implemented in accordance with the vessel SOPEP in the event of a vessel-based spill.

7.15 Unplanned release—vessel collision event

7.15.1 Scenario

A vessel collision event within either of the OA is considered a credible (but unlikely) unplanned event. A major marine spill because of vessel collision is only expected to occur under exceptional circumstances (e.g. loss of DP, navigational error, inclement weather conditions). Given the location, water depths, and lack of submerged features within the OA, grounding is not considered credible, and is not considered further.

Based upon the types of vessels typically used to support drilling and intervention activities, size of largest fuel tanks and fuel type to be used for the activities in this EP, CAPL was able to identify the typical credible worst-case scenario (as per AMSA guidelines; Ref. 115) as being a surface release between ~500 and 800 m^3

of MDO resulting from a vessel collision event. Therefore, as a conservative approach to risk assessment for activities covered under this EP, previous modelling of spills around 1,500–1,750 m^3 have been used in the following analyses.

7.15.2 Spill modelling

CAPL commissioned RPS to conduct spill modelling to inform the risk assessment associated with a vessel collision event within both the Gorgon (Ref. 116) and Jansz fields (Ref. 117).

A three-dimensional oil spill model (SIMAP) was used to simulate the drift, spread, weathering and fate of the spilled oil (Ref. 116; Ref. 117). Modelling was conducted using a stochastic approach, where multiple simulations (using the same spill parameters) were conducted, but under varying meteorological and oceanographic conditions.

Table 7-8 summarises the model settings; Table 7-9 summarises the hydrocarbon properties for MDO; and Table 7-10 describes the modelled environmental exposure and impact thresholds respectively.

Table 7-8: Vessel collision spill scenario model settings

Parameter	Details	
Release location	Gorgon	Jansz
Latitude	20°34'38.60" S	19°51′8.7″ S
Longitude	114°46'38.39" E	114°30′57.8″ E
Water depth	~267 m	~1,350 m
Oil type	MDO	
Simulation spill type	Surface	
Simulation spill volume	1,500 m^3	1,750 m^3
Simulation spill duration	24 hours	
Total simulation duration	50 days	
Number of randomly selected spill simulation start times	100 per season (300 total)	
Seasons modelled	Summer (December to February) Transitional (March, October and November) Winter (April to September)	

Table 7-9: Physical properties and boiling point ranges for MDO

Characteristic	Value			
Density	829.1 kg/m^3 (at 25 °C)			
Dynamic viscosity	4 cP			
Pour point	−14 °C			
API gravity	37.6 API			
Classification	Group II, light-persistent oil			
Boiling point	**Volatile <180 °C**	**Semi-volatile 180–265 °C**	**Low volatility 265–380 °C**	**Residual >380 °C**
	6.0%	34.6%	54.4%	5.0%

Table 7-10 Hydrocarbon environmental thresholds

Environmental threshold	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA	Planning Area for Scientific Monitoring*	Justification
Surface ≥1 g/m^2 (low)		✓	✓	In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 118), CAPL has set the surface impact threshold for socioeconomic effects at ≥1 g/m^2. This threshold is equivalent to ~1,000 L/km^2 or a layer thickness of ~1 µm. At this concentration, oil on the water surface is expected to be visible. The Bonn Agreement Oil Appearance Code (Ref. 119) describes a 0.3–5.0 µm thick oil layer as having a rainbow-coloured appearance. Due to this visibility, there is the potential to impact nature-based activities (such as tourism) via a reduction in aesthetics. In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 118), this low threshold for surface oil establishes the planning area for scientific monitoring.
Surface ≥10 g/m^2 (moderate)	✓	✓		In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 118), CAPL has set the surface impact threshold for ecological effects at ≥10 g/m^2. This threshold is equivalent to ~10,000 L/km^2 or a layer thickness of ~10 µm. The Bonn Agreement Oil Appearance Code (Ref. 119) describes a 5–50 µm thick oil layer as having a metallic appearance. This threshold is considered by NOPSEMA to approximate the lower limit of harmful effects to birds and marine mammals (Ref. 118). This threshold is consistent with observations ranging from physical oiling to toxicity effects for marine fauna within literature, including French et al. (Ref. 120), French-McCay (Ref. 121), Engelhardt (Ref. 122), Clark (Ref. 123), Geraci and St. Aubin (Ref. 124) and Jenssen (Ref. 125).
In-water (dissolved) ≥10 ppb (low)			✓	In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 118), this low threshold for surface oil establishes the planning area for scientific monitoring based on potential for exceedances of water quality triggers.
In-water (dissolved) ≥50 ppb (moderate)	✓	✓		Laboratory studies have shown that dissolved oil exert most of the toxic effects of oil on aquatic biota (e.g. Carls et al. [Ref. 126], Nordtug et al. [Ref. 127], Redman [Ref. 128]). Being soluble, the dissolved oil can be taken up by organisms directly from the water column by absorption through external surfaces and gills, as well as through the digestive tract. In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 118), CAPL has set the in-water (dissolved) impact threshold for sublethal ecological effects at ≥50 ppb. This threshold is considered by NOPSEMA to approximate potential toxic effects, particularly sublethal effects to sensitive species (Ref. 118). This threshold is based on an instantaneous concentration, and therefore only requires the dissolved oil to be at this concentration for one-hour (based on minimum model time-step) to trigger this threshold.
In-water (entrained) ≥10 ppb (low)			✓	In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 118), this low threshold for surface oil establishes the planning area for scientific monitoring based on potential for exceedances of water quality triggers.

Environmental threshold	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA	Planning Area for Scientific Monitoring*	Justification
In-water (entrained) ≥100 ppb (high)	✓	✓		Entrained oil are insoluble droplets suspended in the water column, and as such exposure pathways are direct contact with external tissue or direct oil consumption. In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 118), CAPL has set the in-water (entrained) impact threshold for sublethal ecological effects at ≥100 ppb. This threshold is considered by NOPSEMA as appropriate for informing risk evaluation (Ref. 118). This threshold is based on an instantaneous concentration, and therefore only requires the entrained oil to be at this concentration for one-hour (based on minimum model time-step) to trigger this threshold. French-McCay (Ref. 130) identified that if total hydrocarbons in entrained oil droplets was to be evaluated as a risk, 100 ppb would be an extremely conservative sublethal threshold.
Shoreline ≥10 g/m^2 (low)		✓		In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 118), CAPL has set the shoreline impact threshold for socioeconomic effects at ≥10 g/m^2. This threshold is equivalent to ~10 mL/m^2 or ~2 teaspoons/m^2. At this concentration, oil on the shoreline is expected to be visible. Due to this visibility, there is the potential to impact nature-based activities (such as tourism or recreational use) via a reduction in aesthetics.
Shoreline ≥100 g/m^2 (moderate)	✓	✓		In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 118), CAPL has set the shoreline impact threshold for ecological effects at ≥100 g/m^2. This threshold is equivalent to ~100 mL/m^2 or 20 teaspoons/m^2. French et al. (Ref. 120) and French-McCay (Ref. 121) define shoreline oil accumulation at ≥100 g/m^2 as potentially harmful to wildlife (including invertebrates, birds, fur-bearing aquatic mammals and marine reptiles), based on studies for sublethal and lethal impacts. Impacts on vegetated habitats (such as saltmarsh and mangroves) have been observed at higher concentrations of shoreline oil. Observations by Lin and Mendelssohn (Ref. 131) demonstrated that loadings of >1,000 g/m^2 of oil during the growing season would be required to impact marsh plants significantly. Similar thresholds have been found in studies assessing oil impacts on mangroves (e.g. Grant et al. [Ref. 132]; Suprayogi and Murray [Ref. 133]).

^ Environmental impact thresholds have been used to define the EMBA, and the presence of environmental values and sensitivities within this area have been identified in Section 4. These impact thresholds and the spatial extent of the EMBA is used as part of the environmental impact and risk assessment presented below.

** Environmental thresholds used to define the Planning Area for Scientific Monitoring, and the presence of environmental values and sensitivities within this area have been identified within Appendix D of the Operational and Scientific Monitoring Plan: Environmental Monitoring in the Event of an Oil Spill to Marine or Coastal Waters (Ref. 2)*

7.15.2.1 Weathering and fate

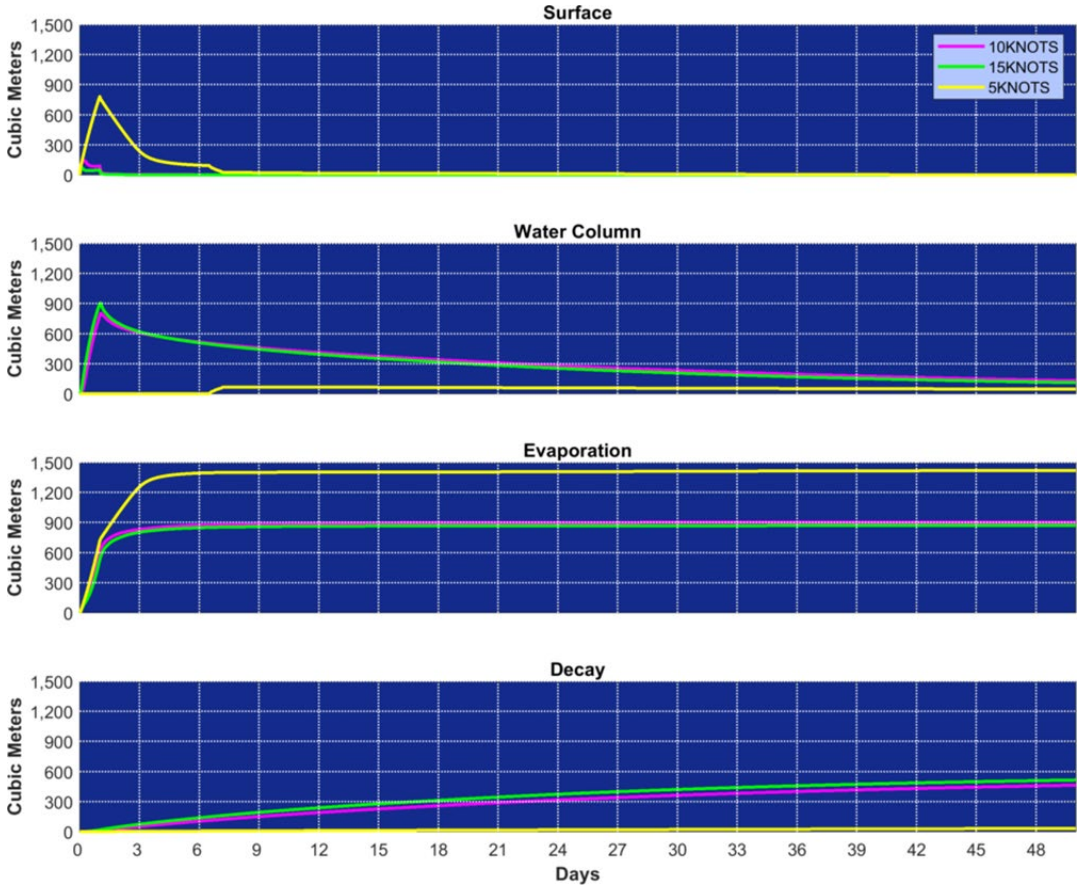
MDO is a light-persistent fuel oil used in the maritime industry. It has a density of 829.1 kg/m^3, an API of 37.6, and a low pour point (−14 °C) (Table 7-9). The low

viscosity (4 cP) indicates that this oil will spread quickly when released and will form a thin film on the sea surface, increasing the evaporation rate.

Generally, about 6.0% of the MDO mass should evaporate within the first 12 hours (boiling point <180 °C); a further 34.6% should evaporate within the first 24 hours (boiling point 180 °C–265 °C); and an additional 54.4% should evaporate over several days (boiling point 265 °C–380 °C). Approximately 5% (by mass) of MDO will not evaporate at atmospheric temperatures. These compounds will persist in the environment.

While MDO will typically remain on the water surface (where it is subject to evaporation), it is noted that some of the heavy components have a strong tendency to physically entrain into the upper water column in the presence of moderate winds (i.e. >12 knots) and breaking waves but can re-float to the surface if these energies abate (Ref. 116).

Figure 7-2 shows predicted weathering for a 1,500 m^3 release of MDO over 24 hours (tracked for 50 days) during 3 static wind conditions. Typically, <50% of the slick volume, and potentially far less, will remain on the water surface after ~3 days



(Source: Ref. 116)

Figure 7-2: Predicted weather graph

7.15.2.2 Modelling outputs

Stochastic modelling outputs from RPS (Ref. 116; Ref. 117) are summarised in Table 7-11 and Table 7-12 having regard to the particular values and sensitivities identified in Section 4.

For the 1,500 m^3 MDO release within the Gorgon field:

- The maximum distance from the release location to the ≥1 g/m^2 and ≥10 g/m^2 surface impact thresholds was ~277 km south-west (transitional) and ~65 km south-south-west (transitional), respectively.
- The probability of contact to any shoreline at ≥10 g/m^2 was 3% in summer, with no contact predicted in transitional and winter months. The minimum time before shoreline contact was ~3 days and the maximum volume of oil ashore was 2.7 m^3. The only area of shoreline contact predicted was parts of the west coast of the North West Cape peninsula. No shoreline contact at the ≥100 g/m^2 impact threshold was predicted to occur during any season.
- No dissolved oil at ≥50 ppb impact thresholds was predicted to occur during any season.
- Entrained oil at ≥100 ppb impact thresholds was predicted to occur. However, entrained oil was predicted to remain in the surface layers, with no exposure at depths >20 m below the surface predicted to occur during any season.

For the 1,750 m^3 MDO release within the Jansz field:

- The maximum distance from the release location to the ≥1 g/m^2 and ≥10 g/m^2 surface impact thresholds was ~208 km east-north-east (transitional) and ~120 km north-east (transitional), respectively.
- No shoreline contact was predicted to occur during any season.
- Dissolved oil at ≥50 ppb impact thresholds was predicted to occur. However, dissolved oil was predicted to remain in the surface layers only (no predicted exposure at depths >10 m below the surface). No dissolved oil at ≥4,800 ppb.hrs impact thresholds was predicted to occur during any season.
- Entrained oil at ≥100 ppb impact thresholds was predicted to occur. However, entrained oil was predicted to remain in the surface layers, with no exposure at depths >10 m below the surface predicted to occur during any season.

Table 7-11: Gorgon field vessel collision spill modelling receptor exposure summary

Sensitivity	Name	Surface^		In-water (dissolved)^	In-water (entrained)^	Shoreline^	
		≥1 g/m²	≥10 g/m²	≥50 ppb	≥100 ppb	≥10 g/m²	≥100 g/m²
		(probability of exposure, min. time to exposure)		(probability of exposure)	(probability of exposure)	(probability of exposure, min. time to exposure, mean length of shoreline)	
AMP	Gascoyne	0–1%, 15–19 days	—	—	8–14%	—	—
	Montebello	—	—	—	1–5%	—	—
	Ningaloo	0–2%, 4 days	—	—	6–13%	—	—
KEF	Ancient coastline at 125 m depth contour	4–16%, <1 day	2–4%, <1–1 day	—	11–26%	—	—
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	0–1%, 9 days	—	—	10–20%	—	—
	Commonwealth waters adjacent to Ningaloo Reef	0–2%, 4 days	—	—	6–13%	—	—
	Continental slope demersal fish communities	—	—	—	88–92%	—	—
	Exmouth Plateau	0–1%, 19 days	—	—	6–7%	—	—
World Heritage Properties / National Heritage Places	The Ningaloo Coast *(inferred from Cape Range Interim Biogeographic Regionalisation for Australia [IBRA], and Exmouth shoreline)*	0–3%, 3 days	—	—	0–6%	0–3%, 3 days, 8 km	—
Commonwealth Heritage Properties	Ningaloo Marine Area – Commonwealth Waters *(inferred from Ningaloo IMCRA)*	0–4%, 3 days	—	—	6–18%	—	—

^ *Ranges in values shown are due to the different results between seasons.*

Table 7-12: Jansz field vessel collision spill modelling receptor exposure summary

Sensitivity	Name	Surface^		In-water (dissolved)^	In-water (entrained)^	Shoreline^	
		≥1 g/m²	≥10 g/m²	≥50 ppb	≥100 ppb	≥10 g/m²	≥100 g/m²
		(probability of exposure, min. time to exposure)		(probability of exposure)	(probability of exposure)	(probability of exposure, min. time to exposure, mean length of shoreline)	
AMP	Gascoyne	—	—	—	7–10%	—	—
	Montebello	—	—	—	0–1%	—	—
	Ningaloo	—	—	—		—	—
KEF	Ancient coastline at 125 m depth contour	—	—	—	0–1%	—	—
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	—	—	—	4–5%	—	—
	Commonwealth waters adjacent to Ningaloo Reef	—	—	—	—	—	—
	Continental slope demersal fish communities	0–1%, 50 days	—	—	3–12%	—	—
	Exmouth Plateau	5–10%,			12–14%	—	—
World Heritage Properties / National Heritage Places	The Ningaloo Coast *(inferred from Cape Range IBRA, and Exmouth shoreline)*	16–27 days	0–1%, 50 days	0–1%	—	—	—
Commonwealth Heritage Properties	Ningaloo Marine Area – Commonwealth Waters *(inferred from Ningaloo IMCRA)*	—	—	—	—	—	—

^ *Ranges in values shown are due to the different results between seasons.*

7.15.3 Risk assessment

Unplanned release—vessel collision event

Source

Activities identified as having the potential to result in a vessel collision event are:

- Drilling and field support—vessel operations within the OAs.

A vessel collision event may occur as a result of a loss of DP, navigational error or floundering due to weather.

Potential impacts and risks

Impacts	C	Risks	C
N/A	–	The potential environmental impacts associated with hydrocarbon exposures from a vessel collision event are:	
		• marine pollution resulting in sublethal or lethal effects to marine fauna	4
		• smothering of subtidal and intertidal habitats	5
		• indirect impacts to commercial fisheries	6
		• reduction in amenity resulting in impacts to tourism and recreation • changes to cultural heritage values	6 4
		• changes to values and sensitivities of Australian Marine Parks	5

Consequence evaluation

Marine pollution resulting in sublethal or lethal effects to marine fauna

Marine mammals

Marine mammals may be exposed to hydrocarbons from an oil spill at the water surface or within the water column. Marine mammals can be exposed to oil, externally (e.g. swimming through surface slick) or internally (e.g. swallowing the oil, consuming oil-affected prey, or inhaling of volatile oil related compounds). The highest likelihood of exposure occurs when the mammal surfaces to breathe (Ref. 162).

Marine mammals that have direct physical contact with surface, entrained or dissolved aromatic hydrocarbons may suffer surface fouling, ingestion of hydrocarbons (including from prey, water and sediments), aspiration of oily water or droplets and inhalation of evaporated volatiles. This may result in skin lesions, irritation of sensitive membranes such as the eyes, mouth, digestive and respiratory tracts and organs, impairment of the immune system, neurological damage, reproductive failure, adverse health effects (e.g. lung disease, poor body condition) and, potentially, death (Ref. 134; Ref. 328; Ref. 329).

The effect of oil on cetacean skin is probably minor and temporary (Ref. 134) due to the skin's effectiveness as a barrier. However, it was observed that existing skin lesions, cuts, or abrasions could allow oil to be absorbed more readily into the bloodstream (Ref. 329). French-McCay (Ref. 135) identifies that a ≥10 g/m^2 oil thickness threshold has the potential to impart a lethal dose to the species; however, also estimates a probability of 0.1% mortality to cetaceans if they encounter these thresholds based on the proportion of the time spent at surface.

The physical impacts from ingested hydrocarbons with subsequent lethal or sublethal impacts are possible; however, the susceptibility of cetaceans varies with feeding habits. Baleen whales may be susceptible to ingestion of oil in the water column as they lung feed (i.e. opening their mouths from well below the surface to the surface). Toothed whales and dolphins may be susceptible to ingestion of dissolved and entrained oil as they gulp feed at depth. However, significant feeding during migration is not expected (although opportunistic feeding may occur). As highly mobile species, in general it is not expected that these animals will be constantly exposed to concentrations of hydrocarbons in the water column for continuous durations (e.g. >48–96 hours) that would lead to chronic effects.

The most immediate threat to cetaceans is inhalation of toxic fumes, especially near the source of a fresh oil spill (Ref. 332). Because volatile toxic vapours disperse relatively quickly (Ref. 328), for the short period that they persist, vapours from a spill are a significant risk to mammal health, with the potential to damage mucous membranes of the airways and the eyes, which will reduce the health and potential survivability of an animal. Inhaled volatile hydrocarbons are transferred rapidly to the bloodstream and may also accumulate in tissues (Ref. 134). Therefore, due to weathering effects on oil spills, the area where potential impacts from physical contact with surface slicks and inhalation of contaminated air may occur would be localised around the release

Unplanned release—vessel collision event

location. The findings of the review of DWH oil spill impacts (Ref. 329) determined cetaceans were most likely exposed to DWH oil via inhalation of contaminated air and/or aspiration of liquid oil. These routes of exposure are consistent with the types of adverse health effects documented in living and dead, stranded dolphins (effects on the lungs). Given the characteristics of the crude oil, the physical extent and duration of the DWH spill, the event and impacts are considered extreme, in comparison with potential MDO vessel spills from the Activity.

Marine mammal behavioural disturbance (i.e. avoiding spilled hydrocarbons) was identified in some instances for several species of cetacean, suggesting that cetaceans are able to detect and avoid surface slicks (Ref. 134). However, detection seems to depend on oil thickness and colour during experiments in captivity and observations in the wild (Ref. 330). Observations during oil spill events (Deepwater Horizon [DWH] and the Mega Borg oil spills) have recorded whales and dolphins travelling through and feeding in oil slicks. (Ref. 329; Ref. 330; Ref. 331), Research indicates dolphins can detect and avoid emulsified oil, detect and enter oil slicks, and not detect thin oil sheens (Ref. 329; Ref. 331).

The smooth skin surface of cetaceans was believed to exclude oil adhering to the skin, but during the DWH spill, bottle nose dolphins were observed with oil adhered to the skin, which can result in skin lesions from prolonged exposure (Ref. 331). On review of the impacts from the DWH spill it was determined that exposure to DWH-related petroleum products caused a suite of adverse health effects, including lung disease, adrenal disease, reproductive failure, death, and poor body condition, in bottlenose dolphins (Ref. 329). However, given the physical and temporal extent of the DWH spill, and the nature of the crude oil, adherence to the skin by MDO may be considered less likely based on the hydrocarbon properties and the spatial and temporal nature of the scenario.

A review of the impacts of large-scale hydrocarbon spills on cetaceans, found that exposure to oil from the DWH oil spill resulted in increased mortality to cetaceans (Ref. 329; Ref. 331). In general, refined petroleum products tend to be more toxic to organisms but less persistent in the environment. Crude oils and heavy fuel oils like bunker fuels tend to be less toxic but are more persistent and more likely to have physical impacts on wildlife (Ref. 138). Given the non-persistent nature of the MDO from a vessel spill (compared with crude oil from the 2 spills, see hydrocarbon characteristics, Section 7.15.1), and as there are no known aggregation areas or BIAs for dolphins or whales within either OA, such exposure impacts to cetaceans are less likely.

There is a paucity of studies examining the effects of hydrocarbon spills on dugongs, although the direct impacts of exposure to hydrocarbons may be similar to cetaceans. Like cetaceans, dugongs are expected to be resilient to direct impacts due to their thick skin and blubber. If surfacing in a slick, the Dugongs may foul their sensory hairs (around their mouths) or their eyes; these could lead to inflammation/infections that then affect their ability to feed or breed (Ref. 138). Dugongs may also ingest oil (directly, or indirectly via oil-affected seagrass), and depending on the amount and type of oil, the effects could be short-term to long-term/chronic (e.g. organ damage). However, it is noted that reports on oil pollution damage to Dugongs is rare (Ref. 275). A hydrocarbon spill may impact coastal cetaceans through site displacement and damage to food source, however, Taylor and Rasheed (Ref. 333) found that seagrass meadows are not significantly affected by an oil spill when compared to non-impacted, reference seagrass meadow. Due to the non-persistent nature of the hydrocarbon it is not predicted to result in impacts on overall population viability of either dugongs or coastal cetaceans.

The evaluation of likely spill scenario from this activity and potential consequences of marine mammals' exposure to hydrocarbons is assessed below.

As identified in Section 4.3.3.1, several marine mammal species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the EMBA. The following BIAs may be exposed to hydrocarbon concentrations greater than impact thresholds based on the vessel collision spill modelling (Ref. 116; Ref. 117) scenarios:

- Humpback Whale (migration, resting)
- Pygmy Blue Whale (distribution, migration, foraging)
- Dugongs (breeding, calving, foraging, nursing).

As these species are considered most sensitive to surface exposures, deterministic analyses were used to understand the potential extent and duration of exposure.

As these species are considered most sensitive to surface exposures, deterministic analysis for the largest sea surface swept area was used to understand the potential extent and duration of exposure. The deterministic model (Gorgon scenario) indicates that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~15 km^2. This deterministic scenario is considered most relevant for offshore waters (where surface exposures were deemed to be larger) and subsequent impacts to offshore BIAs associated with whales. Using the Pygmy Blue Whale migration BIA as an example, modelling indicates that the extent of surface exposures was predicted to be limited to <0.01% of the entire BIA.

Unplanned release—vessel collision event

Deterministic analysis for largest volume of oil ashore, predicts that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~1 km. This deterministic scenario is considered most relevant for nearshore waters and subsequent impacts to nearshore BIAs. Using the Dugong breeding BIA as an example, modelling indicates that the extent of surface exposures was predicted to be limited to <0.01% of the entire BIA. As the extent and duration of exposure to nearshore environments is expected to be limited the potential for environmental impacts would also be limited. However, as behaviours in nearshore waters are likely to result in increased sensitivity to hydrocarbon exposures as species are less likely to be transient, impacts to nearshore environments are expected to be larger than that associated with offshore exposures.

Based on an assessment of the predicted magnitude and duration of surface oil, and entrained oil, it is expected that only a small proportion of any marine mammal population would be exposed above the defined impact exposure thresholds. Therefore, the potential impacts of oil to cause sublethal or lethal effects was ranked as Minor (5) and Moderate (4), respectively.

Reptiles

Marine reptiles may be exposed to hydrocarbons from an oil spill at the water surface or on the shoreline. Marine reptiles can be exposed to oil externally (e.g. swimming through surface slick) or internally (e.g. swallowing the oil, consuming oil-affected prey, or inhaling of volatile oil related compounds) (Ref. 137).

Marine turtles are vulnerable to the effects of oil at all life stages: eggs, hatchlings, juveniles, and adults. Several aspects of turtle biology and behaviour place them at risk, including a lack of avoidance behaviour, indiscriminate feeding in convergence zones, and large pre-dive inhalations (Ref. 138). Oil effects on turtles can include impacts to the skin, blood, digestive, and immune systems, and increased mortality due to oiling.

Shoreline hydrocarbons can impact turtles coming ashore at nesting beaches. Eggs may also be exposed during incubation, potentially resulting in increased egg mortality and detrimental effects on hatchlings. Hatchlings may be particularly vulnerable to toxicity and smothering as they emerge from the nests and make their way over the intertidal area to the water (Ref. 137).

As identified in Section 4.3.3.2, several reptile species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the EMBA. BIAs for the Flatback Turtle, Loggerhead Turtle, Green Turtle, and Hawksbill Turtle may be exposed to hydrocarbon concentrations greater than the impact thresholds based on the vessel collision spill modelling (Ref. 116; Ref. 117) scenarios . The behaviours associated with these BIAs include aggregation, basking, foraging, internesting, mating, and nesting.

Stochastic modelling predicted no shoreline accumulation above the ≥100 g/m^2 impact threshold. The deterministic model (Gorgon scenario) indicates that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~15 km^2. Deterministic analysis for largest volume of oil ashore, predicts that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~1 km. This deterministic scenario is considered most relevant for nearshore waters and subsequent impacts to nearshore BIAs. Using the Flatback Turtle internesting BIA as an example, modelling indicates that the extent of surface and shoreline exposures was predicted to be limited to <0.01% of the entire BIA. This information indicates that if a vessel spill event occurred during the nesting season, it is unlikely to impact entire local nesting populations.

The EPBC threatened Short-nosed Seasnake and Leaf-scaled Seasnake, and other EPBC marine listed seasnake species, may be present within the Hydrocarbon EMBAs. Oil pollution has been identified as a pressure 'of potential concern' (Ref. 311) to seasnakes[35]. Sea snakes are susceptible to oil on the sea surface (Ref. 311; Ref.312; Ref. 313). Being air breathers and obligate bottom feeders, oil may be either inhaled or ingested (Ref. 311; Ref. 314). As described above, surface oil exposure above impact thresholds are predicted to be only be present for a short (<2 days) duration and over a relatively small (maximum ~9 km^2) area. Any exposure to benthic habitats is only predicted to occur within nearshore (<20 m water depth) areas. Using the shoreline exposure described above as indicative of oil presence in a nearshore environment, the duration and extent of exposure from a single spill event is predicted to be limited.

Based on an assessment of the predicted magnitude and duration of surface and shoreline oil, it is expected that only a small proportion of any marine reptile population would be exposed above the defined impact thresholds. Therefore, the potential impacts of oil to cause sublethal or lethal effects was ranked as Incidental (6) and Minor (5), respectively.

Fishes, including sharks and rays

Fish, including sharks and rays, may be exposed to hydrocarbons from an oil spill within the water column. Most fish do not break the sea surface, and therefore the risk from surface oil is not relevant; however, some shark species (including Whale Sharks) feed in surface waters, so there is also the potential for surface

[35] *The pressure analysis distinguished between oil pollution from shipping ('of less concern') and oil rigs ('of potential concern') (Ref. 311). Although the aspect source for this risk assessment is a spill from a vessel, the higher pressure concern was adopted.*

Unplanned release—vessel collision event

hydrocarbons to be ingested. Fish species are expected to have higher sensitivity to exposures of in-water (entrained) oil components.

Potential effects include damage to the liver and lining of the stomach and intestine, and toxic effects on embryos (Ref. 139). Fish are most vulnerable to oil during embryonic, larval and juvenile life stages. However, very few studies have demonstrated increased deaths of fish as a result of oil spills (Ref. 140; Ref. 141; Ref. 142).

Demersal fish are not expected to be impacted given the presence of entrained oil ≥100 ppb is predicted in the surface layers (<10 m water depth) only.

Pelagic free-swimming fish and sharks are not expected to suffer long-term damage from oil spill exposure because dissolved/entrained hydrocarbons are typically insufficient to cause harm (Ref. 143). Pelagic species are also generally highly mobile and as such are not expected to suffer extended exposure (e.g. >48–96 hours) at concentrations that would lead to chronic effects due to their patterns of movement. Near the sea surface, fish can detect and avoid contact with surface slicks meaning fish deaths rarely occur in the event of a hydrocarbon spill in open waters (Ref. 144). Fish exposed to dissolved hydrocarbons can eliminate the toxicants once placed in clean water; hence, individuals exposed to a spill would recover (Ref. 145) once they are outside the exposure area. Marine fauna with gill-based respiratory systems, including Whale Sharks, are expected to have higher sensitivity to exposures of entrained oil.

As identified in Section 4.3.3.3, several fish species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the EMBA. The following BIAs may be exposed to hydrocarbon concentrations greater than impact thresholds based on the vessel collision spill modelling (Ref. 116; Ref. 117) scenarios:

- Whale Shark (foraging).

As Whale Sharks are considered most sensitive to surface exposures, deterministic analyses were used to understand the potential extent and duration of exposure.

The deterministic analysis (from the Gorgon field scenario) for the largest sea surface swept area were analysed. The deterministic model indicates that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~15 km^2. This deterministic scenario is considered most relevant for offshore waters and subsequent impacts to offshore BIAs. Comparing this to the Whale Shark foraging BIA, modelling indicates that the extent of surface exposures was predicted to be limited to <0.01% of the entire BIA.

Based on an assessment of the predicted magnitude and duration of surface oil, and both instantaneous and time-integrated entrained oil, it is expected that only a small proportion of any fish population would be exposed above the defined impact thresholds. Therefore, the potential impacts of oil to cause sublethal or lethal effects was ranked as Minor (5) and Moderate (4), respectively.

Seabirds and shorebirds

Birds that rest at the water's surface (e.g. shearwaters) or surface-plunging birds (e.g. terns, boobies) are particularly vulnerable to surface hydrocarbons (Ref. 146; Ref. 138). Damage to external tissues, including skin and eyes, can occur, along with internal tissue irritation in lungs and stomachs (Ref. 147). Acute and chronic toxic effects may result where the product is ingested as the bird attempts to preen its feathers (Ref. 147).

As identified in Section 4.3.4, several bird species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the EMBA. The following BIAs may be exposed to hydrocarbon concentrations greater than impact thresholds based on the vessel collision spill modelling (Ref. 116; Ref. 117) scenarios:

- Fairy Tern, Lesser Crested Tern, Roseate Tern, Wedge-tailed Shearwater, and White-tailed Tropicbird (breeding)

As these species are most sensitive to surface and shoreline hydrocarbon exposures, deterministic analysis for the largest volume of oil ashore to understand the potential extent and duration of nearshore hydrocarbon exposures.

Deterministic analysis for largest volume of oil ashore (from the Gorgon field scenario), predicts that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~1 km^2. This deterministic scenario is considered most relevant for nearshore waters and subsequent impacts to nearshore BIAs. Using the Roseate Tern breeding BIA surrounding Lowendal Islands as an example, modelling indicates that the extent of surface exposures was predicted to be limited to <1% of the entire BIA. This information indicates that if a vessel spill event occurred during the breeding season, it is unlikely to impact entire local nesting populations.

Stochastic modelling predicted no shoreline accumulation above the ≥100 g/m^2 impact threshold; therefore, direct shoreline exposure to seabirds is not discussed further.

Unplanned release—vessel collision event

Based on an assessment of the predicted magnitude and duration of surface and shoreline oil, it is expected that only a small proportion of any seabird population would be exposed above the defined impact thresholds. Therefore, the potential impacts of oil to cause sublethal or lethal effects was ranked as Minor (5) and Moderate (4), respectively.

Smothering of subtidal and intertidal habitats

Offshore benthic habitats (e.g. coral, sponges, seagrass, macroalgae)

The effects of physical contact on subtidal habitats are similar, and studies have shown that it can cause sublethal stress and reduced growth rates in seagrass (Ref. 148; Ref. 149), act as a barrier to diffusion of CO_2 across cell walls in macroalgae (Ref. 150), and a decline in metabolic rate and partial death in corals (Ref. 151; Ref. 152) and impair respiration and photosynthesis by symbiotic zooxanthellae (Ref. 153; Ref. 154). The recovery of benthic habitats can be slow, with studies following the Deepwater Horizon incident showing long-term non-acute effects of the spill on coral colonies 7 years after the event (Ref. 155).

Stochastic modelling predicted coral reefs associated with the following particular values or sensitivities within the Hydrocarbon EMBAs have the potential to be exposed to hydrocarbon concentrations above impact thresholds based on the vessel collision spill modelling (Ref. 116; Ref. 117) scenarios::

- Ningaloo Coast (World Heritage Property, National Heritage Place)
- Ningaloo Marine Area – Commonwealth Waters (Commonwealth Heritage Place).

The Ningaloo marine area is known to support coral reef and macroalgae habitat. Coral, seagrass, and macroalgae habitats are also known to occur around the Barrow and Montebello islands, as well as other Pilbara inshore islands.

No surface exposure at the ≥10 g/m^2 impact threshold was predicted for the Ningaloo Coast area based on the Gorgon field scenario (Table 7-11) and less than 1% probability of surface exposure at the ≥10 g/m^2 impact threshold was predicted for the Ningaloo Coast area based on the Jansz field scenario (Table 7-12). Therefore, impacts from smothering within intertidal areas due to surface oil is not expected to occur. The probability of exposure to entrained oil (≥100 ppb) at the Ningaloo Coast area was low; 6–18% (Table 7-11); and stochastic modelling showed all entrained oil remained in the surface waters layers. As such, exposure to coral reefs in deeper waters at Ningaloo is not predicted to occur.

For assessment of other coral habitats that occur around some of the Pilbara islands (including Barrow Island), the deterministic analysis for largest volume of oil ashore (Gorgon field scenario) was used as an indicator. This deterministic scenario is considered most relevant for nearshore waters and subsequent impacts to nearshore corals. Deterministic analysis for largest volume of oil ashore, predicts that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~1 km^2. Therefore, as the extent and duration of exposure to nearshore environments is expected to be limited the potential for environmental impacts would also be limited.

These deterministic scenarios are considered most relevant for nearshore waters and subsequent impacts to nearshore corals. Therefore, as the extent and duration of exposure to nearshore environments is expected to be limited the potential for environmental impacts would also be limited.

Based on an assessment of the predicted magnitude and duration of surface oil, and both instantaneous and time-integrated entrained oil, it is expected that only a small proportion of any coral habitat would be exposed above the defined impact thresholds. Therefore, the potential impacts of oil to cause smothering was ranked as Minor (5).

Coastal habitats (e.g. mangroves, mudflats)

Shoreline hydrocarbons can have smothering and toxic effects on mangroves and intertidal mudflats. Acute and chronic impacts to the health of mangrove communities can occur via pneumatophore smothering and exposure to the toxic volatile fraction of the hydrocarbons (Ref. 156). Intertidal mudflats, which are typically sheltered and have a large surface area for oil absorption, can trap oil, potentially causing toxicity impacts to infauna. Intertidal mudflats are very sensitive to oil pollution because the oil enters lower layers of the mudflats where a lack of oxygen prevents the oil from decomposing (Ref. 157).

As identified in Section 4.3.2, coastal habitats on Barrow, Montebello, and other Pilbara islands include sandy beaches, rocky coasts, and mangroves. Coastal and marine baseline studies undertaken by CAPL (Ref. 277) identified that there are no mangrove stands on the west coast of Barrow Island, where the Hydrocarbon Ecological EMBA intersect with the coast; however there may be some intersect with the isolated patches of mangroves on the Montebello Islands.

Stochastic modelling predicted no shoreline accumulation above the ≥100 g/m^2 impact threshold; therefore, shoreline exposure to mangroves and intertidal mudflats is not discussed further.

Unplanned release—vessel collision event

Indirect impacts to commercial fisheries

As identified in Section 4.4.1 several commercial fisheries have management areas and recent fishing effort recorded within the ecological EMBA. Direct impacts to commercially targeted fish species are expected to occur from in-water exposures.

Stochastic modelling showed that there was no dissolved oil above impact thresholds (≥50 ppb) predicted to occur during any season. Entrained oil above impact thresholds (≥100 ppb) was predicted to occur; however, was predicted to remain in the surface layers, with no exposure at depths >20 m below the surface predicted to occur during any season.

Although exposures above impact thresholds have the potential to affect the recruitment of targeted commercial and recreational fish species, any acute impacts are expected to be limited, given this event is singular, non-continuous, and will result in a limited volume of hydrocarbon being released over a short time. On this basis recruitment of targeted species is not expected to be impacted significantly given the extent of exposure to concentrations above impact thresholds are expected to be limited due to rapid dilution and dispersion upon release.

Spill events also have the potential to impact commercial fisheries through indirect impacts associated with tainting. Tainting is a change in the characteristic smell or flavour and renders the catch unfit for human consumption or sale due to public perception. Tainting may not be a permanent condition but will persist if the organisms are continuously exposed; but when exposure is terminated, depuration will quickly occur (Ref. 157). Regardless of the small potential for tainting, customer perception that tainting has occurred may cause a larger impact then the direct impact itself. However, as this event is singular, non-continuous, and will result in a limited volume of hydrocarbon being released over a short time period, and the low persistence of the hydrocarbon in the environment, customer perceptions are not expected to be altered for a prolonged period.

Modelling predicts that inshore exposure would be limited, while offshore exposures are expected to dilute and disperse over a longer period. In both instances, it is expected that any impacts from this type of event would be short term in duration. Therefore, CAPL assesses the consequence to commercial fisheries as Incidental (6).

Reduction in amenity resulting in impacts to tourism and recreation

Modelling predicts shoreline exposure ≥10 g/m^2 (visible impact threshold) from a vessel spill event has the potential to occur along a small area of North West Cape coast during summer months, depending on the environmental conditions at the time of the event. No shoreline contact was predicted to occur during other (winter, transitional) seasons.

Deterministic analysis for largest volume of oil ashore, predicts the maximum length of shoreline oil above the visible impact threshold (≥10 g/m^2) at any given time was ~15 km, and the maximum volume of oil ashore was ~2.7 m^3. No shoreline contact was predicted above the ≥100 g/m^2 impact threshold. Shoreline loading can impact the visual amenity of coastal areas and limit beach access for users, impacting tourism and recreation activities. However, it is expected that any impacts from this type of event would be short term in duration. Therefore, CAPL assesses the consequence to commercial fisheries as Incidental (6).

Marine pollution resulting in impacts to areas with heritage value

Modelling predicts shoreline exposure ≥10 g/m^2 (visible impact threshold) from a vessel spill event has the potential to occur along a small area of North West Cape coast during summer months, depending on the environmental conditions at the time of the event. No shoreline contact was predicted to occur during other (winter, transitional) seasons.

As discussed in Section 4.6 there are heritage listed places or sites within the Hydrocarbon EMBAs, including shipwrecks and the World and National heritage listed Ningaloo Coast, and Commonwealth listed Ningaloo marine area, Native Title determination areas, as well as several protected First Nation sites or artefacts along (or adjacent to) the coast of the North West Cape peninsula.

At the time of writing this EP, CAPL understands that there is no First Nations archaeology known to exist within the offshore Commonwealth waters. However, CAPL acknowledge that there is a potential for artefacts and/or places of cultural value to be associated with areas of previously emergent land and/or coast to be present, such as the seabed within (and landward of) the ancient coastline at 125 m depth contour KEF. Similarly, the waters of the NWMR (and therefore the waters within the Hydrocarbon EMBAs) are acknowledged as potentially having some cultural and spiritual significance to First Nations as well as providing natural resources.

Stochastic modelling did not predict interaction with seabed in offshore waters. Therefore, no impacts to seabed-based cultural heritage (e.g. shipwrecks or archaeology) are expected and no further evaluation has been undertaken.

Unplanned release—vessel collision event

As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. It is understood that the term 'Country' refers to more than just a geographical area, and includes values, places, resources, stories, and cultural obligations associated with that geographical area (Ref. 248; Ref. 349).

Specific tangible values of Sea Country identified through literature and/or consultation include:

- marine fauna (e.g. whales, dugongs, turtles)
- offshore islands (e.g. Barrow Island) and parts of the mainland coast (e.g. Ningaloo Coast)
- Biggada Creek on Barrow Island
- marine resources (e.g. fish).

The consequence evaluations to marine fauna (including fish) are provided above and were assessed as having a moderate environmental impact. Further, as described in the above evaluations, if an unplanned hydrocarbon (marine fuel) release did occur it is not expected to have an effect at population-levels.

BTAC identified that the Thalanyji people have a deep connection to a number of the Pilbara inshore islands (Table 4-14). Depending on the environmental conditions at the time of the spill event, of the named islands within the Hydrocarbon EMBAs, Montebello and Barrow islands may be exposed to shoreline loading above the visible impact threshold (≥10 g/m^2).

Deterministic analysis for largest volume of oil ashore, predicts the maximum length of shoreline oil above the visible impact threshold (≥10 g/m^2) at any given time was ~15 km, and the maximum volume of oil ashore was ~2.7 m^3. No shoreline contact was predicted above the ≥100 g/m^2 impact threshold.

Therefore, as the extent and duration of exposure to shorelines is expected to be limited, and there is limited potential to intersect with a heritage site or disrupt significant activities.

Biggada Creek on Barrow Island was identified as significant by representatives from MCH (Table 4-14); the mouth of Biggada Creek is located on the west coast of Barrow Island. Depending on the environmental conditions at the time of a spill, shoreline exposure on the west coast of Barrow Island was predicted to occur. However, if oil is deposited ashore, this only occurs up to high-water level. As such, exposure to Biggada Creek itself is expected to be negligible.

Intangible cultural heritage refers to the "practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage" (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2

Given the volume, type of oil (marine fuel) and predicted weathering, no prolonged impact pathway to a change in access to Country is anticipated. The consequence evaluations to marine fauna are provided above and were assessed as having a moderate environmental impact to a proportion of the population—if they are present within the area at the time of a spill. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected in the long-term from an unplanned hydrocarbon (marine fuel) release within the OA. Given the expected behaviour and weathering of the oil, limited spatial and temporal exposure, only a relatively small area is expected to be exposed due to a single spill event. However, it is acknowledged that the sea and coast that may be exposed could represent important cultural values. Therefore, the potential impacts of oil to cultural heritage values was ranked as Moderate (4).

Changes to values and sensitivities of Australian Marine Parks

Modelling predicts no surface exposure ≥10 g/m^2 to any Australian Marine Parks or WA State Marine Parks; however, the modelling does predict entrained exposure ≥100 ppb from a vessel spill event as having a lo**w** probability of occurrence within the Gascoyne (14%), Ningaloo (%13) and Montebello (5%) Marine Parks (Table 7-11). No interaction with seabed was predicted to occur.

The natural values of these Australian Marine Parks include species listed as threatened, migratory, marine, or cetacean under the EPBC Act, as well as any identified BIAs for regionally significant marine fauna. Social and economic values of the Marine Parks predicted to be contacted include heritage values and commercial fishing.

The consequence evaluations to marine fauna, heritage and commercial fisheries are provided above.

Given the expected behaviour and weathering of the oil, limited spatial and temporal exposure to marine fauna or commercial fish species above impact exposure thresholds, the potential impacts of a vessel spill event to the values and sensitivities of the potentially impacted Marine Parks has been ranked as Minor (5).

Unplanned release—vessel collision event	
ALARP decision context justification	
Support vessels commonly operate near each other during offshore surveys, and these activities are well-practised nationally and internationally. The control measures to manage the risk associated with vessel collisions are well defined via legislative requirements that are considered standard industry practice. These are well understood and implemented by the petroleum industry and CAPL. Specifically, CAPL has worked in the region for more than 10 years, and has a demonstrated understanding of industry requirements and their operational implementation in these areas. The risks associated with a vessel collision are considered lower-order risks in accordance with Table 5-3. As such, CAPL would apply ALARP Decision Context A for this aspect.	
Good practice control measures	
Control measure	**Description**
Marine Standard	Chevron *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 29) ensures that various legislative requirements are met. These include: crew meet the minimum standards for safely operating a vessel, including watchkeeping requirements • navigation, radar equipment, and lighting meets industry standards. These requirements will ensure that direct vessel radio contact is available to other marine users operating in this area to enable ease of communication in highlighting risks and safety exclusion zone.
Maritime safety information	Maritime safety information, such as AUSCOAST navigational warnings, are issued by the JRCC Australia, part of AMSA. Under the *Navigation Act 2012*, the AHO is also responsible for maintaining and disseminating navigational charts and publications, including providing safety-critical information to mariners (including any change to prohibited/restricted areas, obstructions to surface navigation, etc.) via the Notice to Mariners system. Notice to Mariners can be permanent or temporary notifications. Maritime safety information (radio-navigation warnings and/or Notice to Mariners) will be issued; thus enabling other marine users to also safely plan their activities.
SOPEP / Shipboard Marine Pollution Emergency Plan	MARPOL 73/78 Annex I and Marine Order 91 (Marine pollution prevention – oil) requires that a vessel >400 GT has an approved SOPEP in place. To prepare for a spill event, the SOPEP details: • response equipment available to control a spill event • review cycle to ensure that the SOPEP is kept up to date • testing requirements, including the frequency and nature of these tests. In the event of a spill, the SOPEP details: • reporting requirements and a list of authorities to be contacted • activities to be undertaken to control the discharge of oil • procedures for coordinating with local officials.
Oil Pollution Emergency Plan (OPEP)	Under the OPGGS(E)R, NOPSEMA require that the petroleum activity have an accepted OPEP in place before commencing the activity. If a vessel collision occurs, the OPEP will be implemented. CAPL has developed a NOPSEMA-accepted OPEP (Ref. 1) to support all spill response activities across all its assets.
Operational and Scientific Monitoring Plan (OSMP)	The OSMP details the arrangements and capability in place for operational and scientific monitoring. Operational monitoring collects information about the oil spill to aid planning and decision-making for executing spill response or clean-up operations. Scientific monitoring focuses on the environmental impact attributable to the spill or the associated response activities and informs requirements for remediation (if required). CAPL has developed a NOPSEMA-accepted OSMP (Ref. 2) to support all spill monitoring activities across all its assets.

<table>
<tr><th colspan="3">Unplanned release—vessel collision event</th></tr>
<tr><td>Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)</td><td colspan="2">In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).</td></tr>
<tr><th colspan="3">Additional control measures and cost–benefit analysis</th></tr>
<tr><th>Control measure</th><th>Benefit</th><th>Cost</th></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">Based on industry data, vessel collisions are considered rare, with only 3% of all marine incidents that occurred in Australian waters between 2005 and 2012 associated with a vessel collision event.
As most vessel collisions involve the LOC of a forward tank, which are generally double-lined and smaller than other tanks, the loss of the maximum credible volumes used in this scenario is unlikely.
Considering the inherent low likelihood of a collision occurring, the safeguards in place, and enactment of the OPEP, the potential likelihood of causing the consequences described in this section is Remote (5)</td></tr>
<tr><td>Risk level</td><td colspan="2">Low (8)</td></tr>
<tr><th colspan="3">Acceptability summary</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential risks associated with this aspect would be short term, apply to some individuals, and consequently is not expected to affect biological diversity and ecological integrity.
The highest consequence associated with this aspect is Moderate (4), and subsequently the potential for serious or irreversible environmental damage is not expected.
Therefore, no additional evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements relevant for this aspect include:
Navigation Act 2012 (Cth)
Marine Order 91, Marine Pollution Prevention – oil
Marine Order 30, Prevention of collisions
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 50)
Conservation Advice Balaenoptera borealis Sei Whale (Ref. 49)
Conservation Advice Balaenoptera physalus Fin Whale (Ref. 48)
Conservation Advice Rhincodon typus Whale Shark (Ref. 47)
Recovery Plan for Marine Turtles in Australia (Ref. 46)
Approved Conservation Advice for Aipysurus apraefrontalis (Short-nosed Sea Snake) (Ref. 315)
Approved Conservation Advice for Aipysurus foliosquama (Leaf-scaled Sea Snake) (Ref. 316)
North-west Marine Parks Network Management Plan (Ref. 256).
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.<table><tr><th>Requirement</th><th>Demonstration</th></tr><tr><td>Navigation Act 2012 (Cth)
Notice to Mariners</td><td>Requirement to issue a Notice to Mariners has been incorporated into the</td></tr></table></td></tr>
</table>

Unplanned release—vessel collision event		
		maritime safety information control measure.
	Marine Order 91 Gives effect to Annex I of MARPOL 73/78	Requirements for a vessel to have a SOPEP have been incorporated into the **SOPEP/Shipboard Marine Pollution Emergency Plan** control measure
	Marine Order 30 Gives effect to the Prevention of Collisions Convention	Requirements for navigation, lights, and signals have been incorporated into the **Marine Standard** control measure
	Conservation Management Plan for the Blue Whale 2015–2025 No specific management action identified.	N/A
	Conservation Advice Balaenoptera borealis Sei Whale No specific conservation action identified.	N/A
	Conservation Advice Balaenoptera physalus Fin Whale No specific conservation action identified.	N/A
	Conservation Advice Rhincodon typus Whale Shark No specific conservation action identified.	N/A
	Recovery Plan for Marine Turtles in Australia Management action A4.2: Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in reference to 'slow to recover habitats', e.g. nesting habitat, seagrass meadows or coral reefs	Assessment of spill risk strategies is within scope of the OPEP (Ref. 1). Response and recovery of habitats and marine fauna is within the scope of the OSMP (Ref. 2). Therefore, this activity is not considered to be inconsistent with the *Recovery Plan for Marine Turtles in Australia*.
	Approved Conservation Advice for Aipysurus apraefrontalis (Short-nosed Sea Snake) No specific conservation action identified.	N/A
	Approved Conservation Advice for Aipysurus foliosquama (Leaf-scaled Sea Snake) No specific conservation action identified.	N/A
	North-west Marine Parks Network Management Plan The Plan requires that 'actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with mining operations authorised under the OPGGS Act may be conducted in all zones. The Director should be notified if in the event of an oil pollution incident that occurs within, or may impact upon, an Australian Marine Park and, so far as reasonably practicable, prior to a response action being taken within a marine park.'	The Montebello Marine Park is a multiple use zone (IUCN VI). The control measures identified for managing an unplanned release provide for the response to, and environmental monitoring and remediation of, an oil pollution incident. Requirements to report oil pollution incidents that occur within, or may impact upon, an AMP is included in Section 8.4.2. Therefore, this activity is not considered to be inconsistent with the *North-west Marine Parks Network Management Plan*.

<table>
<tr><th colspan="4">Unplanned release—vessel collision event</th></tr>
<tr><td>Internal context</td><td colspan="3">The following CAPL management processes or procedures were deemed relevant for this aspect:
Marine Standard Non Tankers: Corporate OE Standard (Ref. 29)
• OPEP (Ref. 1)
• OSMP (Ref. 2).</td></tr>
<tr><td>External context</td><td colspan="3">During relevant persons consultation, no objections or claims were raised regarding a vessel collision event arising from the activity.</td></tr>
<tr><td>Defined acceptable level</td><td colspan="3">These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.
However, in alignment with Section 5.6.2, where the aspect is listed as threat to a protected matter or identified as a concern to a listed conservation value, CAPL will define an acceptable level of impact that aligns with the objectives of these documents.
Objectives of the relevant documents are shown below:
<table>
<tr><th>Plan</th><th>Objective</th></tr>
<tr><td>Conservation Management Plan for the Blue Whale 2015–2025</td><td>Recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 4 Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td>Recovery Plan for Marine Turtles in Australia</td><td>Recovery objective: The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 3: Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td>North-west Marine Parks Network Management Plan 2018</td><td>As per Section 4.5.1.</td></tr>
</table>
Therefore, CAPL has defined the following acceptable levels of impact such that it is consistent with these documents:
• no injury or death to Pygmy Blue Whales or marine turtles such that it would prevent the long-term recovery of the species
• no adverse change to the values of the Australian Marine Parks.
CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the unplanned release, that the risk to marine fauna and/or values of the AMPs are also subsequently managed.</td></tr>
<tr><th>Environmental performance outcome</th><th>Environmental performance standard</th><th>Measurement criteria</th></tr>
<tr><td rowspan="2">(EPO 13) No unplanned release of hydrocarbons or hazardous materials to the environment during</td><td>(EPS 1.3) Marine Standard
MODU and vessels will meet the crew competency, navigation equipment, and radar requirements of the Marine Standard.</td><td>(MC 1.3.1) Records indicate that MODU and vessels meet the crew competency, navigation equipment, and radar requirements of the Marine Standard.</td></tr>
<tr><td>(EPS 1.2) Maritime safety information</td><td>(MC 1.2.1) Record of lodgement of notification to relevant agency.</td></tr>
</table>

Unplanned release—vessel collision event		
the petroleum activity. (EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity. Reduce the risk of impacts to the environment from the unplanned release of hydrocarbons or hazardous materials during petroleum activities	Notify relevant agency of activities, vessel movements, and requested safety exclusion zone, to enable them to generate radio-navigation warnings and/or Notice to Mariners prior to commencing offshore activities.	
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol**.**	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation**.**	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.
	(EPO 14.1) SOPEP Marine vessels >400 T will carry on board a SOPEP in accordance with MARPOL 73/78 Annex I – Prevention of Oil Pollution.	(MC 14.1.1) OVIS report / ABU Marine OE Inspection Checklist confirms an approved SOPEP is on board marine vessels >400 T.
		(MC 14.1.2) Records show drills conducted in accordance with SOPEP.
	(EPO 14.2) SOPEP In the event of a vessel-based spill event, emergency response activities will be implemented in accordance with the vessel SOPEP (or equivalent).	(MC 14.2.1) Records confirm that emergency response activities were implemented in accordance with the vessel SOPEP in the event of a vessel-based spill.
	(EPO 14.3) OPEP In the event of a Level 2 (or above) oil spill occurring to marine or coastal waters, response activities are implemented in accordance with the *ABU Consolidated OPEP*.	(MC 14.3.1) Records confirm the OPEP has been activated and response activities implemented.
	(EPO 14.4) OPEP CAPL will maintain the following minimum preparedness capability for the duration of the petroleum activity: • number and type of response packages as identified in Table 7-19 (vessel collision event).	(MC 14.4.1) Records confirm that CAPL has arrangements in place to access the minimum number and type of responses packages before the petroleum activity commences.

Unplanned release—vessel collision event		
	(EPO 14.5) OPEP – Oil Spill Response Organisation (OSRO) Capability Arrangements CAPL shall maintain service agreements with oil spill response organisations (as per Section 8.3.9.7.3) that have capabilities to support a response to an oil spill event for the duration of the petroleum activity.	Records confirm that service agreements are in place before, and for the duration of, the petroleum activity.
	(EPO 14.6) OPEP—Mutual Aid Capability Arrangements CAPL shall maintain membership to mutual aid frameworks (as per Section 8.3.9.7.4) that have capabilities to support a response to an oil spill event for the duration of the petroleum activity.	(MC 14.6.1) Records confirm that memberships to mutual aid frameworks agreements are in place before, and for the duration of, the petroleum activity.
	OPEP Refer to the *ABU Consolidated OPEP* for environmental performance outcomes, standards and measurement criteria related to emergency management, emergency preparedness, and each response tactic.	
	(EPS 14.7) OSMP In the event of a Level 2 (or above) oil spill to marine or coastal waters occurring, the OSMP will be activated, and: • Operational and Scientific monitoring programs are initiated[36] once the specific initiation criteria are met • Operational and Scientific monitoring programs are implemented within the timeframes outlined in the ABU OSMP • operational and scientific monitoring components are continued until respective termination criteria are met.	(MC 14.7.1) Records confirm the OSMP has been activated
		MC 14.7.2) Records confirm that once initial criteria have been met, operational and scientific monitoring programs were initiated.
		MC 14.7.3) Records confirm that operational and scientific monitoring programs were implemented within the timeframes outlined in the ABU OSMP
		(MC 14.7.4) Records confirm that once termination criteria have been met, operational and scientific monitoring programs were ceased.
	(EPS 14.8) OSMP Capability required to implement all operational and scientific monitoring programs are in place to meet the requirements outlined in the ABU OSMP.	(MC 14.8.1) Internal personnel capability is documented every six months in the *ABU OSMP Capability Register*.
		(MC 14.8.2) External contractors self-assess their capability against the requirements and provide a Statement of Personnel Capability and Readiness every 6 months.
		(MC 14.8.3) If any OSMP programs requiring vessels are activated, records demonstrate that CAPL EMT identified vessel availability through existing contracts within 12 hours of OMSP component initiation activation
		(MC 14.8.4) If any OSMP programs requiring aircraft are activated, records demonstrate that

[36] *As per Section 2.1 of the OSMP, for this plan initiation means starting preparation for implementation.*

Unplanned release—vessel collision event		
		CAPL EMT identified aircraft availability through existing contracts within 12 hours of OMSP component initiation activation
		(MC 14.8.5) Records show CAPL EMT mobilised a minimum of one identified, contracted vessel within 24 hours to Onslow, Dampier or Barrow Island (subject to Barrow Island quarantine requirements)
		(MC 14.8.6) Hydrocarbon characterisation sample kits are maintained at Barrow Island and Karratha

7.16 Unplanned release—well control event

7.16.1 Scenario

Drilling, well intervention and well abandonment activities introduce the potential for an unplanned release of gas and condensate. CAPL categorise well control into 2 categories:

- loss of well integrity—where integrity of the well has been compromised, but the well remains under control (which would prompt a Level 1 or Level 2 well control emergency response)
- loss of effective well control—where control of the well has been lost (which would require a Level 3 well control emergency response).

Well control events are a feasible risk during well drilling and completions, well abandonment or, intervention activities and have the potential to occur by:

- dropped objects onto the well envelope (potential damage to wellhead)
- mechanical failure (including failure of wellhead components or cement plugs)
- corrosion (corrosion leading to loss of casing integrity)
- loss of effective well control (including hydrocarbon influx or breach of well fluids to surface)
- loss of effective well control (unable to shear pipe in an emergency situation)
- loss of effective well control (loss of hydrostatic barrier)
- loss of station keeping (anchoring/mooring failure with potential damage to wellhead)
- operating error (such as incorrect operation of well control systems).

Risk controls in place during drilling, completions intervention and abandonment activities include (but are not limited to) design and construction of primary and secondary well integrity barriers, fluids programs, casing program, overall well design and pressure-control equipment (BOP). These are all supported by a myriad of Chevron global technical standards containing requirements related to well control.

Based upon the feasible risks identified during activities within scope of this EP (i.e. well drilling and completions, well abandonment, intervention activities), a loss of effective well control was deemed to present the worst-case credible spill scenario and has been used as the basis for the following risk assessment.

7.16.1.1 LOWC scenario justification

7.16.1.1.1 LOWC volume

A subsea release of 74,677.9 m^3 (469,710 bbl) of Gorgon condensate over a 90-day period was selected as the worst-case credible spill scenario for the well intervention and drilling activities. This scenario is considered as appropriate to inform the risk assessment for the following reasons:

- The modelled release location is one of the production wells (GOR-1A) referenced in this EP, described in Section 3.1.1. The Gorgon drill centre location was originally chosen as it is the closest to land and provides an appropriate indication of the scale of impact and types of receptors that may be affected should a LOWC occur at any well location within the Gorgon and Jansz OAs.
- GOR-1A has the highest worst credible discharge (WCD) rate and was defined based on a review of the inflow performance relationship for the 2 most productive Gorgon wells, GOR-1A and GOR-3C. GOR-3C has higher productivity but a lower reservoir pressure (due to increased depletion) while GOR-1A has the highest reservoir pressure but lower productivity. When combined with the relevant vertical lift performance curves, GOR-1A was found to give the highest WCD rate of 735 MMScf/d (Ref. 369). The corresponding condensate-gas ratio is 7.1 bbl/MMScf calculated based on the average reported year-end condensate volumes since start-up in 2016 (Ref. 370). These worst-case discharge parameters were used as inputs for spill modelling.

The worst-case discharge modelling was performed assuming these well flow characteristics:

- open hole across all flow zones
- no mechanical obstruction in the hole e.g. no pipe, tools, or debris to choke the flow
- no sand bridging of the wellbore, hydrates or washouts
- no BOP attached with full WCD fluid evacuation to mudline
- zero mechanical skin or geometric skin
- no reservoir depletion.

7.16.1.1.2 LOWC duration

The ~13-week (90 days) duration is considered to provide a maximum credible indication of a LOWC event. Response Time Models (RTMs) for Gorgon indicate it is reasonable to expect that the GOR-1A well could be killed within the ~13-week (90 days) maximum credible scenario modelled. Accordingly, it is reasonable to expect that any of the Gorgon or Jansz wells could be killed within the 13-week maximum credible scenario modelled. The RTMs take into account the preparation, assessment, and approval of the Safety Case revisions for the relief well rig and support vessels. Further details on the RTM are provided in the Development Well *Source Control Emergency Response Plan* (SCERP) (Ref. 171).

The SCERP (Ref. 171) structure was specifically developed to align with relevant industry guidance and standards, including Australian Petroleum Production and

Exploration Association (APPEA) Source Control Guideline (Ref. 371), IOGP Report 594 (Ref. 372) and NOPSEMA Information Paper (Ref. 373).

The SCERP contents satisfy the information recommendations in these industry documents and include topics such as a plume and dispersion study, capping stack landing analysis, capping stack selection, well to BOP to cap interface analysis, capping stack and ROV interfaces, capping stack mobilisation, and deployment planning, WCD calculation, relief well locations and designs, relief well dynamic well kill plan, relief well long lead inventory management, simultaneous operations (SIMOPS) planning, debris clearance plan, subsea dispersant operations and supply planning, source control Incident Management Team (IMT) arrangements and notifications, mutual aid arrangements via APPEA (now Australian Energy Producers [AEP]), wellhead structural integrity analysis, source control and Emergency Response Plan (ERP) training and drills, response vessels and tracking, and response time modelling for source control strategy.

The SCERP (Ref. 171) which contains all steps necessary to affect the direct intervention on a well that has experienced loss of well containment, with the intent to halt or control the release of hydrocarbons to the environment. The SCERP also provides information to align source control response expectations within the Wells function between the ABU and the Chevron Global Wells Source Control Team, based in Houston.

As per the SCERP and associated RTM, drilling of a relief well would be the primary source control option for the drilling. The detailed and well specific relief well planning will be contained in a Relief Well Plan.

In addition to the detailed Relief Well Plan, the SCERP summarises relief well rig specifications and arrangements for monitoring the availability of appropriate rig units. Due to the relatively shallow water depths (200–250 m), a moored semisubmersible rig is assumed for drilling a relief well. The rig mud pumps require the capability to pump at up to 99 Barrels Per Minute (BPM) with at least 15 ppg kill mud at up to 6,200 psi pump pressure. Other specifications to be evaluated include water depth capability, maximum hook load, BOP pressure rating and rig choke and kill line size will provide a limit on the kill rate that can be delivered.

CAPL Relief Well planning is based on internal company standard ABU Wells Worst Case Discharge Calculation and Relief Well Planning SOP (Ref. 374), and Chevron Business Unit Well Source Control Response Plan (Ref. 375) guideline. In addition, the content and strategy outlined in the OGUK Guidelines on Relief Well Planning for Offshore Wells (Ref. 376) was used in developing the internal standard and guidelines.

The key tasks associated with drilling a relief well (and incorporated into the RTMs) include:

- incident reporting and notifications, and activation of EMT
- source and contract vessel, and mobilise a capping stack from Singapore
- source and contract a relief well rig, rig suspends operations, prepare and mobilisation to site
- preparation, assessment, and approval of Safety Case revisions for the relief well rig and support vessels. Timing for the assessment and approval of the Safety Case revisions and WOMP is based on undertaking this concurrently with the relief well rig suspending operations, preparing, and mobilising to site.

Preference would be for a relief well rig that has a NOPSEMA-approved Safety Case in place

- transport equipment and materials ready for deployment
- position, drill well, intersect, and dynamically kill the well.

Relief well preparedness and preparation also involves a number aspects:

- CAPL has a number of specialist contractors and organisations available to support a response to a LOWC incident, including having contractual arrangements in place to access such services as required.
- CAPL has service agreements or memberships with Wild Well Control, Add Energy, Trendsetter, Haliburton, Oceaneering, Australian Marine Oil Spill Centre (AMOSC) Subsea First-response Toolkit (SFRT) and Oil Spill Response Limited (OSRL) Subsea Well Intervention Services (SWIS). Activation of these resources will occur upon authorisation by the Chevron IMT Incident Commander or delegate.
- CAPL tracks and assesses the availability and suitability of available MODUs through the OSRL Sea/Response vessel tracking software. MODUs expected to be located in Australia (with a Safety Case) or located in the region for the duration of the project are identified during the planning phase and immediately before spudding. The APPEA Memorandum of Understanding (MoU): Mutual Aid is also in place to enable access to rigs contracted by other titleholders for relief well drilling.
- Before commencing well operations, the availability of suitable wellhead equipment and sufficient casing for the relief well will be confirmed through the Chevron inventory management system and requirements detailed in the well-specific relief well plan. This inventory check extends to any items that would normally be considered long-lead items, including liner hanger systems if used in the well design. In many cases the relief well design will be similar to that of the incident well. This will either eliminate the need to purchase separate equipment tubular sizes, weights, grades and casing accessories for contingency purposes, or reduce the additional quantities required.
- As detailed in the Worst Case Discharge Calculation and Relief Well Planning SOP (Ref. 374), ABU maintains an active Relief Well Equipment list together with a Relief Well equipment management process to ensure equipment readiness, completeness and availability before commencing well operations.

7.16.2 Spill modelling

CAPL commissioned RPS to conduct spill modelling to inform the risk assessment associated with a loss of effective well control event (Ref. 158).

Two models were used as part of the spill modelling: OILMAP-DEEP was used to simulate the nearfield multiphase plume rise dynamics from the subsea release, and a three-dimensional oil spill model (SIMAP) was used to simulate the drift, spread, weathering and fate of the spilled oil (Ref. 158). Modelling was conducted using a stochastic approach, where multiple simulations (using the same spill parameters) were conducted, but under varying meteorological and oceanographic conditions.

Table 7-13 summarises the model settings; Table 7-14 summarises the hydrocarbon properties for Gorgon condensate; and Table 7-10 describes the modelled environmental exposure and impact thresholds respectively.

Table 7-13: Well control event spill scenario model settings

Parameter	Details
Release location	GOR-1A well
Latitude	20° 24′ 29.16″ S
Longitude	114° 50′ 55.96″ E
Water depth	217 m
Oil type	Gorgon condensate
Simulation spill type	Subsea
Simulation spill volume	74,677.9 m^3 (469,710 bbl)
Simulation spill duration	90 days
Total simulation duration	104 days
Number of randomly selected spill simulation start times	100 per season (300 total)
Seasons modelled	Summer (September to March) Transitional (April and August) Winter (May to July)

Table 7-14: Physical properties and boiling point ranges for Gorgon condensate

Characteristic	Value			
Density	848 kg/m^3 (at 15 °C)			
Dynamic viscosity	2.4 cP (at 20 °C)			
Pour point	−9 °C			
API gravity	35.3 API			
Classification	Group II, Light-persistent oil			
Boiling point	**Volatile <180 °C**	**Semi-volatile 180–265 °C**	**Low volatility 265–380 °C**	**Residual >380 °C**
% total	33.3%	28.5%	32.3%	5.9%

7.16.2.1 Weathering and fate

Gorgon condensate is light-persistent oil, with a density of 848 kg/m^3, an API of 35.3, and a low pour point (−9 °C) (Table 7-14). The low viscosity (2.4 cP) indicates that this oil will spread quickly when released and form a thin film on the sea surface, increasing the evaporation rate.

The Gorgon condensate is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi- to low-volatile components (Table 7-14). In favourable evaporation conditions, ~33.3.0% of the oil mass should evaporate within the first 12 hours, a further ~28.5% should evaporate within the first 24 hours, and a further ~32.3% should evaporate over several days. Approximately 5.9% of the oil is shown to be persistent (Table 7-14); this component will typically resist evaporation, persist in the marine environment for longer periods, and be subject to relatively slow degradation.

The whole oil has a low asphaltene content (<0.05%), indicating a very low propensity for the mixture to take up water to form water-in-oil emulsion over the weathering cycle (Ref. 213).

7.16.2.2 Modelling outputs

Stochastic modelling outputs from RPS (Ref. 158) are summarised in Table 7-15, Table 7-16 and Table 7-17 for floating oil exposure, water column exposure and shoreline accumulation respectively, having regard to the particular values and sensitivities identified in Section 4.

For the 74,677.9 m^3 subsea release of condensate at GOR-1A:

- the maximum distance from the release location to the ≥1 g/m^2, ≥10 g/m^2, and ≥50 g/m^2 floating oil exposure thresholds was 135.1 km south (summer), 34.5 km south-west (summer) and 3.4 km south-west (transitional and winter), respectively.
- a total of 8, 6 and 6 BIAs were predicted to be exposed to floating condensate at, or above, the low threshold during summer, transitional and winter, respectively. This includes the receptors that the release location resides within. The Montebello AMP was predicted to be exposed to floating oil at the low threshold with a probability of 2% during summer.
- The probability of accumulation on any shoreline at, or above, the low threshold (≥10 g/m^2) was greatest during summer at 21%, while the minimum time before shoreline accumulation was 5.08 days and the maximum volume of oil ashore was 46 m^3 (over the duration of the simulation). Oil accumulation on individual shoreline receptors at or above the moderate (>100 g/m^2) threshold was predicted for Serrurier Island, Exmouth, and DoT Shoreline Cells 126 and 326, with predicted probability at 3% or lower.
- In the surface (0–10 m) depth layer, a total of 41, 44 and 39 BIAs were predicted to be exposed to dissolved hydrocarbons at, or above, the low threshold (≥10 ppb) during summer, transitional and winter, respectively. Additionally, 7 AMPs and 8 IMCRAs were predicted to be exposed to dissolved hydrocarbons at, or above the low threshold during all seasons, while 12 (transitional) and 10 (summer) and 9 (winter) KEFs were predicted to be exposed to dissolved hydrocarbons at, or above the low threshold.
- In the surface (0–10 m) depth layer, a total of 42 BIAs were predicted to be exposed at, or above, the low threshold during summer, compared to 33 during both transitional and winter conditions. During all seasons, 7 AMPs were predicted to be exposed at, or above the low threshold. Additionally, 9 (summer), 7 (transitional) and 7 (winter) KEFs were predicted to be exposed to entrained hydrocarbons at, or above the low threshold.

Table 7-15: LOWC spill modelling EMBA receptor exposure summary for floating oil exposure

Sensitivity	Name	Surface^					
		≥1 g/m²	≥10 g/m²	≥1 g/m²	≥10 g/m²	≥1 g/m²	≥10 g/m²
		Probability of exposure		Minimum time to exposure (days)		Maximum residence time (days)	
AMP	Montebello	2%	-	66.79	-	0.17	-
KEF	Ancient coastline at 125 m depth contour*	98–100%	42–49%	0.46–1.17	0.83–3.67	2.2–3.2	0.46–0.58
	Continental slope demersal fish communities	100%	100%	0.04	0.04	76–81	41–55

** The release location resides within the receptor boundaries*

^ Ranges in probability values shown are due to the different results between seasons.

Table 7-16: LOWC spill modelling EMBA receptor exposure summary for water column oil exposure

Sensitivity	Name	In-water (dissolved)^			In-water (entrained)^		
		≥50 ppb			≥100 ppb		
		Probability of exposure	Min. time to exposure (days)	Max. residence time (days)	Probability of exposure	Min. time to exposure (days)	Max. residence time (days)
AMP	Abrolhos	2–4%	25–43	0.13	—	—	
	Argo-Rowley Terrace	2–15%	24–29	0.29	—	—	—
	Carnarvon Canyon	7%	15–23	0.13	—	—	—
	Gascoyne	90–97%	4–5	1.08	36–38%	4–6.5	4.42
	Montebello	30–40%	3–8	1.04	12–23%	6–29	6.42
	Ningaloo	60–84%	4–6	1.38	18–30%	6–17	3.96
	Shark Bay	11–23%	16–18	0.67	—	—	—
KEF	Ancient coastline at 125 m depth contour*	100%	0.25–0.5	4.79	100%	0.0.25–0.54	20.29
	Ancient coastline at 90–120 m depth	1%	40–84	—	—	—	—

Sensitivity	Name	In-water (dissolved)^			In-water (entrained)^		
		≥50 ppb			≥100 ppb		
		Probability of exposure	Min. time to exposure (days)	Max. residence time (days)	Probability of exposure	Min. time to exposure (days)	Max. residence time (days)
	Canyons linking the Argo Abyssal Plain with the Scott Plateau	1%	61–84	—	—	—	—
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	94–97%	3–4	1.13	17–44%	3–7	3.04
	Commonwealth marine environment surrounding the Houtman Abrolhos Islands	1%	68	—	—	—	—
	Commonwealth waters adjacent to Ningaloo Reef	60–84%	4–6	1.04	19–30%	6–12	3.96
	Continental slope demersal fish communities	100%	0.04	28.7	100%	0.04	72.71
	Exmouth Plateau	69–91%	4–5	1	30–32%	4–8	4.42
	Glomar Shoals	3%	15–82	0.38	1%	16.88	0.08
	Perth Canyon and Adjacent shelf break, and other west coast canyons	1–2%	24–36	0.04	—	—	—
	Wallaby Saddle	3%	43–74	—	—	—	—
	Western demersal slope and associated fish communities	5–12%	17–27	0.21			—
World Heritage Properties / National Heritage Places	The Ningaloo Coast *(inferred from the Ningaloo Coast World Heritage Area Impact Assessment Area (IAA))*	60–84%	4–6	1.92	18–30%	6–16	0.96
Commonwealth Heritage Properties	Ningaloo Marine Area – Commonwealth Waters *(inferred from Ningaloo IMCRA)*	82–92%	3–4	1.92	17–23%	5–8	7.58

** The release location resides within the receptor boundaries*

^ Ranges in probability values shown are due to the different results between seasons.

Table 7-17: LOWC spill modelling EMBA receptor exposure summary for shoreline accumulation of oil

Sensitivity	Name	Shoreline^					
		≥10 g/m²	≥100 g/m²	≥10 g/m²	≥100 g/m²	≥10 g/m²	≥100 g/m²
		probability of exposure		Min. time to exposure		mean length of shoreline	
World Heritage Properties / National Heritage Places	The Ningaloo Coast *(inferred from the Ningaloo Coast World Heritage Area IAA)*	16%	2%	6.67	85.88	15.4	7.58

^ *Ranges in probability values shown are due to the different results between seasons.*

7.16.3 Risk assessment

Unplanned release—well control event

Source

Activities identified as having the potential to result in a loss of effective well control event are:

- drilling, well intervention and/or well abandonment activities—unplanned hydrocarbon influx, breach of well fluids, or loss of hydrostatic barrier.

Potential impacts and risks

Impacts	C	Risks	C
N/A	-	The potential environmental impacts associated with hydrocarbon exposures from a well control event are:	
		• marine pollution resulting in sublethal or lethal effects to marine fauna	4
		• marine pollution resulting sublethal or lethal effects to subtidal or intertidal habitats	5
		• indirect impacts to commercial fisheries	4
		• reduction in amenity resulting in impacts to tourism and recreation • changes to cultural heritage values	3 4
		• changes to values and sensitivities of Australian Marine Parks	4

Consequence evaluation

Marine pollution resulting in sublethal or lethal effects to marine fauna

Marine mammals

Marine mammals may be exposed to hydrocarbons from an oil spill at the water surface or within the water column. Marine mammals can be exposed to oil, externally (e.g. swimming through surface slick) or internally (e.g. swallowing the oil, consuming oil-affected prey, or inhaling of volatile oil related compounds). The highest likelihood of exposure occurs when the mammal surfaces to breathe (Ref 162).

Marine mammals that have direct physical contact with surface, entrained or dissolved aromatic hydrocarbons may suffer surface fouling, ingestion of hydrocarbons (including from prey, water and sediments), aspiration of oily water or droplets and inhalation of evaporated volatiles. This may result in skin lesions, irritation of sensitive membranes such as the eyes, mouth, digestive and respiratory tracts and organs, impairment of the immune system, neurological damage, reproductive failure, adverse health effects (e.g. lung disease, poor body condition) and, potentially, death (Ref. 134; Ref. 328; Ref. 329).

The effect of oil on cetacean skin is probably minor and temporary (Ref. 134) due to the skin's effectiveness as a barrier. However, it was observed that existing skin lesions, cuts, or abrasions could allow oil to be absorbed more readily into the bloodstream (Ref. 329). French-McCay (Ref. 135) identifies that a ≥10 g/m^2 oil thickness threshold has the potential to impart a lethal dose to the species; however, also estimates a probability of 0.1% mortality to cetaceans if they encounter these thresholds based on the proportion of the time spent at surface.

The physical impacts from ingested hydrocarbons with subsequent lethal or sublethal impacts are possible; however, the susceptibility of cetaceans varies with feeding habits. Baleen whales may be susceptible to ingestion of oil in the water column as they lung feed (i.e. opening their mouths from well below the surface to the surface). Toothed whales and dolphins may be susceptible to ingestion of dissolved and entrained oil as they gulp feed at depth. However, significant feeding during migration is not expected (although opportunistic feeding may occur). As highly mobile species, in general it is not expected that these animals will be constantly exposed to concentrations of hydrocarbons in the water column for continuous durations (e.g. >48–96 hours) that would lead to chronic effects.

The most immediate threat to cetaceans is inhalation of toxic fumes, especially near the source of a fresh oil spill (Ref. 332). Because volatile toxic vapours disperse relatively quickly (Ref. 328), for the short period that they persist, vapours from a spill are a significant risk to mammal health, with the potential to damage mucous membranes of the airways and the eyes, which will reduce the health and potential survivability of an animal. Inhaled volatile hydrocarbons are transferred rapidly to the bloodstream and may also accumulate in tissues (Ref. 134). Therefore, due to weathering effects on oil spills, the area where potential impacts from physical contact with surface slicks and inhalation of contaminated air may occur would be localised around the release location. The findings of the review of DWH oil spill impacts (Ref. 329) determined cetaceans were most likely exposed to DWH oil via inhalation of contaminated air and/or aspiration of liquid oil. These routes of exposure

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are consistent with the types of adverse health effects documented in living and dead, stranded dolphins (effects on the lungs). Given the characteristics of the crude oil, the physical extent and duration of the DWH spill, the event and impacts are considered extreme, in comparison with potential condensate spills from the Activity.

Marine mammal behavioural disturbance (i.e. avoiding spilled hydrocarbons) was identified in some instances for several species of cetacean, suggesting that cetaceans are able to detect and avoid surface slicks (Ref. 134). However, detection seems to depend on oil thickness and colour during experiments in captivity and observations in the wild (Ref. 330). Observations during oil spill events (Deepwater Horizon (DWH) and the Mega Borg oil spills) have recorded whales and dolphins travelling through and feeding in oil slicks. (Ref. 329; Ref. 330; Ref. 331), Research indicates dolphins can detect and avoid emulsified oil, detect and enter oil slicks, and not detect thin oil sheens (Ref. 329; Ref. 331).

The smooth skin surface of cetaceans was believed to exclude oil adhering to the skin, but during the DWH spill, bottle nose dolphins were observed with oil adhered to the skin, which can result in skin lesions from prolonged exposure (Ref. 331). On review of the impacts from the DWH spill it was determined that exposure to DWH-related petroleum products caused a suite of adverse health effects, including lung disease, adrenal disease, reproductive failure, death, and poor body condition, in bottlenose dolphins (Ref. 329). However, given the physical and temporal extent of the DWH spill, and the nature of the crude oil, adherence to the skin by condensate may be considered less likely based on the hydrocarbon properties and the spatial and temporal nature of the scenario.

A review of the impacts of large-scale hydrocarbon spills on cetaceans, found that exposure to oil from the DWH oil spill resulted in increased mortality to cetaceans (Ref. 329; Ref. 331). In general, refined petroleum products tend to be more toxic to organisms but less persistent in the environment. Crude oils and heavy fuel oils like bunker fuels tend to be less toxic but are more persistent and more likely to have physical impacts on wildlife (Ref. 138). Given the light-persistent (Gorgon) and non-persistent (Jansz) nature of the condensates from a well control event from this activity (compared with heavy crude oil from the DWH spill, see hydrocarbon characteristics, Section 7.15.1 – Spill Scenario), and as there are no known aggregation areas or BIAs for dolphins or whales within either OA, such exposure impacts to cetaceans are less likely.

There is a paucity of studies examining the effects of hydrocarbon spills on dugongs, although the direct impacts of exposure to hydrocarbons may be similar to cetaceans. Like cetaceans, dugongs are expected to be resilient to direct impacts due to their thick skin and blubber. If surfacing in a slick, the Dugongs may foul their sensory hairs (around their mouths) or their eyes; these could lead to inflammation/infections that then affect their ability to feed or breed (Ref. 138). Dugongs may also ingest oil (directly, or indirectly via oil-affected seagrass), and depending on the amount and type of oil, the effects could be short-term to long-term/chronic (e.g. organ damage). However, it is noted that reports on oil pollution damage to Dugongs is rare (Ref. 275). A hydrocarbon spill may impact coastal cetaceans through site displacement and damage to food source, however, Taylor and Rasheed (2011) found that seagrass meadows are not significantly affected by an oil spill when compared to non-impacted, reference seagrass meadow. Due to the non-persistent nature of the hydrocarbon it is not predicted to result in impacts on overall population viability of either dugongs or coastal cetaceans.

The evaluation of likely spill scenario from this activity and potential consequences of marine mammals' exposure to hydrocarbons is assessed below.

As identified in Section 4.3.3.1, several marine mammal species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the EMBA. The following BIAs intersect the EMBA:

- Humpback Whale (migration, resting)
- Pygmy Blue Whale (distribution, migration, foraging)
- Dugongs (breeding, calving, foraging, nursing).

As these species are considered most sensitive to surface exposures, deterministic analysis for the largest sea surface swept area was used to understand the potential extent and duration of exposure.

The deterministic analysis for the for the largest sea surface swept area above the moderate (impact) threshold indicates that surface hydrocarbon concentrations ≥10 g/m^2 peak at a maximum area of coverage of ~20 km^2 occurring ~62 days after the spill commenced. This deterministic scenario is considered most relevant for offshore waters, and subsequent impacts to offshore BIAs in those regions. Using the Pygmy Blue Whale migration BIA as an example, modelling indicates that the extent of surface exposures was predicted to be limited to <0.01% of the entire BIA.

The deterministic model for the largest area of entrained hydrocarbon indicates that entrained hydrocarbon concentrations ≥100 ppb are present for ~100 days following the spill event, with a maximum area of coverage of ~1000 km^2 occurring ~38 days after the spill commenced. This deterministic scenario is considered most relevant for offshore waters, and subsequent impacts to offshore BIAs in those regions. Again, using the Pygmy Blue Whale migration BIA as an example, modelling indicates that the extent of entrained exposures was predicted to be limited to <0.05% of the entire BIA. Based on an assessment of the predicted magnitude

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and duration of surface and entrained oil, it is expected that only a small proportion of any marine mammal population would be exposed above the defined impact exposure thresholds. Therefore, the potential of oil to cause sublethal or lethal effects was ranked as Moderate (4) and Minor (5), respectively.

Reptiles

Marine reptiles may be exposed to hydrocarbons from an oil spill at the water surface or on the shoreline. Marine reptiles can be exposed to oil externally (e.g. swimming through surface slick) or internally (e.g. swallowing the oil, consuming oil-affected prey, or inhaling of volatile oil related compounds) (Ref. 137).

Marine turtles are vulnerable to the effects of oil at all life stages: eggs, hatchlings, juveniles, and adults. Several aspects of turtle biology and behaviour place them at risk, including a lack of avoidance behaviour, indiscriminate feeding in convergence zones, and large pre-dive inhalations (Ref. 137; Ref. 138). Oil effects on turtles can include impacts to the skin, blood, digestive, and immune systems, and increased deaths due to oiling.

Shoreline hydrocarbons can impact turtles coming ashore at nesting beaches. Eggs may also be exposed during incubation, potentially resulting in increased egg deaths and detrimental effects on hatchlings. Hatchlings may be particularly vulnerable to toxicity and smothering as they emerge from the nests and make their way over the intertidal area to the water (Ref. 137).

As identified in Section 4.3.3.2, several reptile species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the EMBA. The following BIAs intersect the EMBA:

- Flatback Turtle
- Loggerhead Turtle
- Green Turtle
- Hawksbill Turtle

The behaviours associated with these BIAs include aggregation, basking, foraging, internesting, mating, and nesting (Table 4-9), and may be exposed to hydrocarbon concentrations greater than the impact thresholds within the EMBA.

Stochastic modelling of the Gorgon LOWC scenario indicated that Serrurier Island had the highest probability of being exposed to shoreline hydrocarbons accumulation at the impact threshold (≥100 g/m^2), with a probability of occurrence being 3% during summer.

The deterministic model for the longest length of shoreline accumulation area above ≥100 g/m^2 predicted a peak volume of oil ashore as 22 m^3 (most of which was at thresholds below ≥100 g/m^2) and the maximum length of shoreline exposed to thresholds of ≥100 g/m^2 was ~5 km occurring ~61 days after the spill commenced. Serrurier Island, and other inshore Pilbara islands are identified as habitat critical to the survival of Flatback, Green and Hawksbill. As such, nesting adult turtles and hatchlings may be exposed as they traverse the intertidal area, resulting in potential smothering and acute impacts to some hatchlings during that nesting season.

The deterministic analysis for the largest sea surface swept area above the moderate (impact) threshold indicates that surface hydrocarbon concentrations ≥10 g/m^2 peak at a maximum area of coverage of ~20 km^2 occurring ~62 days after the spill commenced. Using the Flatback Turtle internesting buffer BIA around Montebello Island as an example, modelling indicates that the extent of surface exposures was predicted to be limited to <1% of the entire BIA. This information indicates that if a spill event occurred during the nesting season, it is not expected to impact entire local nesting populations.

The EPBC threatened Short-nosed Seasnake and Leaf-scaled Seasnake, and other EPBC marine listed seasnake species, may be present within the Hydrocarbon EMBAs. Oil pollution has been identified as a pressure 'of potential concern' (Ref. 311) to seasnakes[37]. Sea snakes are susceptible to oil on the sea surface (Ref. 311; Ref.312; Ref. 313). Being air breathers and obligate bottom feeders, oil may be either inhaled or ingested (Ref. 311; Ref. 314). As described above, surface oil exposure above impact thresholds are predicted to be only be present over a relatively small (maximum ~20 km^2) area. Any exposure to benthic habitats is only predicted to occur within nearshore (<20 m water depth) areas. Using the shoreline exposure described above as indicative of oil presence in a nearshore environment, the duration and extent of exposure from a single spill event is predicted to be limited.

Based on an assessment of the predicted magnitude and duration of surface oil, it is expected that only a small proportion of any marine reptile population would be exposed above the defined impact thresholds. Therefore, the potential impacts of oil to cause sublethal or lethal effects was ranked as Moderate (4) and Minor (5), respectively.

[37] *The pressure analysis distinguished between oil pollution from shipping ('of less concern') and oil rigs ('of potential concern') (Ref. 311). Although the aspect source for this risk assessment is a spill from a vessel, the higher pressure concern has been adopted*

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Fishes, including sharks and rays

Fish, including sharks and rays, may be exposed to hydrocarbons from an oil spill within the water column. Most fish do not break the sea surface, and therefore the risk from surface oil is not relevant; however, some shark species (including Whale Sharks) feed in surface waters (Ref. 168), so there is also the potential for surface hydrocarbons to be ingested. Such species are expected to have higher sensitivity to exposures of entrained oil.

Potential effects include damage to the liver and lining of the stomach and intestine, and toxic effects on embryos (Ref. 139). Fish are most vulnerable to oil during embryonic, larval and juvenile life stages. However, very few studies have demonstrated increased deaths of fish as a result of oil spills (Ref. 140; Ref. 141; Ref. 142).

Demersal fish are not expected to be impacted given the presence of entrained oil ≥100 ppb is predicted in the surface layers (<10 m water depth) only.

Pelagic free-swimming fish and sharks are unlikely to suffer long-term damage from oil spill exposure because dissolved/entrained hydrocarbons are typically insufficient to cause harm (Ref. 143). Pelagic species are also generally highly mobile and as such are not expected to suffer extended exposure (e.g. >48–96 hours) at concentrations that would lead to chronic effects due to their patterns of movement. Near the sea surface, fish can detect and avoid contact with surface slicks meaning fish deaths rarely occur in the event of a hydrocarbon spill in open waters (Ref. 144). Fish exposed to dissolved hydrocarbons can eliminate the toxicants once placed in clean water; hence, individuals exposed to a spill would recover (Ref. 145). Marine fauna with gill-based respiratory systems, including Whale Sharks, are expected to have higher sensitivity to exposures of entrained oil.

As identified in Section 4.3.3.3, several fish species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the EMBA. The following BIAs intersect the EMBA:

- Whale Shark (foraging).

As Whale Sharks are considered most sensitive to surface exposures, deterministic analyses were used to understand the potential extent and duration of exposure.

The deterministic analysis for the for the largest sea surface swept above the moderate (impact) threshold indicates that surface hydrocarbons concentrations ≥10 g/m^2 peak at a maximum area of coverage of ~20 km^2 occurring ~62 days after the spill commenced. Using the Whale Shark foraging BIA as an example, modelling indicates that the extent of entrained exposures was predicted to be limited to <1% of the entire BIA.

As fish species are also sensitive to entrained hydrocarbon exposures, deterministic analysis for the largest area of entrained hydrocarbon were analysed. The deterministic model for the largest area of entrained hydrocarbon indicates that entrained hydrocarbons concentrations at the impact threshold (≥100 ppb) are present for ~100 days following the spill event, with a maximum area of coverage of ~1000 km^2 occurring ~38 days after the spill commenced. This deterministic scenario is considered most relevant for offshore waters, and subsequent impacts to offshore BIAs in those regions. Using the Whale Shark foraging BIA as an example, modelling indicates that the extent of entrained exposures was predicted to be limited to <0.05% of the entire BIA.

Based on an assessment of the predicted magnitude and duration of surface oil, and both instantaneous and time-integrated entrained oil, it is expected that only a small proportion of any fish population would be exposed above the defined impact thresholds. Therefore, the potential impacts of oil to cause sublethal or lethal effects was ranked as Moderate (4) and Minor (5), respectively.

Seabirds and shorebirds

Birds may be exposed to hydrocarbons from an oil spill at the water surface (e.g. foraging, resting) or on the shoreline (e.g. roosting, nesting).

Birds that rest at the water's surface (e.g. shearwaters) or surface-plunging birds (e.g. terns, boobies) are particularly vulnerable to surface hydrocarbons (Ref. 134; Ref. 146). Damage to external tissues, including skin and eyes, can occur, along with internal tissue irritation in lungs and stomachs (Ref. 147). Acute and chronic toxic effects may result where the product is ingested as the bird attempts to preen its feathers (Ref. 147).

As identified in Section 4.3.4, several bird species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the EMBA. The following BIAs intersect the EMBA:

- Fairy Tern, Lesser Crested Tern, Roseate Tern, Wedge-tailed Shearwater, and White-tailed Tropicbird (breeding)
- Bridled Tern, Little Shearwater, White-faced Storm Petrel, Wedge-tailed Shearwater (foraging in high numbers), Sooty tern (foraging), Roseate Tern (foraging – provisioning young)

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Stochastic modelling of the Gorgon LOWC scenario indicated that Serrurier Island had the highest probability of being exposed to shoreline hydrocarbons accumulation at the impact threshold (≥100 g/m^2), with a probability of occurrence being 3% during summer. The deterministic model for the longest length of shoreline accumulation area above ≥100 g/m^2 predicted a peak volume of oil ashore as 22 m^3 (most of which was at thresholds below ≥100 g/m^2) and the maximum length of shoreline exposed to thresholds of ≥100 g/m^2 was ~5 km occurring ~61 days after the spill commenced. The deterministic analysis for the largest sea surface swept above the moderate (impact) threshold indicates that surface hydrocarbons concentrations ≥10 g/m^2 peak at a maximum area of coverage of ~20 km^2 occurring ~62 days after the spill commenced. Using the Wedge-tailed Shearwater breeding BIA as an example, modelling indicates that the extent of surface exposures was predicted to be limited to <0.01% of the Wedge-tailed Shearwater breeding BIA within the EMBA. This information indicates that if a spill event occurred during the breeding season, it is not expected to impact entire local populations. Based on an assessment of the predicted magnitude and duration of surface oil, it is expected that only a small proportion of any seabird population would be exposed above the defined impact thresholds. Therefore, the potential impacts of oil to cause sublethal or lethal effects was ranked as Moderate (4) and Minor (5), respectively.
Smothering of subtidal and intertidal habitats *Offshore benthic habitats (e.g. coral, sponges, seagrass, macroalgae)* The effects of physical contact on subtidal habitats are similar, and studies have shown that it can cause sublethal stress and reduced growth rates in seagrass (Ref. 148; Ref. 149), act as a barrier to diffusion of CO_2 across cell walls in macroalgae (Ref. 150), and a decline in metabolic rate and partial death in corals (Ref. 151; Ref. 152) and impair respiration and photosynthesis by symbiotic zooxanthellae (Ref. 153; Ref. 154). The recovery of benthic habitats can be slow, with studies following the Deepwater Horizon incident showing long-term non-acute effects of the spill on coral colonies 7 years after the event (Ref. 155). Stochastic modelling predicted coral reefs associated with the following particular values or sensitivities within the Hydrocarbon EMBAs have the potential to be exposed to hydrocarbon concentrations above impact thresholds: • Ningaloo Coast (World Heritage Property, National Heritage Place). No surface exposure at the moderate (≥10 g/m^2 impact) threshold was predicted for any of the above coral reef areas (Table 7-15). Therefore, impacts from smothering within intertidal areas due to surface oil is not expected to occur. For assessment of other coral habitats that occur around some of the Pilbara islands (including Montebello Islands and Barrow Island), the deterministic analysis for the largest sea surface swept above the moderate (impact) threshold indicates that surface hydrocarbons concentrations ≥10 g/m^2 peak at a maximum area of coverage of ~20 km^2 occurring ~62 days after the spill commenced. However, the modelling did not predict surface exposure in nearshore areas, therefore impacts from smothering within intertidal areas due to surface oil are not expected to occur. The deterministic analysis for the largest area of entrained hydrocarbon indicates that entrained hydrocarbons concentrations ≥100 ppb peak at a maximum area of coverage of ~1,000 km^2 occurring ~38 days after the spill commenced. As such it is possible that exposure to benthic habitats from entrained hydrocarbons in shallow waters (<10 m) may occur. Stochastic modelling indicates that there is 30% probability (winter) of contact above entrained oil impact thresholds at the Ningaloo World Heritage Area with a maximum residence time of 3.5 days. Further to this stochastic modelling did not predict any contact to coastal waters around the Montebello Island or Barrow Island from entrained hydrocarbons above the impact threshold (>100 ppb). Based on an assessment of the predicted magnitude and duration of surface oil, and both instantaneous and time-integrated entrained oil, it is expected that only a small proportion of coral habitat of particular value and sensitivity would be exposed above the defined impact thresholds. Therefore, the potential impacts of oil to cause smothering was ranked as Minor (5).
Indirect impacts to commercial fisheries Stochastic modelling showed that dissolved oil above impact thresholds (≥50 ppb) and entrained oil above impact thresholds (≥100 ppb) was predicted to occur; however, was predicted to rise up in the surface layers, with no exposure at depths >20 m below the surface predicted to occur during any season. As identified in Section 4.4.1, several commercial fisheries have management areas and recent fishing effort recorded within the EMBA. Direct impacts commercially targeted fish species are expected to occur from in-water exposures. Although exposures above impact thresholds have the potential to affect the recruitment of targeted commercial and recreational fish species, any acute impacts are expected to be limited, given this event is

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singular and non-continuous. On this basis, recruitment of targeted species is not expected to be impacted significantly given the extent of exposure to concentrations above impact thresholds are expected to be limited due to rapid dilution and dispersion upon release. Spill events also have the potential to impact commercial fisheries through indirect impacts associated with tainting. Tainting is a change in the characteristic smell or flavour and renders the catch unfit for human consumption or sale due to public perception. Tainting may not be a permanent condition but will persist if the organisms are continuously exposed; but when exposure is terminated, depuration will quickly occur (Ref. 157). Although a LOWC scenario is an unlikely but possible event that has the potential to occur in a short-term (<90 days) period, the perception that tainting has occurred may cause a larger impact than the direct impact itself. Therefore, CAPL conservatively assesses the consequence to commercial fisheries as Minor (5).
Reduction in amenity resulting in impacts to tourism and recreation Modelling predicts shoreline exposure ≥10 g/m^2 (visible threshold) has the potential to occur along parts of Barrow and Montebello islands, several other Pilbara inshore islands and mainland coast areas including Exmouth and the Pilbara coast. Deterministic analysis for the largest volume of oil ashore indicates that shoreline hydrocarbons concentrations ≥10 g/m^2 are present within ~71 days following the spill event, with a peak volume ashore of ~20 m^3. Stochastic modelling also showed that the longest length of shoreline with exposure of ≥10 g/m^2 is ~59 km. Therefore, as the extent and duration of exposure to shorelines is expected to be limited the potential for environmental impacts would also be limited. Shoreline loading can impact the visual amenity of coastal areas and limit beach access for users, impacting tourism and recreation activities. There is limited access to Barrow and Montebello islands; however, there is more likelihood of tourism or recreational activities occurring on some of the smaller islands closer to the mainland. Due to the larger spatial extent of in-water exposure, indirect impacts may occur. As recreational fishing, and ecotourism activities occur within the Montebello Islands, changes to ecological receptors (such as the potential acute and chronic effects to marine fauna described previously) may indirectly impact tourism and recreation. As such, CAPL has ranked the consequence to tourism and recreation as Minor (5).
Marine pollution resulting in impacts to areas with heritage value Modelling predicts shoreline exposure ≥10 g/m^2 (visible impact threshold) has the potential to occur along parts of Barrow and Montebello islands, some Pilbara Inshore Islands, Muiron Islands and along the coast associated with the Cape Range National Park. As discussed in Section 4.6 there are heritage listed places or sites within the Hydrocarbon EMBA, including shipwrecks and the World and National heritage listed Ningaloo Coast, and Commonwealth listed Ningaloo marine area, Native Title determination areas, as well as several protected First Nation sites or artefacts along (or adjacent to) the coast of the North West Cape peninsula. At the time of writing this EP, CAPL understands that there is no First Nations archaeology known to exist within the offshore Commonwealth waters. However, CAPL acknowledge that there is a potential for artefacts and/or places of cultural value to be associated with areas of previously emergent land and/or coast to be present, such as the seabed within (and landward of) the ancient coastline at 125 m depth contour KEF. Similarly, the waters of the NWMR (and therefore the waters within the Hydrocarbon EMBAs) are acknowledged as potentially having some cultural and spiritual significance to First Nations as well as providing natural resources. Stochastic modelling did not predict interaction with seabed in offshore waters. Therefore, no impacts to seabed-based UCH (e.g. shipwrecks or archaeology), including First Nations UCH, are expected. As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. It is understood that the term ‘Country’ refers to more than just a geographical area, and includes values, places, resources, stories, and cultural obligations associated with that geographical area (Ref. 248; Ref. 349). Specific tangible values of Sea Country identified through literature and/or consultation include: • marine fauna (e.g. whales, dugongs, turtles) • offshore islands (e.g. Barrow Island) and parts of the mainland coast (e.g. Ningaloo Coast) • Biggada Creek on Barrow Island • marine resources (e.g. fish). The consequence evaluations to marine fauna (including fish) are provided above and were assessed as having a moderate environmental impact. Further, as described in the above evaluations, if an unplanned hydrocarbon (marine fuel) release did occur it is not expected to have an effect at population-levels.

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BTAC identified that the Thalanyji people have a deep connection to a number of the Pilbara inshore islands (Table 4-14). Depending on the environmental conditions at the time of the spill event, of the named islands within the Hydrocarbon EMBAs, Montebello and Barrow islands may be exposed to shoreline loading above the visible impact threshold (≥10 g/m^2).

Stochastic analysis of oil accumulation at concentrations ≥10 g/m^2 along the following coastlines indicates:

- Montebello Islands: The minimum time before shoreline hydrocarbons are present was 48.3 days following the spill event, with a maximum volume ashore of ~2.2 m^3 and a maximum length of 2.9 km of shoreline contacted.
- Barrow Islands Group: The minimum time before shoreline hydrocarbons are present was 5.1 days following the spill event, with a maximum volume ashore of ~7.4 m^3 and a maximum length of 10.8 km of shoreline contacted.
- Muiron Islands: The minimum time before shoreline hydrocarbons are present 7 days following the spill event, with a maximum volume ashore of ~2.6 m^3 and a maximum length of 2.9 km of shoreline contacted.
- Ningaloo Coast World Heritage Area: The minimum time before shoreline hydrocarbons are present is 6.7 days following the spill event, with a maximum volume ashore of ~18.8 m^3 and a maximum length of 15.4 km of shoreline contacted.

Therefore, as the extent and duration of exposure to shorelines is expected to be limited, and there is limited potential to intersect with a heritage site or disrupt significant activities.

Intangible cultural heritage refers to the “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognise as part of their cultural heritage” (Ref. 381). Specific intangible values of Sea Country identified through consultation included Dreamtime stories and songlines (Table 4-14). In particular, representatives from MCH identified the existence of songlines that go through Barrow Island and offshore (Table 4-14). Note: for further description of songlines and associated access and connection to Country, refer to the description provided previously in Section 7.2

Given the volume, type of oil (condensate) and predicted weathering, no prolonged impact pathway to a change in access to Country is anticipated. The consequence evaluations to marine fauna are provided above and were assessed as having a moderate environmental impact to a proportion of the population—if they are present within the area at the time of a spill. As such, it is anticipated that intangible heritage values such as songlines and connection to Country would not be significantly adversely affected in the long-term from an unplanned hydrocarbon (condensate) release within the OA.

Given the expected behaviour and weathering of the oil, limited spatial and temporal exposure, only a relatively small area is expected to be exposed due to a single spill event. However, it is acknowledged that the sea that may be exposed could represent important cultural values. Therefore, the potential impacts of oil to cultural heritage values was ranked as Moderate (4).

Changes to values and sensitivities of Australian Marine Parks

Stochastic modelling predicts a 2% probability of surface exposure at the low threshold (≥1 g/m^2) to the Montebello Islands Marine Park and no exposure at the impact threshold of ≥10 g/m^2. No other Australian Marine Parks were predicted to be contacted at any surface threshold.

At the moderate threshold, modelling predicted 27% (summer) probability of dissolved oil exposure within the Montebello Islands Marine Park, 40% (winter) probability within the Ningaloo Marine Park, 73% (summer) probability within the Gascoyne and 1-3% (all seasons) within the Shark Bay, Carnarvon Canyon and Argo-Rowley Terrace parks. The maximum residence time of dissolved oil at these thresholds (the maximum continuous amount of time that dissolved oil, at a specified threshold, occurs within a single model grid cell) was ~1.4 days for the Ningaloo Marine Park, and less than 1 day for all other marine parks.

At the high threshold (>100 ppb), modelling predicted a 23% (summer) probability of entrained oil exposure within the Montebello Islands Marine Park, 38% probability within the Gascoyne Marine Park, and 30% probability within the Ningaloo Marine Park. The maximum residence time of entrained oil at these thresholds (the maximum continuous amount of time that entrained oil, at a specified threshold, occurs within a single model grid cell) was ~6.5 days for the Montebello Islands Marine Park, ~3.6 days for the Gascoyne Marine Park and ~3.6 days for the Ningaloo Marine Park. No interaction with seabed was predicted to occur.

The natural values of the Australian Marine Park include species listed as threatened, migratory, marine, or cetacean under the EPBC Act, as well as any identified BIAs for regionally significant marine fauna. Social and economic values of the Montebello Marine Park include heritage values and commercial fishing.

The consequence evaluations to marine fauna, heritage and commercial fisheries are provided above.

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Given the expected behaviour and weathering of the oil, limited spatial and temporal exposure to marine fauna or commercial fish species above impact exposure thresholds, the potential impacts of a LOWC event to the values and sensitivities of the Montebello Marine Park has been ranked as Minor (5).
ALARP decision context justification
Drilling activities offshore is a well-practised nationally and internationally activity. The control measures to manage the risk associated with a loss of effective well control event are well defined via legislative requirements that are considered standard industry practice. These are well understood and implemented by the petroleum industry and CAPL. Specifically, CAPL has worked in the region for more than 10 years and has a demonstrated understanding of industry requirements and their operational implementation in these areas. The risks associated with a LOWC event are considered lower-order risks in accordance with Table 5-3. As such, CAPL would apply ALARP Decision Context A for this aspect.
Good practice control measures

Control measure	Description
Well Operations Management Plan (WOMP)	Under the OPGGS (Resource Management and Administration) Regulations 2011, NOPSEMA require that the petroleum activity have an accepted WOMP in place before commencing the activity. A WOMP ensures systems are in place to manage well integrity and well activities.
Blowout preventor	For these drilling activities, a BOP will be installed and tested in accordance with the WOMP.
WellSafe Standard Operational Procedure (WellSafe SOP)	CAPL's *WellSafe Standard Operational Procedure* (Ref. 169) is an assurance program used to certify that specified requirements have been met; this provides assurance that well control can be maintained at all times. Specifically, WellSafe requires: • rig/rigless certification • well design and plan certification • well execution certification
Equipment maintenance	Critical equipment will be identified (e.g. BOP) and maintained in accordance with manufacturers' specifications. Regular maintenance ensures the integrity of critical equipment is maintained, which ensures optimal performance and reduces the risk of failure.
EMT	An emergency management team (EMT) capable of managing a response to the worst-case discharge scenario described in this EP will be maintained.
SCERP	Source control is part of the first actions taken to minimise the volume of hydrocarbon released and therefore reduce potential impacts and risks to the environment. Key source control options for this LOWC event include relief well drilling (primary option) and capping stack (secondary option), covered in the SCERP (Ref. 171). Where applicable to the activities, the SCERP will address: • arrangements for providing Source Control EMT personnel (numbers, competency, capability for the duration of the response) • arrangements for providing equipment and supplies • arrangements for monitoring and tracking equipment and personnel • activation and mobilisation plans, including activation and expenditure authority and regulatory approval processes • logistics plans and providers • well kill and shut-in plans.
Relief well specialist contractors	CAPL will have contractual arrangements in place with number of specialist contractors and organisations available to support a response to a LOWC incident. These include service agreements or memberships with Wild Well Control, Add Energy, Trendsetter, Halliburton, Oceaneering, AMOSC (SFRT) and OSRL SWIS.

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Relief Well Plan	The ABU Worst Case Discharge Calculation and Relief Well Planning SOP (Ref. 374) provides detailed guidance on the planning and engineering required when planning for relief wells in the event of a LOWC incident. Specific relief well plans are prepared for each well activity, and will include the following aspects in the design of the well: • blowout modelling and dynamic well kill analysis • selection of surface relief well location • wellbore ranging and survey uncertainty requirements • relief well trajectory planning • relief well casing design • equipment availability and contingency services contract arrangements • kill rate limitations.
Relief Well Equipment List	As detailed in the ABU Worst Case Discharge Calculation and Relief Well Planning SOP (Ref. 374) ABU maintains an active Relief Well Equipment List to ensure equipment readiness, completeness and availability prior to well operations. Before commencing exploration drilling, the availability of suitable wellhead equipment and sufficient casing for the relief well will be confirmed through the Chevron inventory management system. This inventory check extends to any items that would normally be considered long-lead items (e.g. liner hanger systems if used in the well design).
Relief Well Rig Availability	CAPL tracks and assesses the availability and suitability of available relief well drilling rigs through the OSRL sea/response vessel tracking software. At the time of writing this EP, suitable drilling rigs are expected to be on, or within the vicinity of, the North West Shelf for the duration of the exploration drilling campaign. The AEP Memorandum of Understanding (MoU) Mutual Aid framework (see Section 8.3.9.6 for further description) is also in place to enable access to rigs contracted by other titleholders for relief well drilling.
OPEP	Under the OPGGS(E)R, NOPSEMA require that the petroleum activity have an accepted OPEP in place before commencing the activity. Should a LOWC scenario occur, the OPEP will be implemented. CAPL has developed a NOPSEMA-accepted OPEP (Ref. 1) to support all spill response activities across all its assets.
OSMP	The OSMP details the arrangements and capability in place for operational and scientific monitoring. Operational monitoring collects information about the oil spill to aid planning and decision-making for executing spill response or clean-up operations. Scientific monitoring focuses on the environmental impact attributable to the spill or the associated response activities and informs requirements for remediation (if required). CAPL has developed a NOPSEMA-accepted OSMP (Ref. 2) to support all spill monitoring activities across all its assets.
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).

Additional control measures and cost–benefit analysis		
Control measure	**Benefit**	**Cost**
Mobilisation and deployment of OSRL Offset Installation Equipment to aid in	To allow for capping stack deployment vessel(s) to stay outside the zone in which it may be unsafe to operate due	**Rejected** As per the Offshore installation Equipment (OIE) Tech Memo (Ref. 377), CAPL have determined that using the OSRL OIE is not appropriate for the

<table>
<tr><th colspan="3">Unplanned release—well control event</th></tr>
<tr><td>the installation of a capping stack</td><td>to hydrocarbons present at the sea surface (i.e. an exclusion zone).</td><td>activities identified in the SCERP (Ref 171). CAPL's primary response plan to a loss of well containment for a shallow subsea well (<600 m water depth) would be to drill a relief well(s) and perform a dynamic well kill.</td></tr>
<tr><td>Use of a Capping Stack in all LOWC incidents</td><td>Reduction of time required to isolate a hydrocarbon source in a LOWC incident</td><td>Rejected
An unrestricted loss of containment on a Gorgon well would likely result in a significant gas plume at surface based on computational fluid dynamics modelling. The associated explosive limits of the diffused gas would likely preclude the running of a capping stack from directly over the wellhead and in these circumstances CAPL's primary response plan to a loss of well containment would be to vent gas (with or without surface flaring) until a relief well(s) can be drilled.</td></tr>
<tr><td>Second contracted MODU stationed in the execution area solely for the need of relief well drilling</td><td>Reduction of response time for drilling a relief well and performing a dynamic well kill</td><td>Rejected
Significant costs and limited rig availability deem a second MODU for the sole purpose of drilling a relief well unfeasible. The low likelihood of a LOWC incident further supports this.</td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">The blowout frequencies data from IOGP (Ref. 170) was used to evaluate the likelihood of a LOWC scenario (blowout of an appraisal well), which was determined to be equivalent to 1.5×10^{-4} per drilled well.
Due to the low probability of a LOWC event, and the control measures in place, the likelihood of the worst-case environmental consequence occurring as described above was assessed as Remote (5).</td></tr>
<tr><td>Risk level</td><td colspan="2">Low (8)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential risks associated with this aspect would be short-term, apply to some individuals, and consequently is not expected to affect biological diversity and ecological integrity.
The highest consequence associated with this aspect is Moderate (4), and subsequently the potential for serious or irreversible environmental damage is not expected.
Therefore, further evaluation against the remaining Principles of ESD is required.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements relevant for this aspect include:
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 50)
Conservation Advice Balaenoptera borealis Sei Whale (Ref. 49)
Conservation Advice Balaenoptera physalus Fin Whale (Ref. 48)
Conservation Advice Rhincodon typus Whale Shark (Ref. 47)
Recovery Plan for Marine Turtles in Australia (Ref. 46)
Approved Conservation Advice for Aipysurus apraefrontalis (Short-nosed Sea Snake) (Ref. 315)
Approved Conservation Advice for Aipysurus foliosquama (Leaf-scaled Sea Snake) (Ref. 316)
North-west Marine Parks Network Management Plan (Ref. 256).
<table>
<tr><th>Requirement</th><th>Demonstration</th></tr>
<tr><td>Conservation Management Plan for the Blue Whale 2015–2025</td><td>N/A</td></tr>
</table></td></tr>
</table>

Unplanned release—well control event		
	No specific management action identified.	
	Conservation Advice Balaenoptera borealis Sei Whale No specific conservation action identified.	N/A
	Conservation Advice Balaenoptera physalus Fin Whale No specific conservation action identified.	N/A
	Conservation Advice Rhincodon typus Whale Shark No specific conservation action identified.	Assessment of spill risk strategies is within scope of the OPEP (Ref. 1). Response and recovery of habitats and marine fauna is within the scope of the OSMP (Ref. 2). Therefore, this activity is not considered to be inconsistent with the *Recovery Plan for Marine Turtles in Australia*.
	Recovery Plan for Marine Turtles in Australia Management action A4.2: Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in reference to 'slow to recover habitats', e.g. nesting habitat, seagrass meadows or coral reefs	N/A
	Approved Conservation Advice for Aipysurus apraefrontalis (Short-nosed Sea Snake) No specific conservation action identified.	N/A
	Approved Conservation Advice for Aipysurus foliosquama (Leaf-scaled Sea Snake) No specific conservation action identified.	N/A
	North-west Marine Parks Network Management Plan The Plan requires that 'actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with mining operations authorised under the OPGGS Act may be conducted in all zones. The Director should be notified in the event of an oil pollution incident that occurs within, or may impact upon, an Australian Marine Park and, so far as reasonably practicable, prior to a response action being taken within a marine park.'	The Montebello Marine Park is a multiple use zone (IUCN VI). The control measures identified for managing an unplanned release provide for the response to, and environmental monitoring and remediation of, an oil pollution incident. Requirements to report oil pollution incidents that occur within, or may impact upon, an AMP is included in Section 8.4.2. Therefore, this activity is not considered to be inconsistent with the *North-west Marine Parks Network Management Plan*.
Internal context	These CAPL management processes or procedures were deemed relevant for this aspect: • WOMP (Ref. 6)	

<table>
<tr><th colspan="4">Unplanned release—well control event</th></tr>
<tr><td></td><td colspan="3">• WellSafe Standard Operational Procedure (Ref. 170)
• OPEP (Ref. 1)
• OSMP (Ref. 2)
• SCERP (Ref. 171).</td></tr>
<tr><td>External context</td><td colspan="3">During relevant persons consultation, no objections or claims were raised regarding well control events arising from the activity.</td></tr>
<tr><td>Defined acceptable level</td><td colspan="3">These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential impacts and risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.
However, in alignment with Section 5.6.2, where the aspect is listed as threat to a protected matter or identified as a concern to a listed conservation value, CAPL will define an acceptable level of impact that aligns with the objectives of these documents.
Objectives of the relevant documents are shown below:
<table>
<tr><th>Plan</th><th>Objective</th></tr>
<tr><td>Conservation Management Plan for the Blue Whale 2015–2025</td><td>Recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 4 Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td>Recovery Plan for Marine Turtles in Australia</td><td>Recovery objective: The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 3: Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td>North-west Marine Parks Network Management Plan 2018</td><td>As per Section 4.5.1.</td></tr>
</table>
Therefore, CAPL has defined the following acceptable levels of impact such that it is consistent with these documents:
• no injury or death to Pygmy Blue Whales or marine turtles such that it would prevent the long-term recovery of the species
• no adverse change to the values of the Australian Marine Parks.
CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the unplanned release, that the risk to marine fauna and/or values of the AMPs are also subsequently managed.</td></tr>
<tr><th>Environmental performance outcome</th><th>Environmental performance standard</th><th>Measurement criteria</th></tr>
<tr><td rowspan="2">EPO 13) No unplanned release of hydrocarbons or hazardous materials to the environment</td><td>(EPS 13.4) WOMP
A NOPSEMA-accepted WOMP will be in place before activities commence.</td><td>(MC 13.4.1) Records confirm that a WOMP has been developed and accepted before activities commence.</td></tr>
<tr><td>(EPS 13.5) WOMP</td><td>(MC 13.5.1) Records confirm that risk controls are implemented in</td></tr>
</table>

Unplanned release—well control event		
during the petroleum activity.	Risk controls are in place to mitigate well control events during well construction activities.	accordance with the WOMP during well construction.
(EPO 2b) No adverse change to First Nations cultural heritage values from the petroleum activity..	**(EPS 13.6) WOMP** Primary and secondary barriers are in place to mitigate well integrity impacts during well suspension and abandonment activities.	(MC 13.6.1) Records confirm that primary and secondary barriers are in place in accordance with the WOMP during well suspension and abandonment.
	(EPS 13.7) BOP A blowout preventer will be installed, and tested during the drilling activities in accordance with the NOPSEMA-accepted WOMP.	(MC 13.7.1) Records confirm that a BOP was installed, and has been tested during the drilling activities in accordance with the NOPSEMA-accepted WOMP.
	(EPS 13.8) Wellsafe SOP—Exploration well The following certifications shall be in place before exploration drilling activities commence in accordance with CAPL's *Wellsafe Standard Operational Procedure:* • MODU/rig certification • Exploration well design and plan certification • well execution certification • Business Unit WellSafe certification.	(MC 13.8.1) Records confirm that MODU certification, well design and plan certification were verified before activities commenced.
	(EPS 11.1) Equipment maintenance Critical equipment will be maintained in accordance with manufacturers specifications.	(MC 11.1.1) Records confirm the BOP is maintained in accordance with manufacturer specifications.
	(EPS 2.2) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocol**.**	(MC 2.2.1) Relevant persons consultation records.
	(EPS 2.3) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) If new information on cultural values or features within the OA or EMBA is identified during ongoing consultation or relationship building, then any subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation**.**	(MC 2.3.1) As required, records show that the MoC process was undertaken in response to any new information on cultural values or features within the OA or EMBA.
(EPO 14) Reduce the risk of impacts to the environment from the unplanned release of hydrocarbons or hazardous materials during the petroleum activity.	**(EPS 14.3) OPEP** In the event of a Level 2 (or above) oil spill occurring to marine or coastal waters, response activities are implemented in accordance with the *ABU Consolidated OPEP*.	(MC 14.3.1) Records confirm the OPEP has been activated and response activities implemented.
	(EPS 14.4) OPEP CAPL will maintain the following minimum preparedness capability for the duration of the petroleum activity: • number and type of response packages as identified in Table 7-20 (LOWC event).	(MC 14.4.1) Records confirm that CAPL has arrangements in place to access the minimum number and type of responses packages before the petroleum activity commences.

Unplanned release—well control event		
	(EPS 14.5) OPEP – OSRO Capability Arrangements CAPL shall maintain service agreements with oil spill response organisations (as per Section 8.3.9.7.3) that have capabilities to support a response to an oil spill event for the duration of the petroleum activity.	Records confirm that service agreements are in place before, and for the duration of, the petroleum activity.
	(EPS 14.6) OPEP – Mutual Aid Capability Arrangements CAPL shall maintain membership to mutual aid frameworks (as per Section 8.3.9.7.4) that have capabilities to support a response to an oil spill event for the duration of the petroleum activity.	Records confirm that memberships to mutual aid frameworks agreements are in place before, and for the duration of, the petroleum activity.
	OPEP Refer to the *ABU Consolidated OPEP* for environmental performance outcomes, standards and measurement criteria related to emergency management, emergency preparedness, and each response tactic.	
	(EPS 14.9) SCERP CAPL will develop an activity-specific SCERP to manage source control for exploration drilling prior to the petroleum activity commencing.	(MC 14.9.1) Records confirm that an activity-specific SCERP was developed and in place prior to the petroleum activity commencing
	(EPS 14.10) SCERP In the event of a loss of well control, source control response tactics are implemented in accordance with the exploration drilling SCERP.	(MC 14.10.1) Records confirm the SCERP has been activated and source control activities implemented.
	(EPS 14.11) SCERP—Relief Well For the Gorgon field, a relief well will be drilled and the well intersected and dynamically killed within 90 days of the LOWC event commencing. For the Jansz field,, in the event a capping stack can not be installed (or fails) as the primary source control response strategy, a relief well will be drilled and the well intersected and dynamically killed within 90 days of the LOWC event commencing	(MC 14.11.1) Incident Log (or equivalent records).
	(EPS 14.12) SCERP—Subsea Dispersant Subsea dispersant injection (SSDI) occurs within 20 days following the authorisation from the EMT to implement use of SSDI and commence mobilisation.	(MC 14.12.1) Incident Log (or equivalent records).
	(EPS 14.13) SCERP—Capping Stack Well capping stack is deployed and well secured within 35 days following the authorisation from the EMT to implement use of a capping stack and to commence mobilisation For the Gorgon field, should the LOWC flow rate be restricted or less than the modelled WCD such that gas does not express at the sea surface, then a well capping stack is	(MC 14.13.1) Incident Log (or equivalent records).

Unplanned release—well control event		
	deployed and well secured within 35 days following the authorisation from the EMT to implement use of a capping stack and to commence mobilisation.	
	(EPS 14.14) SCERP—Relief Well Capability Arrangements CAPL shall maintain service agreements or memberships with third-party well control specialists (as per Section 8.3.9.7.5) that have capabilities to support a response to a LOWC event for the duration of the petroleum activity.	(MC 14.14.1) Records confirm that service agreements or memberships are in place prior to, and for the duration of, the petroleum activity.
	(EPS 14.15) Wellsafe SOP—Relief well The following certifications shall be in place prior to relief well drilling activities commencing in accordance with CAPL's *Wellsafe Standard Operational Procedure:* • MODU/rig certification • relief well design and plan certification • well execution certification • Business Unit WellSafe certification.	(MC 14.15.1) Records confirm that MODU certification, relief well design and plan certifications were verified prior the commencement of the activity.
	(EPS 14.16) Relief Well Plan CAPL will develop an activity-specific Relief Well Plan prior to the petroleum activity commencing.	(MC 14.16.1) Records confirm that an activity-specific Relief Well Plan was developed and in place prior to the petroleum activity commencing.
	(EPS 14.17) Relief Well Equipment List CAPL will maintain a Relief Well Equipment List for the duration of the petroleum activity.	(MC 14.17.1) Records confirm that a Relief Well Equipment List is in place prior to, and for the duration of, the petroleum activity.
	(EPS 14.18) Relief Well Equipment List Availability of suitable equipment required for a relief well will be confirmed prior to the petroleum activity commencing.	(MC 14.18.1) Inventory management system confirms availability of relief well equipment.
	(EPS 14.19) Relief Well Rig Availability Availability of suitable relief well drilling rigs on or within the vicinity of the North West Shelf will be confirmed prior to the petroleum activity commencing.	(MC 14.19.1) Vessel tracking (or other equivalent) records confirm presence of relief well drilling rigs prior to the petroleum activity commencing.
	(EPS 14.7) OSMP In the event of a Level 2 (or above) oil spill to marine or coastal waters occurring, the OSMP will be activated, and: • Operational and Scientific monitoring programs are initiated[38] once the specific initiation criteria are met • Operational and Scientific monitoring programs are implemented within the timeframes outlined in the ABU OSMP	(MC 14.7.1) Records confirm the OSMP has been activated (MC 14.7.2) Records confirm that once initial criteria have been met, operational and scientific monitoring programs were initiated. (MC 14.7.3) Records confirm that operational and scientific monitoring programs were implemented within the timeframes outlined in the ABU OSMP

[38] *As per Section 2.1 of the OSMP, for this plan initiation means starting preparation for implementation.*

Unplanned release—well control event		
	• operational and scientific monitoring components are continued until respective termination criteria are met.	(MC 14.7.4) Records confirm that once termination criteria have been met, operational and scientific monitoring programs were ceased.
	(EPS 14.8) OSMP Capability required to implement all operational and scientific monitoring programs are in place to meet the requirements outlined in the ABU OSMP.	(MC 14.8.1) Internal personnel capability is documented every six months in the *ABU OSMP Capability Register*.
		(MC 14.8.2) External contractors self-assess their capability against the requirements and provide a Statement of Personnel Capability and Readiness every 6 months.
		(MC 14.8.3) If any OSMP programs requiring vessels are activated, records demonstrate that CAPL EMT identified vessel availability through existing contracts within 12 hours of OMSP component initiation activation
		(MC 14.8.4) If any OSMP programs requiring aircraft are activated, records demonstrate that CAPL EMT identified aircraft availability through existing contracts within 12 hours of OMSP component initiation activation
		(MC 14.8.5) Records show CAPL EMT mobilised a minimum of one identified, contracted vessel within 24 hours to Onslow, Dampier or Barrow Island (subject to Barrow Island quarantine requirements)
		(MC 14.8.6) Hydrocarbon characterisation sample kits are maintained at Barrow Island and Karratha
	(EPS 14.20) OPEP, SCERP, EMT and OSMP ABU EMT exercises, including exercises to test source control response arrangements, will be conducted in accordance with Section 8.3.9.8.	(MC 14.20.1) Exercise Records
	(EPS 2.4) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) In the event of a spill occurring, CAPL will engage with relevant First Nations people and/or representative bodies.	(MC 2.4.1) Relevant persons consultation records
(EPO 15) CAPL will be prepared and ready to manage an oil spill event, including a LOWC scenario	**(EPS 15.1) EMT** CAPL core and support EMT members will complete all hazards and oil spill training in accordance with the ABU Training and Exercise Program Procedure (Ref.388)	(MC 15.1.1) Records of training

Unplanned release—well control event		
	(EPS 15.2) EMT CAPL shall maintain an EMT duty roster with a minimum of 10 qualified EMT personnel to fulfil core CAPL EMT positions.	(MC 15.2.1) EMT Duty Roster records
	(EPS 15.3) EMT CAPL shall maintain the minimum required personnel within the ABU trained to fulfil core EMT functions, including source control roles, as per Appendix F of the OPEP.	(MC 15.3.1) Records of training
	(EPS 15.4) EMT During any oil spill response, ABU EMT support personnel, including mutual aid personnel, joining the CAPL EMT will be provided with training in accordance with the ABU Training and Exercise Program Procedure (Ref. 388) before they join the EMT	(MC 15.4.1) Training / induction records
	(EPS 15.5) EMT CAPL shall validate that well control specialists seconded into the CAPL EMT Source Control Branch during a well control incident hold relevant qualifications, have relevant industry experience to fill their designated role and either must hold an valid International Association of Drilling Contractors (IADC) or International Well Control Forum (IWCF) Subsea Well Control Certification (Supervisor level).	(MC 15.5.1) Training/induction records
	(EPS 15.6) EMT CAPL shall maintain Service Level Agreement / membership with OSROs enabling the provision of technical specialists to supplement the CAPL EMT either directly or via industry mutual aid framework agreements.	(MC 15.6.1) Service Level Agreement / Membership
	(EPS 15.7) EMT CAPL shall validate EMT capability and competency arrangements before undertaking a new petroleum activity in Commonwealth waters against the credible worst-case scenario and associated EMT response need to ensure sufficient EMT resourcing and competency to fulfil all core and support EMT roles required for the identified worst-case scenario.	(MC 15.7.1) Review of records

7.17 Spill response

7.17.1 Response option selection

7.17.1.1 Strategic NEBA

CAPL has developed a series of Strategic Net Environmental Benefit Analysis (NEBAs) (Ref. 159) using generalised scenarios that reflect the spill risks associated with all CAPL offshore WA operations. Hydrocarbons associated with spill events from all CAPL operations were grouped into oil types as defined by the International Tanker Owners Pollution Federation Ltd (ITOPF) classification system:

- Group 1 – including Iago, Wheatstone, and Jansz condensate; Wheatstone trunkline fluids; and Wheatstone flowline fluids
- Group 2 – including MDO, Gorgon condensate, Barrow Island crude, and Gorgon/Jansz mixed trunkline fluids
- Group ¾ – including HFO and intermediate fuel oil (depending on blend).

These NEBAs were developed as a pre-spill planning tool for all CAPL EPs, to facilitate response option selection and support the development of the overall response strategies by identifying and comparing the potential effectiveness and impacts of oil spill response options (Ref. 160). After considering the benefits and drawbacks of each response option on the ecological, social, and economic receptors within the EMBA, the response options that were determined to minimise the impacts to the environment and people were pre-selected.

7.17.1.2 Protection prioritisation process

CAPL has developed a Protection Prioritisation Process (PPP) (Ref. 161) to support decision-making in the event of a significant spill event. The information within the PPP document is used to identify priorities for protection within the activity-specific spill scenario(s) EMBA, such as that described in Section 4. The identification of priorities for protection assists in the identification of resources to be assessed within the strategic and operational NEBAs, as described above. The NEBA considers the protection priority values, the EMBA, and the various control measures, including their feasibility, likely success, environmental benefits, level of effectiveness and performance of response tactics. The output of the NEBA and the protection priorities identified will then guide the strategic direction of the response through informing decisions made around tactical planning and response option selection.

The PPP (Ref. 161) ranks receptors (natural or anthropogenic value or resource that is potentially sensitivity to marine oil pollution) using a 5 level scale (from Very Low (1) to Very High (5)) based on a number of factors, including their sensitivity and vulnerability to oil, their conservation status and the biological and socioeconomic importance of the receptor. The CAPL PPP (Ref. 161) aligns with WA DoT PPP (Ref. 162) and uses the same shoreline cells to illustrate broad scale identification of sensitive areas.

Areas with high value receptors and at greatest risk of contact with oil (as indicated by stochastic modelling) are assigned a high protection priority and designated as priority planning areas. The process for identifying these areas (described in the PPP document [Ref. 161]) considers all High (4) and Very High (5) ranked shoreline cells where contact above the moderate exposure threshold (from stochastic modelling across all seasons) is predicted within 4 days (96 hours). As described in the PPP (Ref. 161), the 4-day contact timeframe is based on the expected time it would take CAPL to develop and implement a Tactical Response Guide (TRG) for an area predicted to be impacted. For contact outside this timeframe, it expected that CAPL will have reasonable time to develop and implement a TRG before oil contacts the resource.

Based on all modelling scenarios presented in this EP, there were no High and Very High value areas (DoT shoreline cells) identified for contact within this 4 day timeframe. There were only 2 shoreline cells where contract about the moderate threshold was predicted:

- DoT Shoreline Cell 126 (which includes Serrurier Island): 2% probability of contact at the moderate exposure threshold and a minimum time before shoreline accumulation of 85 days
- DoT Shoreline Cell 326 (which includes Ningaloo): 3% probability of contact at the moderate exposure threshold and a minimum time before shoreline accumulation of 41 days

As such, CAPL has taken a conservative approach and identified priority planning areas based on sensitive coastlines closest to the potential release locations, as listed in Table 7-18. These priority planning areas, and the specific receptors identified within them, are considered to ensure that tactical planning and response option selection are appropriate.

Table 7-18: Priority planning areas for vessel collision event spill scenario

Potential area of impact	Distance from source of spill	Shoreline values	Planned response tactics
DoT Shoreline Cell # 318 and # 319 (Montebello Islands)	75 km	Turtles – BIAs including nesting Seabirds – BIAs including breeding Mangroves Coral and reef communities Australian Marine Park	Monitor, Evaluation and Surveillance Shoreline Clean-up Oiled Wildlife Response
DoT Shoreline Cell # 320 and # 321 (Barrow Island)	60 km	Turtles – BIAs including nesting Seabirds – BIAs including breeding Coral and reef communities Australian Marine Park	Monitor, Evaluation and Surveillance Shoreline Protection and Deflection Shoreline Clean-up Oiled Wildlife Response

7.17.2 Activity-specific response option selection

To select the appropriate response options for this EP, hydrocarbons applicable to the worst credible scenarios specific to this activity are:

- Group 2 – Gorgon condensate, MDO.

Taking into account the priority planning areas identified in Table 7-18, the recommended response options proposed to be used for the spill scenarios associated with this EP include:

- source control
- monitoring, evaluation, and surveillance (MES)
- shoreline protection and deflection (SPD)
- shoreline clean-up (SHC).

These response options are carried out alongside oiled wildlife and waste management response tactics. CAPL does not consider oiled wildlife and waste management as separate response options as they are implemented as support tactics for all spill events in a manner that is commensurate to the level of impact and risk of that event.

7.17.3 CAPL existing spill response capability assessment

Based on the spill response arrangements that CAPL has in place across the business, the capability of these arrangements was determined. This process involved:

- identifying CAPL's existing response arrangements and the equipment and personnel available to CAPL under these arrangements
- defining the response package for each response option, and identifying the critical components for each response package (i.e. limited quantity of equipment available to be purchased; limited personnel able to be accessed readily)
- determining the number of critical components available to CAPL under existing arrangements
- identify the number of response packages available to CAPL under existing arrangements
- defining the volume of hydrocarbons that could be recovered or treated per response package.

The outcome of this evaluation is included in the OPEP (Ref. 1) and SCERP (Ref. 171).

7.17.3.1 CAPL project-specific capability requirement assessment

To understand the spill response capability required for this activity, CAPL assessed the worst-case credible spill event and used modelling to understand the number of packages per response technique that may be required to respond to that event. The steps involved in this assessment were:

1. Review the Strategic NEBA (Ref. 159) and priority planning areas to understand the planned response to an event.
2. Predict the average surface hydrocarbon volume per day; and average volume of hydrocarbon accumulated onshore per shoreline per day (if relevant) to calculate the number of response packages required per response strategy.
3. Review the number of response packages available to determine if the capability exists.

7.17.3.2 CAPL planned response vessel collision

In accordance with the Strategic NEBA (Ref. 159), the response strategies proposed to be used for this spill scenario and response package calculations are described below. Offshore containment and recovery (CAR) would not be effective because of the hydrocarbon properties (Group 2).

Implement MES response

A MES response will commence for a vessel collision as soon as the spill is identified. This may range from very simplistic visual observation only, through to more involved monitoring and evaluating tactics. Appendix C of the OPEP (Ref. 1) has documented the arrangements that CAPL have in place to implement all the required MES tactics; therefore, this technique is not discussed further.

Table 7-19: Vessel collision response package deployment timeline

Response technique	Days following event						Weeks following event					
	1	2	3	4	5	6	7	2	3	4	5	6
No. packages – planned MES	1	1	1	1	1	1	1	1	0	0	0	0
Does CAPL have the required capability?	Y	Y	Y	Y	Y	Y	Y	Y				

7.17.3.3 CAPL planned response LOWC

In accordance with the Strategic NEBA (Ref. 159), the response strategies proposed to be used for this spill scenario and response package calculations are described below.

Surface dispersant application is not considered feasible response options due to the nature of the hydrocarbon (Group 2), limited spatial extent of predicted surface oil ≥50 g/m^2 (7 km^2 area predicted above this threshold over a period of 104 days, and never >1 km^2 on any one day), and window of opportunity (~1–3 days) for application. Similarly, offshore CAR are not considered feasible response options due to the nature of the hydrocarbon (Group 2).

Implement source control response

Source control is the primary response option for drilling-related emergency spill scenarios. In this event, source control tactics may include drilling a relief well (primary option), installation of a capping stack (secondary option), or use of subsea dispersant injection (SSDI). The time it takes to implement source control strategies is limited by the critical path components for equipment mobilisation (e.g. the capping stack, or MODU contracting, preparations and mobilisation), as identified in the SCERP (Ref. 171).

Based on the SCERP (Ref. 171), CAPL could have one Source Control – Relief Well package commence arrangements on day one, rig identification, contracting, planning, preparation and mobilisation within ~30 days, drill well, intersect, and dynamically kill well within ~90 days (assuming a mobilisation from Singapore). Timing for the assessment and approval of the Safety Case revisions for the relief well rig and support vessels is based on undertaking these tasks concurrently with the relief well rig contracting, suspending operations, preparing and mobilising to site. Confirmation that CAPL has the arrangements in place to implement the required number of packages is provided in Table 7-20. CAPL maintains access to offset installation equipment and would assess its applicability in response to a well event. Drilling of a relief well would be the primary source control option for drilling; further details are contained in the SCERP (Ref. 171).

Using a capping stack is considered a secondary source control option for drilling; further details are contained in the SCERP (Ref. 171). Based on the SCERP (Ref. 171), CAPL could have one Source Control – Well Capping package commence notifications and arrangements on day one, commence mobilisation on day 3, and implementation within a further ~35 days (assuming a mobilisation from Singapore). The estimated 35 days to secure the well capping package includes the preparation, assessment, and approval of Safety Case revisions for vessels involved in the well capping. Confirmation that CAPL has the arrangements in place to implement the required number of packages is provided in Table 7-20.

Based on the SCERP (Ref. 171), CAPL could have one Source Control – SSDI package commence arrangements on day one, contracting, equipment deliveries, vessel preparation from day 2, mobilise, and commence implementation within

~20 days (assuming a mobilisation from Singapore). Sourcing and mobilising a suitable local vessel with an approved Safety Case would be expected to further reduce this duration. Confirmation that CAPL has the arrangements in place to implement the required number of packages is provided in Table 7-20.

Implement MES response

A MES response will commence for a well control event as soon as the spill is identified. This may range from very simplistic visual observation only, through to more involved monitoring and evaluating tactics. Appendix C of the OPEP (Ref. 1) has documented the arrangements that CAPL have in place to implement all the required MES tactics; therefore, this technique is not discussed further.

Implement SPD response

Deterministic analysis for the largest volume of oil ashore indicates that up to 46 m^3 of oil may wash ashore during the release. Small volumes of oil are predicted to become stranded from around day 71, peaking on day 95 at 20 m^3. Oil is predicted to stay on the shoreline up until the end of the simulation on day 103. This deterministic run indicates that there is never more than 5 m^3 of oil deposited on a single day from the time oil contacts the shoreline on day 71. The volume of oil ashore was used to support the planned response requirements—the volume of hydrocarbons that would need to be treated by an SPD response is directly correlated to the volume of oil that may wash ashore.

Based on Appendix C of the OPEP (Ref. 1), each protection team is expected to recover 15.6 m^3 of hydrocarbon per day. On the assumption no more than 5 m^3 washes ashore on any one day, and the volume of oil ashore peaks at 20 m^3, CAPL would need up to 2 SPD packages available from day 70 to implement the SPD response. Confirmation that CAPL has the arrangements in place to implement the required number of packages is provided in Table 7-20.

Implement SHC response

Deterministic analysis for the largest volume of oil ashore indicates that up to 46 m^3 of oil may wash ashore during the release. Small volumes of oil are predicted to become stranded from around day 71, peaking on day 95 at 20 m^3. Oil is predicted to stay on the shoreline up until the end of the simulation on day 103. The volume of oil ashore was used to support the planned response requirements—the volume of hydrocarbons that would need to be treated by an SPD response is directly correlated to the volume of oil that may wash ashore.

Based on Appendix C of the OPEP (Ref. 1), each SHC team is expected to recover 1.6 m^3 of hydrocarbon per day. If 2 clean-up teams are mobilised on day 71 and used each day, all predicted hydrocarbons contacting the shoreline would be recovered. If required, these efforts could be ramped up or extended (or scaled back) as directed and informed by MES activities. Confirmation that CAPL has the arrangements in place to implement the required number of packages is provided in Table 7-20.

Table 7-20: Well control event response package deployment timeline

Response Technique	Days Following Event							Weeks Following Event												
	1	2	3	4	5	6	7	2	3	4	5	6	7	8	9	10	11	12	13	14
No. packages – planned Source Control – Relief Well	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Planning and mobilisation											*Implementation*								
Does CAPL have the required capability?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
No. packages – planned Source Control – Well Capping	1	1	1	1	1	1	1	1	1	1	1									
	Planning and mobilisation									*Implementation*										
Does CAPL have the required capability?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y									
No. packages – planned Source Control – SSDI	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Planning and mobilisation									*Implementation*										
Does CAPL have the required capability?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
No. packages – planned MES	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Does CAPL have the required capability?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
No. packages – planned SPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2
Does CAPL have the required capability?																Y	Y	Y	Y	Y
No. packages – planned SHC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2
Does CAPL have the required capability?																Y	Y	Y	Y	Y

7.17.4 Spill response environmental risk assessment

7.17.4.1 Planned discharges—SSDI response

Conducting SSDI involves application of chemical dispersants, which triggers the environmental aspect of planned discharged.

SSDI aims to chemically disperse the released oil and reduce oil droplet size, which removes volatiles and disperses the hydrocarbons within the water column before they reach the surface. Preliminary screening of response options relevant to this EP (Section 7.17.2) determined that applying chemical dispersants subsurface is a potential option for a well control event.

Monitoring and evaluation of dispersant application effectiveness and ecological impacts continues throughout the response operation. The use of dispersants depends on the particular parameters of an incident resulting in an oil spill and the resources at risk of exposure.

Planned discharges—SSDI response

Source

In the event of a LOWC, chemical dispersant may be applied to support response objectives and minimise the potential environmental impacts and risks to ALARP.

Potential Impacts and Risks

Impacts	C	Risks	C
N/A	-	Applying chemical dispersants has the potential to change ambient water quality resulting in: • marine pollution resulting in sublethal or lethal effects to marine fauna • marine pollution resulting sublethal or lethal effects to subtidal or intertidal habitats	4

Consequence Evaluation

Marine pollution resulting in sublethal or lethal effects to marine fauna

Applying chemical dispersants (to respond to hydrocarbon release emergency event scenarios) will result in dispersant and hydrocarbons in the water column, potentially affecting marine fauna and habitats. Dispersant applied at the well (in response to a LOWC) can result in a dispersant/oil mix in the water column with a spatial extent similar to the entrained/dissolved exposure for the untreated LOWC scenario assessed in Section 7.16.

Dispersant combined with dispersed oil in the water column can be acutely toxic to marine biota (Ref. 173). A review of literature indicates that toxicity from exposure to chemically dispersed hydrocarbons relates more to the toxicity of the oil product and its increased bioavailability in the water column than to the toxicity of the dispersant itself (Ref. 174; Ref. 175). Therefore, this consequence assessment uses the information provided in Section 7.16.3 where appropriate.

Research on the toxic effects of oil/dispersant mixture on fish and crustacean larvae found that the median lethal concentration for total petroleum hydrocarbons was ~4.0 mg/L (4,000 ppb), compared to hydrocarbons treated with chemical dispersants where it ranged from ~22–62 mg/L. For dispersant exposures alone, the median lethal concentration ranged from 17–50 mg/L (Ref. 173). The differences in the relative toxicity among the tests indicated that most petroleum hydrocarbons in the chemically enhanced test are in less acutely toxic forms than the components that dominate the untreated tests (Ref. 173).

As a result of the dispersant action, the increased toxicity of chemically dispersed oil can be attributed to the increase in Polycyclic Aromatic Hydrocarbons (PAH) in the water column, large increase in droplets, and increasing the volumes of toxic oil components in the water column (due to being entrained from floating surface oil). Dispersant toxicity is less than the toxicity of dispersed oil (Ref. 173; Ref. 174; Ref. 175).

Dispersant application at the well has the potential to increase in-water concentrations of hydrocarbons including soluble aromatic compounds. Although these elevated concentrations will generally be of short duration, impacts may occur on values and sensitivities in the water column.

Particular values and sensitivities in the area that may be affected by the dispersant chemical in the water column include:

Planned discharges—SSDI response

Marine mammals

Marine mammals may be exposed to dispersed oil within the water column. Marine mammals can be exposed to oil externally (e.g. swimming through surface slick) or internally (e.g. swallowing the oil, consuming oil-affected prey) (Ref. 115; Ref. 167).

The physical impacts from ingested hydrocarbons with subsequent lethal or sublethal impacts are applicable; however, the susceptibility of cetaceans varies with feeding habits. Baleen Whales are not particularly susceptible to ingestion of oil in the water column as they feed by skimming the surface (i.e. they are more susceptible to surface slicks). Toothed Whales and dolphins may be susceptible to ingestion of dissolved and entrained oil as they gulp feed at depth. As highly mobile species, in general it is not expected that these animals will be constantly exposed to concentrations of hydrocarbons in the water column for continuous durations (e.g. >48–96 hours) that would lead to chronic effects. Furthermore, Geraci and St. Aubin (Ref. 134) identify that several cetaceans are able to detect and avoid a variety of oils and therefore dispersed oil.

As identified in Section 4.3.3.1, several marine mammal species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Hydrocarbon Ecological EMBA. The following BIAs intersect the Hydrocarbon Ecological EMBA:

- Humpback Whale (migration, resting)
- Pygmy Blue Whale (distribution, migration, foraging)
- Dugongs (breeding, calving, foraging, nursing).

Modelling analysis for entrained hydrocarbon exposure was used to understand the potential extent and duration of exposure for dispersed hydrocarbons.

The deterministic model for the largest area of entrained hydrocarbon indicates that entrained hydrocarbons concentrations ≥100 ppb are present for ~100 days following the spill event, with a maximum area of coverage of ~1000 km^2 occurring ~38 days after the spill commenced. This deterministic scenario is considered most relevant for offshore waters, and subsequent impacts to offshore BIAs in those regions. Using the Pygmy Blue Whale migration BIA as an example, modelling indicates that the extent of entrained exposures was predicted to be limited to <0.05% of the entire BIA.

Based on an assessment of the predicted magnitude and duration, it is expected that only a small proportion of any marine mammal population would be exposed above the defined impact exposure thresholds. Therefore, the potential of dispersed oil to cause sublethal or lethal effects was ranked as Moderate (4) and Minor (5), respectively.

Reptiles

Marine reptiles may be exposed to hydrocarbons from an oil spill at the water surface or on the shoreline. Therefore, no further assessment is required.

Fishes, including sharks and rays

Fish, including sharks and rays, may be exposed to dispersed oil within the water column.

Potential effects include damage to the liver and lining of the stomach and intestine, and toxic effects on embryos (Ref. 139). Fish are most vulnerable to oil during embryonic, larval and juvenile life stages. However, very few studies have demonstrated increased deaths of fish as a result of oil spills (Ref. 140; Ref. 141; Ref. 142) and therefore dispersed oil.

Demersal fish are not expected to be impacted given the presence of entrained oil ≥100 ppb is predicted in the surface layers (<10 m water depth) only.

Pelagic free-swimming fish and sharks are not expected to suffer long-term damage from oil spill exposure because dissolved/entrained hydrocarbons are typically insufficient to cause harm (Ref. 143). Pelagic species are also generally highly mobile and as such would not suffer extended exposure (e.g. >48–96 hours) at concentrations that would lead to chronic effects due to their patterns of movement. Fish exposed to dissolved hydrocarbons can eliminate the toxicants once placed in clean water; hence, individuals exposed to a spill are expected to recover (Ref. 145). Marine fauna with gill-based respiratory systems, including Whale Sharks, are expected to have higher sensitivity to exposures of entrained oil.

As identified in Section 4.3.3, several fish species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the EMBA. The following BIAs intersect the EMBA:

- Whale Shark (foraging).

The deterministic model for the largest area of entrained hydrocarbon indicates that entrained hydrocarbons concentrations ≥100 ppb are present for ~100 days following the spill event, with a maximum area of coverage of ~1000 km^2 occurring ~38 days after the spill commenced. This deterministic scenario is considered most relevant for offshore waters, and subsequent impacts to offshore BIAs in those regions. Using the Whale Shark foraging BIA as an example, modelling indicates that the extent of entrained exposures was predicted to be limited to <0.05% of the entire BIA.

Planned discharges—SSDI response

Based on an assessment of the predicted magnitude and duration of both instantaneous and time-integrated entrained oil, it is expected that only a small proportion of any fish population would be exposed above the defined impact thresholds. Therefore, the potential impacts of oil to cause sublethal or lethal effects was ranked as Moderate (4) and Minor (5),

Smothering of subtidal and intertidal habitats

The effects of physical contact on subtidal habitats are similar, and studies have shown that it can cause sublethal stress and reduced growth rates in seagrass (Ref. 148; Ref. 149), act as a barrier to diffusion of CO_2 across cell walls in macroalgae (Ref. 150), and a decline in metabolic rate and partial death in corals (Ref. 151; Ref. 152) and impair respiration and photosynthesis by symbiotic zooxanthellae (Ref. 153; Ref. 154). The recovery of benthic habitats can be slow, with studies following the Deepwater Horizon incident showing long-term non-acute effects of the spill on coral colonies 7 years after the event (Ref. 155).

A 30-year study of the net environmental benefit of dispersant use on seagrass and corals (Ref. 176) concluded that there is greater support for the net environmental benefit of nearshore dispersant use on tropical ecosystems. Although dispersant use resulted in short-term impacts, long-term disruption was not observed, and the area returned to pre-impact condition. Using dispersant results that indicate that medium- and long-term effects are similar to the control conditions (Ref. 176), only small environmental impacts would be expected to these habitats.

As identified in Section 4.5, particular values and sensitivities with coral reef habitats that occur within the EMBA include:

- Ningaloo Coast (World Heritage Property, National Heritage Place)
- Shark Bay (World Heritage Property)
- Ningaloo Marine Area – Commonwealth Waters (Commonwealth Heritage Place).

Stochastic modelling indicates that no entrained exposure above impact thresholds (≥100 ppb) is expected below 20 m water depth. As such, exposure to coral reefs in deeper waters is not predicted to occur.

The deterministic analysis for the largest area of entrained hydrocarbon indicates that entrained hydrocarbons concentrations ≥100 ppb peak at a maximum area of coverage of ~1,000 km^2 occurring ~38 days after the spill commenced. As such it is possible that exposure to benthic habitats from entrained hydrocarbons in shallow waters (<10 m) may occur.

Based on an assessment of the predicted magnitude and duration of surface oil, and both instantaneous and time-integrated entrained oil, it is expected that only a small proportion of any coral habitat would be exposed above the defined impact thresholds. Therefore, the potential impacts of oil to cause smothering was ranked as Minor (5).

Changes to cultural heritage values

As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. One of the specific tangible values of Sea Country identified through consultation was marine fauna (Table 4-14).

CAPL considers that indirect impacts to First Nations cultural values associated with marine fauna may occur due to SSDI. As such, CAPL has ranked the consequence for changes to cultural values as Minor (5), consistent with that for SSDI.

ALARP Decision Context Justification

Chemical dispersant has been applied successfully for several large well control events including Montara in 2009. As such, these practices are well understood by the petroleum industry and CAPL. Specifically, CAPL has worked in the region for over 10 years and has a demonstrated understanding of industry requirements and their operational implementation in these areas.

The risks associated with this response are considered lower-order risks in accordance with Table 5-3. As such, CAPL would apply ALARP Decision Context A for this aspect.

Good practice control measures

Control Measure	Description
SCERP	Source control is part of the first actions taken to minimise the volume of hydrocarbon released and therefore reduce potential impacts and risks to the environment. Key source control options for this LOWC event include drilling a relief well, with a capping stack as a secondary option, as covered in the SCERP (Ref. 171). The SCERP includes using the AMSA Oil Spill Control Agents (OSCA) register. The OSCA register is considered acceptable for maritime use. Listing involves providing evidence that the OSCA is suitable for use in Australia.

Planned discharges—SSDI response	
	Once listed on the OSCA Register, the use of these products to assist in oil spill clean-up in Australian waters during a National Plan response is protected by an exemption under the EPBC Act.
OPEP	Under the OPGGS(E)R, NOPSEMA require that the petroleum activity have an accepted OPEP in place before commencing the activity. Should a LOWC scenario occurs, the OPEP will be implemented. CAPL has developed a NOPSEMA-accepted OPEP (Ref. 1) to support all spill response activities across all its assets. The OPEP details a SSDI operations decision guide and details that CAPL will use the Industry Recommended Subsea Dispersant Monitoring Plan: API Technical Report 1152 (Ref. 177) to monitor, inform the effectiveness and support operational decisions to continue or terminate the response.
OSMP	The OSMP details the arrangements and capability in place for operational and scientific monitoring. Operational monitoring collects information about the oil spill to aid planning and decision-making for executing spill response or clean-up operations. Scientific monitoring focuses on the environmental impact attributable to the spill or the associated response activities and informs requirements for remediation (if required). CAPL has developed an NOPSEMA-accepted OSMP (Ref. 2) to support all spill monitoring activities across all its assets.
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).
Likelihood and Risk Level Summary	
Likelihood	Dispersant use is subject to the controls and application criteria as outlined in the SCERP (Ref. 171) and OPEP (Ref. 1) thus may only be applied to spills distant from coastal receptors under appropriate environmental conditions. Where these criteria are met, and with the selection of a National Plan OSCA-registered dispersant, the likelihood of the described consequences occurring is Remote (5).
Risk Level	Low (8)
Acceptability Summary	
Principles of ESD	The potential impact associated with this aspect is considered to have the potential to result in minor, localised, incidental damage to, or alteration of, habitats and ecological communities; however, this is not expected to affect biological diversity and ecological integrity. The consequence associated with this aspect is Moderate (4). Therefore, no additional evaluation against the Principles of ESD is required.
Relevant Environmental legislation and Other Requirements	Legislation and other requirements relevant for this aspect include: • *Conservation Management Plan for the Blue Whale 2015–2025* (Ref. 50) • *Conservation Advice Balaenoptera borealis Sei Whale* (Ref. 49) • *Conservation Advice Balaenoptera physalus Fin Whale* (Ref. 48) • *Conservation Advice Rhincodon typus Whale Shark* (Ref. 47) • *Recovery Plan for Marine Turtles in Australia* (Ref. 46) • *North-west Marine Parks Network Management Plan* (Ref. 256).

Requirement	Demonstration
Conservation Management Plan for the Blue Whale 2015–2025	N/A

Planned discharges—SSDI response		
	No specific management action identified.	
	Conservation Advice Balaenoptera borealis Sei Whale No specific conservation action identified.	N/A
	Conservation Advice Balaenoptera physalus Fin Whale No specific conservation action identified.	N/A
	Conservation Advice Rhincodon typus Whale Shark No specific conservation action identified.	Assessment of spill risk strategies is within scope of the OPEP (Ref. 1). Response and recovery of habitats and marine fauna is within the scope of the OSMP (Ref. 2). Therefore, this activity is not considered to be inconsistent with the *Recovery Plan for Marine Turtles in Australia*.
	Recovery Plan for Marine Turtles in Australia Management action A4.2: Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in reference to 'slow to recover habitats', e.g. nesting habitat, seagrass meadows or coral reefs	N/A
	North-west Marine Parks Network Management Plan The Plan requires that 'actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with mining operations authorised under the OPGGS Act may be conducted in all zones. The Director should be notified in the event of an oil pollution incident that occurs within, or may impact upon, an Australian Marine Park and, so far as reasonably practicable, prior to a response action being taken within a marine park.'	The Montebello Marine Park is a multiple use zone (IUCN VI). The control measures identified for managing an unplanned release provide for the response to, and environmental monitoring and remediation of, an oil pollution incident. Requirements to report oil pollution incidents that occur within, or may impact upon, an AMP is included in Section 8.4.2. Therefore, this activity is not considered to be inconsistent with the *North-west Marine Parks Network Management Plan*.
Internal Context	These CAPL management processes or procedures were deemed relevant for this aspect: • WOMP (Ref. 6) • WellSafe Standard Operational Procedure (Ref. 170) • OPEP (Ref. 1) • OSMP (Ref. 2) • SCERP (Ref. 171). Control measures related to each of the above management processes or procedures have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.	
External Context	During relevant persons consultation, no objections or claims were raised regarding spill response activities.	
	These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential risks evaluated for this aspect	

<table>
<tr><th colspan="3">Planned discharges—SSDI response</th></tr>
<tr><td rowspan="5">Defined Acceptable Level</td><td colspan="2">are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.
CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level.</td></tr>
<tr><td>Plan</td><td>Objective</td></tr>
<tr><td>Conservation Management Plan for the Blue Whale 2015–2025</td><td>Recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 4 Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td>Recovery Plan for Marine Turtles in Australia</td><td>Recovery objective: The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 3: Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td>North-west Marine Parks Network Management Plan 2018</td><td>As per Section 4.5.1.</td></tr>
<tr><td colspan="2">Therefore, CAPL has defined the following acceptable levels of impact such that it is consistent with these documents:
• no injury or death to Pygmy Blue Whales or marine turtles such that it would prevent the long-term recovery of the species
• no adverse change to the values of the Australian Marine Parks.
CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the unplanned release, that the risk to marine fauna and/or values of the AMPs are also subsequently managed.</td></tr>
<tr><th>Environmental Performance Outcomes</th><th>Environmental performance Standards</th><th>Measurement Criteria</th></tr>
<tr><td rowspan="5">(EPO 16) Reduce the risk of impacts to the environment during event response.

(EPO 2.b) No adverse change to First Nations cultural heritage values from the petroleum</td><td>(EPO 16.1) OPEP
If SSDI is selected for use, the subsea dispersant shall be approved for use in Australia.</td><td>(MC 16.1.1) Records confirm the SSDI is included on AMSA’s Oil Spill Control Agents list.</td></tr>
<tr><td colspan="2">OPEP
Refer to the ABU Consolidated OPEP for environmental performance outcomes, standards and measurement criteria related to emergency management, emergency preparedness, and each response tactic.</td></tr>
<tr><td rowspan="3">(EPS 14.7) OSMP
In the event of a Level 2 (or above) oil spill to marine or coastal waters occurring, the OSMP will be activated, and:
• the components of the operational monitoring program are initiated[39] once the specific initiation criteria are met</td><td>(MC 14.7.1) Records confirm the OSMP has been activated</td></tr>
<tr><td>(MC 14.7.2) Records confirm that once initial criteria have been met, operational monitoring programs were initiated.</td></tr>
<tr><td>(MC 14.7.3) Records confirm that once initial criteria have been met,</td></tr>
</table>

[39] *As per Section 2.1 of the OSMP, for this plan initiation means starting preparation for implementation.*

Planned discharges—SSDI response		
	• the components of the scientific monitoring program are initiated once the specific initiation criteria are met • operational and scientific monitoring components are continued until respective termination criteria are met.	scientific monitoring programs were initiated. (MC 14.7.4) Records confirm that once termination criteria have been met, operational and scientific monitoring programs were ceased.
	(EPS 2.4) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) In the event of a spill occurring, CAPL will engage with relevant First Nations people and/or representative bodies.	(MC 2.4.1) Relevant persons consultation records.

7.17.4.2 Ground disturbance—shoreline spill response

Conducting SPD or SHC involves moving personnel and equipment, which triggers the environmental aspect of ground disturbance.

SPD aims to decrease the overall effect of oil on shorelines before they are impacted and uses booms and sorbents placed adjacent to sensitive shoreline habitats to deflect or capture surface oil.

The objective of SHC is to apply techniques that are appropriate to the shoreline type to remove as much oil as possible. Various techniques may be used alone or in combination to clean oiled shorelines, including shoreline assessment, natural recovery, sorbents, sediment reworking, manual and mechanical removal, and washing, flooding, and flushing.

Ground disturbance—shoreline spill response			
Source			
In the event of a worst-case spill event, implementing SPD and SHC techniques involves people and equipment, which may disturb shoreline habitat.			
Potential Impacts and Risks			
Impacts	**C**	**Risks**	**C**
N/A	-	Conducting SPD and SHC, including moving personnel and equipment, has the potential to damage terrestrial habitats (including nests), with subsequent impacts to fauna such as turtles and birds.	5
Consequence Evaluation			
Potential impacts of SPD and SHC vary, depending on the method used and the shoreline habitat. General impacts include physical disturbance from using personnel, vehicles, and equipment. Particular values and sensitivities in the area that may be affected by the spill include sensitive shoreline habitats (such as mangroves) and nesting / foraging habitat for fauna species such as turtles and birds. The impacts associated with undertaking SHC may be more than if the hydrocarbon product was left in place and remediated through natural processes. Leaving the product in place is a common response option if continual human and vessel/vehicle traffic has the potential to generate greater impacts than the product itself. This technique has been implemented internationally, including for the Montara spill (where persistent components of the product were left to naturally break down in dense coastal mangroves) and the Macondo spill (where marshes and wetlands that had been impacted by weathered product were allowed to recover naturally). If a smaller extent of shoreline is impacted, the impacts from an SHC response activity may be lessened and more localised. Potential impacts associated with using vehicles, personnel, and equipment during SHC (and/or SPD) can include disturbing wildlife feeding or breeding (including damage to nests) and damaging dune structures, vegetation, or intertidal habitats. These shoreline activities have the potential to result in short-term and			

Ground disturbance—shoreline spill response	
localised damage to or alteration of habitats and ecological communities and therefore the consequence is ranked as Minor (5).	
Changes to cultural heritage values As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. One of the specific tangible values of Sea Country identified through consultation was marine fauna (Table 4-14). CAPL considers that indirect impacts to First Nations cultural values associated with marine fauna may occur due to shoreline response operations. As such, CAPL has ranked the consequence for cultural values as Minor (5), consistent with that for shoreline response operations.	
ALARP Decision Context Justification	
The risks associated with shoreline oil spill response techniques are well understood, with the techniques having been applied successfully for a number of large spill events. Although there is a good understanding of these response techniques, there is uncertainty regarding the specific location at which this may be undertaken, and the level of response that may be required in these areas. Spill modelling was used to inform the extent of such a spill, and thus provide a sound basis for response planning (including shoreline response) to such an incident. Control measures to manage the risks associated with shoreline spill response techniques are well defined with most being linked to detailed monitoring plans that feed into tactical planning requirements and NEBAs. The risks arising from implementing shoreline response techniques in the event of a spill are extremely low, and CAPL consider these to be lower-order risks in accordance with Table 5-3. As such, CAPL considers ALARP Decision Context A should be applied for this aspect.	
Good practice control measures	
Control Measure	**Description**
OSMP	The OSMP details the arrangements and capability in place for operational and scientific monitoring. Operational monitoring collects information about the oil spill to aid planning and decision-making for executing spill response or clean-up operations. Scientific monitoring focuses on the environmental impact attributable to the spill or the associated response activities and informs requirements for remediation (if required). CAPL has developed an NOPSEMA-accepted OSMP (Ref. 2) to support all spill monitoring activities across all its assets.
OPEP	Under the OPGGS(E)R, NOPSEMA require that the petroleum activity have an accepted OPEP in place before commencing the activity. Should a LOWC scenario occurs, the OPEP will be implemented. CAPL has developed a NOPSEMA-accepted OPEP (Ref. 1) to support all spill response activities across all its assets. The OPEP identifies the resource capability required to implement the strategy based on shoreline sensitivities and the magnitude of the spill.
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).
Likelihood and Risk Level Summary	
Likelihood	Depending on the clean-up technique and habitat, potential consequences of shoreline cleaning are remote (Note: Mechanical methods are generally expected to have greater consequences than manual cleaning). With the control measures in place, CAPL assessed the likelihood of the consequence described above as Remote (5).
Risk Level	Very low (9)

Ground disturbance—shoreline spill response		
Acceptability Summary		
Principles of ESD	The potential impact associated with this aspect is considered to have the potential to result in minor, localised, incidental damage to, or alteration of, habitats and ecological communities; however, this is not expected to affect biological diversity and ecological integrity. The consequence associated with this aspect is Minor (5). Therefore, no additional evaluation against the Principles of ESD is required.	
Relevant Environmental legislation and Other Requirements	No legislation and other requirements relevant to this aspect were identified.	
Internal Context	The following CAPL management process or procedure was considered relevant for this aspect: • OSMP (Ref. 2) • OPEP (Ref. 1) Control measures related to each of the above management processes or procedures have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.	
External Context	During relevant persons consultation, no objections or claims were raised regarding spill response activities.	
Defined Acceptable Level	These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan. CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level.	
Environmental Performance Outcomes	**Environmental performance Standards**	**Measurement Criteria**
(EPO 16) Reduce the risk of impacts to the environment during event response. (EPO 2.b) No adverse change to First Nations cultural heritage values from the petroleum activity..	**(EPS 14.7) OSMP** In the event of a Level 2 (or above) oil spill to marine or coastal waters occurring, the OSMP will be activated, and: • the components of the operational monitoring program are initiated[40] once the specific initiation criteria are met • the components of the scientific monitoring program are initiated once the specific initiation criteria are met • operational and scientific monitoring components are continued until respective termination criteria are met.	(MC 14.7.1) Records confirm the OSMP has been activated (MC 14.7.2) Records confirm that once initial criteria have been met, operational monitoring programs were initiated. (MC 14.7.3) Records confirm that once initial criteria have been met, scientific monitoring programs were initiated. (MC 14.7.4) Records confirm that once termination criteria have been met, operational and scientific monitoring programs were ceased.
	(EPO 14.3) OPEP In the event of a Level 2 (or above) oil spill occurring to marine or coastal waters, response activities are	(MC 14.3.1) Records confirm the OPEP has been activated and response activities implemented.

[40] *As per Section 2.1 of the OSMP, for this plan initiation means starting preparation for implementation.*

Ground disturbance—shoreline spill response		
	implemented in accordance with the *ABU Consolidated OPEP*.	
	OPEP Refer to the *ABU Consolidated OPEP* for environmental performance outcomes, standards and measurement criteria related to emergency management, emergency preparedness, and each response tactic.	
	(EPS 2.4) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies) In the event of a spill occurring, CAPL will engage with relevant First Nations people and/or representative bodies.	(MC 2.4.1) Relevant persons consultation records.

7.17.4.3 Physical presence—oiled wildlife response

Oiled wildlife response (OWR) activities are aimed at treating fauna that have encountered, or are likely to encounter, spilt hydrocarbons. OWR generates the environmental aspect of physical presence/interaction with fauna, through handling, treating, rehabilitating, and releasing fauna.

Physical presence—oiled wildlife response			
Source			
In the event of a worst-case spill event, the handling and treating marine fauna (through an OWR) will result in personnel interacting with marine fauna.			
Potential Impacts and Risks			
Impacts	**C**	**Risks**	**C**
N/A	-	Conducting OWR has the potential to cause further harm to oiled fauna due to hazing, barriers, deterrents, and cleaning activities, and has the potential to cause injury/death.	5
Consequence Evaluation			
Particular environmental values that may be affected by OWR activities include marine fauna such as turtles and birds. Due to the intensive nature of OWR activities and the fragile nature of many shore and wading birds, OWR activities can have high bird mortality rates. Physical exclusion and hazing operations can result in entanglement and stress-related impacts to marine birds. Cleaning of oiled wildlife may result in skin irritations, impacts to the hydrophobic properties of bird plumage, and stress-induced physiological effects. Spill modelling indicates that areas along the coast frequented by fauna, such as the Montebello Islands, are areas where OWR is most likely to be undertaken. If a spill coincided with turtle nesting/hatchling or bird nesting periods, a large number of animals may be treated using OWR. Impacts from hazing and deterrents are anticipated to be localised to the area of potential spill impact and limited to the spill period. Even if OWR was undertaken during nesting periods, only a small proportion of the nesting population would be involved as the species potentially involved nest widely elsewhere. The potential consequences associated with an OWR are localised and short term and are ranked as Minor (5).			
Changes to cultural heritage values As identified from literature and/or consultation (Section 4.3.6.2.1), Sea Country is a value for First Nations people. One of the specific tangible values of Sea Country identified through consultation was marine fauna (Table 4-14). CAPL considers that indirect impacts to First Nations cultural values associated with marine fauna may occur due to OWR. As such, CAPL has ranked the consequence for cultural values as Minor (5), consistent with that for OWR.			

Physical presence—oiled wildlife response	
ALARP Decision Context Justification	
The risks associated with OWR are well understood, with the technique having been applied successfully for a number of large spill events. Although there is a good understanding of the response technique, there is uncertainty regarding the specific location at which this may be undertaken, the number of animals that may be impacted, and thus the level of response that may be required. Spill modelling was used to inform the extent of such a spill, and thus provide a sound basis for response planning to such an incident. Control measures to manage the risks associated with OWR are well defined with most being linked to detailed monitoring plans that feed into tactical planning requirements and NEBAs. The risks arising from implementing OWR in the event of a spill are extremely low, and CAPL consider these to be lower-order risks in accordance with Table 5-3. As such, CAPL considers ALARP Decision Context A should be applied for this aspect	
Good practice control measures	
Control Measure	**Description**
OSMP	The OSMP details the arrangements and capability in place for operational and scientific monitoring. Operational monitoring collects information about the oil spill to aid planning and decision-making for executing spill response or clean-up operations. Scientific monitoring focuses on the environmental impact attributable to the spill or the associated response activities and informs requirements for remediation (if required). CAPL has developed an NOPSEMA-accepted OSMP (Ref. 2) to support all spill monitoring activities across all its assets. Specifically, Operational Study 6 – Rapid Seabird and Shorebird Assessment and Operational Study 7 – Rapid Marine Megafauna Assessment provide information on the presence of wildlife with regards to predicted trajectory to understand the level of OWR required.
OPEP	Under the OPGGS(E)R, NOPSEMA require that the petroleum activity have an accepted OPEP in place before commencing the activity. Should a LOWC scenario occurs, the OPEP will be implemented. CAPL has developed a NOPSEMA-accepted OPEP (Ref. 1) to support all spill response activities across all its assets. The OPEP identifies the resource capability required to implement the strategy based on shoreline sensitivities and the magnitude of the spill.
Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)	In addition to consultation undertaken during the preparation of this EP (as required by regulation 25 of the OPGGS(E)R, and described in Section 6), where requested, as part of ongoing consultation (as required by regulation 22(15) of the OPGGS(E)R, and described in Section 8.3.4) CAPL will continue to engage with First Nations people and/or representative bodies. This ongoing consultation relates to both the specific petroleum activity (Table 8-5) as well as broader engagement and relationship building (Section 8.3.4.3).
Likelihood and Risk Level Summary	
Likelihood	Where there is the possibility for surface oil to impact wildlife, the risks associated with OWR are lower than those associated with inaction. With the control measures in place, the likelihood of the described consequences occurring from OWR activities was determined to be Remote (5).
Risk Level	Very low (9)
Acceptability Summary	
Principles of ESD	The potential impact associated with this aspect is considered as having the potential to result in a localised incidental impact and thus is not expected to affect biological diversity and ecological integrity. The consequence associated with this aspect is Minor (5). Therefore, no additional evaluation against the Principles of ESD is required.

<table>
<tr><th colspan="3">Physical presence—oiled wildlife response</th></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">No legislation and other requirements relevant to this aspect were identified.</td></tr>
<tr><td>Internal context</td><td colspan="2">The CAPL management process or procedure considered relevant for this aspect is:
OSMP (Ref. 2)
OPEP (Ref. 1)
Control measures related to each of the above management processes or procedures have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding spill response activities.</td></tr>
<tr><td>Defined acceptable level</td><td colspan="2">These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.
CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level.</td></tr>
<tr><th>Environmental Performance Outcomes</th><th>Environmental performance Standards</th><th>Measurement Criteria</th></tr>
<tr><td rowspan="5">(EPO 16) Reduce the risk of impacts to the environment during event response.

(EPO 2.b) No adverse change to First Nations cultural heritage values from the petroleum activity..</td><td rowspan="4">(EPS 14.7) OSMP
In the event of a Level 2 (or above) oil spill to marine or coastal waters occurring, the OSMP will be activated, and:
the components of the operational monitoring program are initiated[41] once the specific initiation criteria are met
the components of the scientific monitoring program are initiated once the specific initiation criteria are met
operational and scientific monitoring components are continued until respective termination criteria are met.</td><td>(MC 14.7.1) Records confirm the OSMP has been activated</td></tr>
<tr><td>(MC 14.7.2) Records confirm that once initial criteria have been met, operational monitoring programs were initiated.</td></tr>
<tr><td>(MC 14.7.3) Records confirm that once initial criteria have been met, scientific monitoring programs were initiated.</td></tr>
<tr><td>(MC 14.7.4) Records confirm that once termination criteria have been met, operational and scientific monitoring programs were ceased.</td></tr>
<tr><td>(EPO 14.3) OPEP
In the event of a Level 2 (or above) oil spill occurring to marine or coastal waters, response activities are implemented in accordance with the ABU Consolidated OPEP.</td><td>(MC 14.3.1) Records confirm the OPEP has been activated and response activities implemented.</td></tr>
<tr><td colspan="2">OPEP
Refer to the ABU Consolidated OPEP for environmental performance outcomes, standards and measurement criteria related to emergency management, emergency preparedness, and each response tactic.</td></tr>
<tr><td>(EPS 2.4) Relevant persons consultation—Ongoing consultation (First Nations people and/or representative bodies)</td><td>(MC 2.4.1) Relevant persons consultation records.</td></tr>
</table>

[41] *As per Section 2.1 of the OSMP, for this plan initiation means starting preparation for implementation.*

Physical presence—oiled wildlife response		
	In the event of a spill occurring, CAPL will engage with relevant First Nations people and/or representative bodies.	

8 Implementation strategy

This section describes the implementation strategy as required under Regulation 22 of the OPGGS(E)R. The implementation strategy identifies the systems, practices, and procedures used to ensure the environmental impacts and risks of the petroleum activities are continuously reduced to ALARP and the environmental performance outcomes and standards detailed in Section 7 are achieved.

CAPL, as nominated titleholder, is responsible for ensuring the petroleum activity within scope of this EP is managed in accordance with this implementation strategy. The MODU and vessel contractors will be required to comply with the requirements of this EP to ensure that the environmental performance outcomes and standards are achieved. The MODU and vessel contractors HSE documentation will be reviewed for alignment with the relevant requirements described in this EP before commencing the activity.

8.1 Operational Excellence Management System

CAPL's operations are managed in accordance with Chevron Corporation's OEMS, which is a comprehensive management framework that supports the corporate commitment to protect the safety and health of people and the environment. The OEMS aligns with ISO 14001:2015 *Environmental management systems – Requirements with guidance for use* (Ref. 26) and meets the requirements of the OPGGS(E)R.

OE systematically manages workforce safety and health, process safety, reliability, and integrity, environment, efficiency, security, and stakeholders to meet the OE objectives and ensure safe operations of CAPL facilities and projects. The OEMS comprises the following key components (Figure 8-1):

- **leadership and OE culture**—through the OEMS, CAPL leaders engage employees and contractors to build and sustain the OE culture and deliver OE performance
- **management system cycle** (MSC)—by applying the MSC, CAPL leaders make risk-based and data-driven decisions, prioritise activities, and direct improvements
- **focus areas and OE expectations** (including common expectations)—focus areas are categories of OE risks and include workforce safety and health, process safety reliability and integrity, environment, efficiency, security, and stakeholder engagement; OE expectations guide the design, management, and assurance of the presence and effectiveness of safeguards.

The OEMS outlines the process for identifying, establishing, and maintaining safeguards and to provide assurance that they are in place, functioning as intended, and are in accordance with legal and OE requirements. The risk management process (Figure 8-1) assesses and identifies safeguards, which are the hardware and human actions designed to directly prevent or mitigate an incident or impact associated with the project, personnel, and the environment. The assurance process (Figure 8-1) provides the verification and validation that the safeguards are in place and functioning as intended.

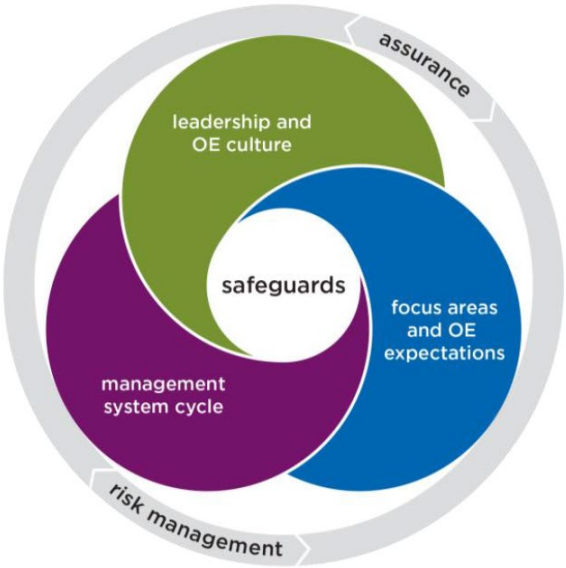

Figure 8-1: Overview of Chevron Corporation's OEMS

8.2 Leadership and OE culture

CAPL leaders demonstrate and are accountable for the consistent and rigorous application of the OEMS to drive performance and manage risks. The actions and visibility of leaders reinforce CAPL's commitment to place the highest priority on the safety and health of its workforce, and on the protection of communities, the environment, and its assets.

8.2.1 Roles and accountability

CAPL leaders have the overall accountability for the implementation of the OEMS.

8.2.1.1 Chain of command (petroleum activity)

As required under Regulation 22(3) of the OPGGS(E)R, a clear chain of command for implementing the petroleum activity is outlined in Figure 8-2.

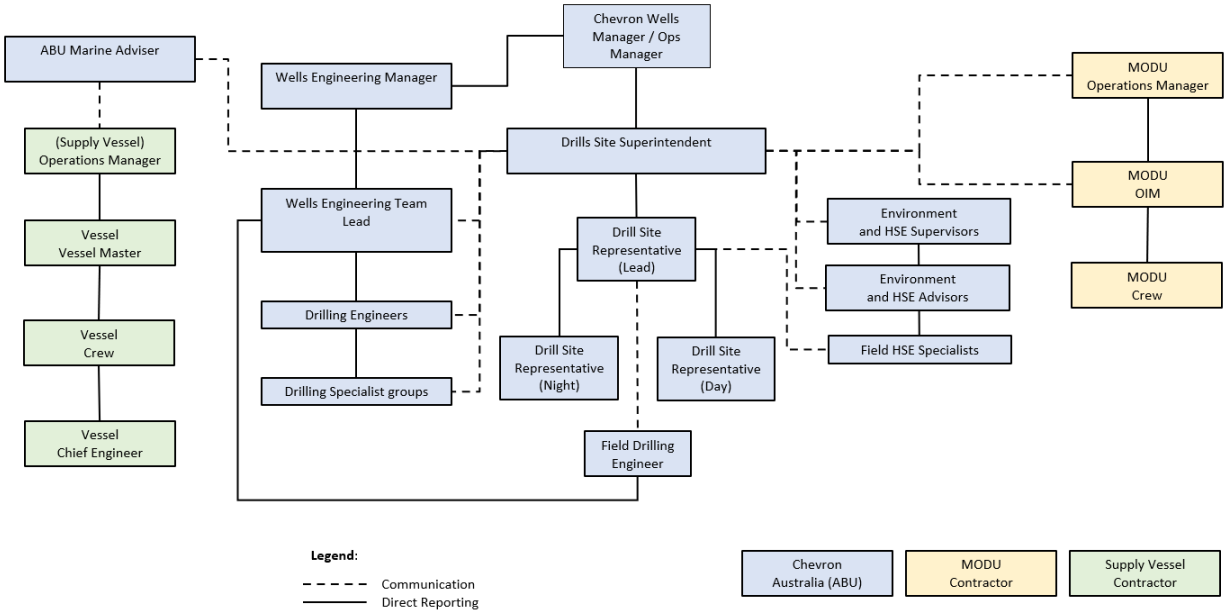

Figure 8-2: Chain of command—drilling, well intervention and/or well abandonment

8.2.1.2 Roles and responsibilities (petroleum activity)

The roles and responsibilities of key CAPL and contractor personnel for implementing task-specific control measures as detailed in Section 6, are summarised in Table 8-1.

Table 8-1: Key roles and responsibilities—drilling, well intervention and/or well abandonment

Role	Responsibilities
CAPL Personnel	
Chevron Wells Manager	• Overall responsibility for implementing, managing, and reviewing this EP Ensure that: • all third-party vessels or contractors are aware of any requirements in this EP, including completing relevant inductions as per Section 8.2.1.3 • ongoing consultation is conducted in accordance with Section 8.3.4 • any MoC is conducted in accordance with Section 8.3.2.2, and notify the Drill Site Representative and HSE Advisor of any scope changes, where relevant • environmental incident reporting is completed in accordance with Section 8.4.2 • routine environmental reporting is undertaken in accordance with Section 8.4.3.
Drill Site Superintendent	Ensure that: • all personnel are made aware of their requirements under this EP and have completed inductions • impacts and risks are continually reduced to ALARP and an acceptable level by implementing this EP in accordance with Section 7 • pre-mobilisation inspections of vessels are undertaken to confirm they comply with relevant legislative requirements, and requirements under this EP • corrective actions identified during environmental inspections are closed out in accordance with Section 8.3.6 • seabird management procedure is implemented • all incidents, including breaches of environmental performance standards, are reported to the Chevron Wells Manager
Drill Site Representative (Offshore)	Ensure that: • all personnel are made aware of their requirements under this EP • impacts and risks are continually reduced to ALARP and an acceptable level by implementing this EP in accordance with Section 7 • compliance with this EP is verified in accordance with Section 8.3 and Section 8.3.9.8.1, including: – completion of environmental inspections – collection of evidence against environmental performance standards assist with review, investigation, and reporting of environmental incidents (as required).
Environment and HSE Supervisors	Ensure that: • all personnel are made aware of their requirements under this EP • impacts and risks are continually reduced to ALARP and an acceptable level by implementing this EP in accordance with Section 7 • all changes to this EP are subject to a MoC assessment as described in Section 8.3.2.2 • compliance with this EP is verified in accordance with Sections 8.3 and 8.4, including: – completing environmental inspections – collecting evidence against environmental performance standards – regularly reviewing compliance with environmental performance standards

Role	Responsibilities
	– preparing environmental performance report after completing the drilling program • assist with review, investigation, and reporting of environmental incidents (as required) • this EP is reviewed in accordance with Section 8.5.
Contractor	
Vessel Master/s	Ensure that: • impacts and risks are continually reduced to ALARP and an acceptable level by implementing this EP in accordance with Section 7 • all necessary vessel-related documentation (e.g. SOPEPs, certificates, etc.) is available in accordance with Section 7 • all marine safety information notifications are issued in accordance with Section 7 • vessel operations are being conducted in accordance with the legislative requirements and this EP, including waste management, refuelling, and emergency/oil spill response • maintenance of equipment and records meet statutory requirements vessels implement cetacean interaction requirements in accordance with EPBC Regulations 2000, and any other additional marine fauna interaction requirements in accordance with this EP • all incidents are immediately reported to the Drill Site Representative • all emissions and discharges are monitored and recorded in accordance with Section 7. • a Vessel Master (or delegate) is on duty at all times.
MODU Offshore Installation Manager (OIM)	Ensure that: • impacts and risks are continually reduced to ALARP and an acceptable level by implementing this EP in accordance with Section 7 • all marine safety information notifications are issued in accordance with Section 7 • MODU operations are being conducted in accordance with the legislative requirements and this EP, including waste management, refuelling, and emergency/oil spill response • maintenance of equipment and records meet statutory requirements • all incidents are immediately reported to the Drill Site Representative • all emissions and discharges are monitored and recorded in accordance with Section 7.
MODU and Vessel crew	Ensure that: • the activity is undertaken in a professional and safe manner with attention to good housekeeping procedures and work practices • immediately report any incidents to the Vessel Master or MODU OIM • immediately report any environmental incidents or spills to the Vessel Master • working in accordance with accepted MODU and vessel procedures • compliance with this EP's requirements as applicable to assigned role

8.2.1.3 Training and competency (petroleum activity)

In accordance with Regulation 22(4) of the OPGGS(E)R, each employee responsible for implementing task-specific control measures during operational activities must be aware of their specific responsibilities as detailed in this EP. People who hold responsibilities relating to implementing this EP are hired by CAPL on the basis of their particular qualifications, experience, and competency.

CAPL's training and competency system is used to identify corporate and role-specific training and competency requirements for CAPL personnel. The system is

also used to ensure training and competency requirements are maintained and are up-to-date. This includes, applicable IADC or IWCF certifications, where required.

All external contractor personnel involved with activities within scope of this EP will hold qualifications or training certification relevant to their role, which will be confirmed through the contractor selection process, audits and review processes.

The MODU and vessel contractors will provide marine crew who are trained and competent to undertake their respective activities onboard the MODU or vessel. All marine personnel will be qualified in accordance with the International Convention on Standards of Training Certification and Watch Keeping for Seafarers (STCW95).

Personnel with specific responsibilities under this EP (refer to Section 8.2.1.2) will be made aware of their role-specific responsibilities under this EP.

All personnel (including contractors) must attend inductions that are relevant to their role (Table 8-2). Records of attendance at inductions will be maintained as per Section 8.3.2.1.

Table 8-2: Training and competency—drilling, well intervention and/or well abandonment

Induction	Required personnel	Scope
Induction	All relevant personnel	Before commencing activities, all personnel, including contractors, must attend an induction that includes an overview of the requirements of this EP. This induction fosters environmental stewardship among all personnel and ensures that they are aware of the control measures implemented to minimise the potential impact on the environment. The induction includes: • awareness of Chevron Corporation's Operational Excellence Policy 530 (Appendix A) • an overview of environmental sensitivities, and key impacts and risks from the petroleum activity • roles and responsibilities of vessel crew members • cetacean interaction requirements under Part 8 of the EPBC Regulations 2000, and additional marine fauna separation distances and VSP operations as per requirements of this EP • waste management and hazardous materials housekeeping requirements • incident reporting requirements (including definitions and reporting pathways) • incident response arrangements.

8.3 Focus areas and OE expectations

The OE expectations are organised into 6 focus areas (Figure 8-3). The OE expectations provide guidance to design, operate, maintain, improve, and assure the presence and effectiveness of safeguards. Common expectations also apply and support the OE expectations and focus areas Figure 8-3.

Figure 8-3: Focus areas and common expectations

The focus areas and common expectations relevant to this EP, and their key processes that demonstrate how CAPL is effective in reducing environmental impacts and risks to ALARP and an acceptable level, are listed in Table 8-3. Each of these focus areas and common expectations are described in further detail in the following subsections.

Table 8-3: Relevant focus areas and common expectations

Focus area or common expectation	Key processes
Focus area	
Workforce safety and health	• *Managing Safe Work (MSW): ABU Standardised OE Process* (Ref. 28) • *Chevron Marine Standard Non Tankers: Corporate OE Standard* (Ref. 29) • *ABU Hazardous Materials Management Procedure: ABU Standardised OE Procedure* (Ref. 30).
Process safety, reliability and integrity	• *OE Information Management: ABU Standardised OE Process* (Ref. 31) • *Management of Change for Facilities and Operations: ABU Standardised OE Process* (Ref. 32).
Environment	• *Environmental Stewardship: ABU Standardised OE Process (Ref. 33)* • *Quarantine Procedure Marine Vessels. ABU Standardised OE Process (Ref. 34)*
Stakeholders	• *Stakeholder Engagement and Issues Management: ABU Standardised OE Process* (Ref. 35)
Common expectation	
Risk management	• *ABU OE Risk Management Process* (Ref. 21)
Assurance	• *OE Assurance Corporate Process* (Ref. 36) • *OE Corporate Standard Incident Investigation* (Ref. 37) • *OE Data Reporting Standard (Ref. 38)*
Contractor OE management	• *Contractor Operational Excellence Management: ABU OE Process* (Ref. 396)
Incident investigation and reporting	• *Incident Investigation and Reporting (II&R) Execution Manual* (Ref. 39)
Emergency management	• *Emergency Management OE Process* (Ref. 40) • OPEP (Ref. 1) • OSMP (Ref. 2)

8.3.1 Workforce safety and health

8.3.1.1 Managing safe work

The Managing Safe Work (MSW) expectation is to assess workplace safety and health hazards and manage the risks associated with the execution and control of work performed by CAPL employees, their delegates, contractors, and subcontractors. The MSW system (Ref. 28) is implemented to ensure safe work practices are made available to the workforce. Standards and procedures relating to MSW relevant to this EP include the permit to work (PTW) system. The PTW system, which includes simultaneous operations (SIMOPS) and hazard analysis, is a way to identify, communicate, mitigate, and control hazards associated with work that have the potential to adversely affect HSE. As the potential consequence associated with each task increases, so does the level of controls and approval that are required.

8.3.1.2 Marine

The *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 29) identifies the requirements and activities necessary to deliver safe, reliable, and efficient third-party marine operations. This process describes key roles and responsibilities for managing marine safety and establishes measurement and verification activities designed to promote a process of continual improvement.

The Marine Standard applies to all marine vessels, emergency response, and all other (non-bulk petroleum) vessels chartered, owned, or operated by CAPL. The process also applies to vessels contracted by an affiliate or contractor that provide marine support or marine services to CAPL.

The key elements of the Marine Standard that apply to the activities outlined in this EP are:

- vessel inspections—vessels used by CAPL or its affiliates must undergo a vessel audit/inspection process before deployment to ensure that the vessels and the staffing levels meet safety requirements and are fit-for-purpose; inspections also ensure emergency procedures (such as SOPEP/SMPEP) are available and that the required standards are met for navigation equipment, lighting, waste systems, and other marine safety protocols including Marine Order 30 (Prevention of Collisions)
- competency management—vessels used by CAPL must be operated by competent personnel who meet applicable international and local regulations
- cargo handling—cargo transport and handling operations on marine vessels must comply with handling procedures and align to standard marine industry practices
- complicated and/or heavy lifts—all lifting and installing of heavy equipment near offshore infrastructure must meet the detailed requirements
- hose management—operations involving the transfer of bulk liquids using loading hoses must align to standard industry practice and safety of the environment
- vessel communication—vessels must have in place communications procedures for operations close to installations, or other mobile units to ensure that safe positioning and communications are maintained at all times.

Vessels provide an activity-specific operational guideline, based on their use and specification, which must be accepted by CAPL.

8.3.1.3 Hazardous materials

CAPL's *Hazardous Materials Management Procedure* (Ref. 30) outlines the process for HSE assessment and approval of hazardous materials. Hazardous materials include those classified as 'hazardous substances' or 'dangerous goods'.

The Hazardous Materials Management Procedure is designed to:

- assess hazardous materials requested for procurement for their HSE risks
- ensure that appropriate controls are identified for using procured hazardous materials and that these controls are communicated to the requestors of the materials and end users at locations within CAPL's operations
- ensure no product includes CAPL-prohibited ingredients
- ensure substitutes were considered if a product contains CAPL-restricted ingredients.

As part of the hazardous materials selection process, hazardous materials that will be discharged to the environment will undergo a detailed environmental assessment. This environmental assessment is guided by the methodology and classification system used by the Offshore Chemical Notification Scheme (OCNS) and Chemical Hazard Assessment and Risk Management (CHARM). Hazardous materials not listed on OCNS or CHARM, are still subject to the environmental assessment described below.

The environmental assessment includes an evaluation of the potential environmental risks that could be associated with the chemical, and considers the relevant dosage, quantity and frequency of the chemical discharge, the location and nature of the receiving environment, and the assessment criteria described in Table 8-4.

The chemical selection process ensures impacts and risks associated with chemical discharge are reduced to levels that are ALARP and acceptable, while meeting operational performance requirements.

Table 8-4: Chemical risk assessment criteria

Assessment criteria	Selection rationale
Potential for acute and/or chronic toxicity to aquatic life	The toxicity of a chemical is the fundamental consideration within this assessment. This reflects the UK OCNS system which ranks chemicals based on their toxicity, and then adjusts rankings depending on biodegradation and bioaccumulation properties. The scale for toxicity is based on the toxicity rating classification system used by DEMIRS, from Hinwood et al. (Ref. 42).
Persistence or biodegradability	Biodegradation rate provides an indication of the potential persistence of the chemical within the environment, and therefore the potential duration of exposure for environmental sensitivities. The scale for biodegradation is based on adjustment criteria used by Centre for Environment, Fisheries and Aquaculture Science (CEFAS) to finalise chemical hazard assessment scores under the OCNS system.
Bioaccumulation or bio-concentration	Indicates the potential for the chemical (or components of the chemical) to accumulate within biological matrices and food chains. Chemicals which may not be toxic and are introduced to the environment in low concentrations can

Assessment criteria	Selection rationale
	concentrate within biological matrices to the point where they become toxic and may have either acute or chronic effects. The scale for bioaccumulation is based on adjustment criteria used by CEFAS to finalise chemical hazard assessment scores under the OCNS system.

8.3.2 Process safety, reliability and integrity

8.3.2.1 OE information management

Under the OEMS, records (including compliance records to demonstrate environmental performance and compliance with commitments in this EP) will be retained in accordance with Regulation 52 of the OPGGS(E)R.

The OE information management process (Ref. 31) explains how critical information related to HSE, reliability, efficiency, and process safety is to be identified, developed, assessed, and maintained so that the workforce has access to, and is using, the most current information. This document describes key roles, responsibilities, and competencies associated with the process, and includes measurement and verification activities.

Vessel contractors will maintain records as above and must make these available upon request.

Records relevant to drilling, well intervention and/or well abandonment activities may include:

- this EP
- induction material and attendance records
- assurance register
- inspection records and supporting evidence
- incident reports, if applicable
- routine environmental reporting
- emissions and discharge data
- relevant log book records (e.g. vessel).

8.3.2.2 Management of change

MoC expectations are to manage proposed changes to design, equipment, operations and products before they are implemented. In conjunction with the *ABU OE Risk Management Process* (Section 8.3.5), the *Management of Change for Facilities and Operations* process (Ref. 32) is followed to document and assess the impact of changes to activities described in this EP. 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 the requirement for submission of a revised EP under the OPGGS(E)R, as detailed below, this EP will be revised, and changes recorded in the EP without resubmission.

For drilling, well intervention and/or well abandonment activities, the following would trigger an MoC:

- change to the activity scope (e.g. timing, vessel, equipment, etc.)

- changes to knowledge of the receiving environment (e.g. EPBC listed species, Part 13 statutory instruments [i.e. recovery plans, threat abatement plans, conservation advice, wildlife conservation plans], requirements for AMPs, etc.)
- new objections or claims received from relevant persons that are assessed to have merit
- non-conformances or opportunities for improvement which indicate that control measures may not be managing environmental impacts and risk to ALARP and acceptable levels
- incidents which identify new or increased impacts and risks arising from activities not previously identified in the accepted EP.

In accordance with Regulations 38 and 39 of the OPGGS(E)R this EP must be revised and resubmitted to NOPSEMA in the following circumstances:

- before commencing a new activity, or any significantly modification or new stage of the activity, not provided for in this EP
- if a change in the titleholder results in a change in the manner in which the impacts and risks of the activity are managed
- as soon as practicable after the occurrence of any significant new environmental impact or risk, or significant increase in an existing environmental impact or risk, that is not provided for in this EP
- as soon as practicable after the occurrence of 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.

8.3.3 Environment

The Environment Focus Area provides CAPL's framework for the protection of the environment and community health using a risk-based approach that addresses potential environmental impacts.

8.3.3.1 Environmental stewardship

The environmental stewardship process (Ref. 33) is designed to identify, assess, and manage potentially significant environmental impacts in a consistent manner and continually improve environmental performance. The objectives of the process are to:

- provide a consistent approach to environmental stewardship
- reduce the potential for environmental impacts
- support continual improvement in environmental performance throughout the lifecycle of Chevron's assets.

8.3.3.2 Quarantine

The *Quarantine Procedure Marine Vessels* (Ref. 34) provides information about quarantine compliance to CAPL, contractors, and others associated with marine vessels.

In relation to the offshore title areas, the purpose of this procedure is to prevent offshore facilities and activities associated with CAPL title areas becoming staging areas for introducing marine pests into Australian waters and ports.

This procedure also outlines the requirements for vessels operating in title areas and details the premobilisation requirements and ongoing management of vessels operating in title areas.

All vessels operating in title areas must comply with applicable Australian biofouling and ballast water requirements to prevent the introduction and spread of marine pests. Regardless of the origin of the vessel or where it will be operating, all vessels must be free from marine pests when mobilised and the contractor must demonstrate the vessel meets low risk rating for biofouling.

As per the Quarantine Procedure Marine Vessels (Ref. 34), CAPL undertakes a risk assessment before any vessel is mobilised to title areas to confirm the vessel meets the requirements for approaching and accessing these areas. For this purpose, each vessel contractor submits a completed Marine Vessel Questionnaire with supporting evidence to CAPL for assessment.

This risk assessment will consider the vessel's attributes and history, including wetsides cleaning, application of antifoul coating, and recent transit history, including time in known high-risk waters.

If the vessel's history is unknown or if there is a moderate risk of IMP presence, additional actions must be undertaken. These action items (which may include requirements such as dry-dock, hull cleaning, etc.) will be issued to the contractor to implement. The contractor must also submit the vessel details to the Vessel Check online risk assessment tool (https://www.vessel-check.com/) and provide CAPL with a copy of the resulting Risk Assessment Report demonstrating the vessel has achieved low risk rating. Only once a vessel has met the requirements of the Quarantine Procedure Marine Vessels (Ref. 34), will CAPL issue a Vessel Mobilisation Certificate.

8.3.4 Stakeholders

Stakeholder engagement expectations are to manage social, political, and reputational risks to CAPL (and Chevron), address potential business impacts, and generate business value by:

- identifying, assessing, and prioritising issues
- building and maintaining relationships with external stakeholders, including governments and the communities where CAPL operates
- developing and executing issue management and stakeholder engagement plans, tracking engagements and issues, and validating the effectiveness of plans.

The *Stakeholder Engagement and Issues Management Process* (Ref. 35) details an integrated approach for engaging stakeholders and managing external stakeholder issues. This process describes key roles and responsibilities for stakeholder engagement, establishes measurement and verification activities designed to monitor the effectiveness of the stakeholder engagement process and to promote continual improvement.

8.3.4.1 Ongoing consultation with relevant persons

In accordance with Regulation 22(15) of the OPGGS(E)R, CAPL will undertake ongoing consultation for this petroleum activity with relevant authorities and other relevant interested persons or organisations for this petroleum activity as described in Table 8-5.

Through co-design of consultation, CAPL will agree processes for ongoing consultation with relevant persons. This may include consultation on the ongoing environmental performance of the petroleum activity and review of applicable control measures with the relevant persons. Engagement agreements, information on grants and social benefit investments (e.g. funding for ranger programs and training opportunities to support CAPL's activities), and consultation plans with relevant persons are included in the sensitive information report. Records for ongoing consultation with relevant persons will be recorded and maintained in CAPL's online tracking engagements system.

Any objections or claims arising from ongoing consultation that have merit and have the potential to result in changes to the description of environment, impact or risk assessment, or control measures, will be subject to CAPL's Management of Change (MoC) process, in accordance with Section 8.3.2.2.

If a new relevant person is identified during the in-force period of the EP, CAPL will provide sufficient information to that relevant person and will assess the merits of the objections or claims of that relevant person in accordance with CAPL's MoC process (Section 8.3.2.2).

Records for ongoing consultation with relevant persons will be recorded and maintained in CAPL's online tracking engagements system.

Table 8-5: Notifications and ongoing consultation

Relevant person	Notification or ongoing consultation requirement	Timing	Frequency
Notifications			
AHO	Provide information to enable distribution of Notice to Mariners Notify AHO via datacentre@hydro.gov.au	At least 4 weeks before commencing activities, or as otherwise agreed with AHO	Once, before activities commence
AMSA	Provide information to enable distribution of radio-navigation warnings Notify AMSA's JRCC via rccaus@amsa.gov.au (phone: 1800 641 792 or +61 2 6230 6811)	At least 24–48 hours before commencing activities, or as otherwise agreed with AMSA	Once, before activities commence
Relevant persons who have requested ongoing notifications	CAPL will provide a pre-start notification confirming the start date of the petroleum activity	At least 2 weeks before commencing activities	Once, before activities commence
	CAPL will provide notification after completing the petroleum activity	Within 2 weeks of completing activities	Once, after activities are completed
Ongoing consultation			
WAFIC	To inform of changes to activities or impacts/risks occurring that may affect fisheries	Before new or significant changes to activities or impacts/risks occur	As required

Relevant person	Notification or ongoing consultation requirement	Timing	Frequency
	Notify WAFIC via oilandgas@wafic.org.au		
Potentially affected relevant persons	CAPL to advise of any new or significant changes to activities or impacts/risks within the scope of the EP, following an evaluation as per Section 8.3.2.2, that may potentially impact marine users functions, interests, or activities	Before new or significant changes to activities or impacts/risks occur	As required
First Nations people and/or representative bodies	CAPL to continue engaging with First Nations people and/or representative bodies regarding identifying and understanding the cultural values or features that may be present within the EMBA (refer to Section 8.3.2.2	Ongoing	Ongoing
	Any new information on cultural values or features within the EMBA, and subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation as per Section 8.3.2.2	Ongoing	Ongoing
	CAPL to advise of any new or significant changes to activities or impacts/risks within the scope of the EP, following an evaluation as per Section 8.3.2.2, that may potentially impact the functions, interests and activities of First Nations people and/or representative bodies	Before new or significant changes to activities or impacts/risks occur	As required
	If an unplanned emergency event occurs that is likely to affect the functions, interests, or activities of First Nations people and/or representative bodies, CAPL will commence engagement with the relevant person and/or representative bodies	As soon as practicable within an emergency response.	Once, post unplanned emergency event.
DCCEEW	CAPL to advise of any new or significant changes to activities or impacts/risks within the scope of the EP, following an evaluation as per Section 8.3.2.2, that may potentially impact underwater cultural heritage (as protected by the UCH Act).	Before new or significant changes to activities or impacts/risks occur	As required

8.3.4.2 Consultation in the event of an emergency

In the event of an emergency hydrocarbon spill event, CAPL will commence oil spill trajectory modelling using the actual inputs associated with the spill event to predict trajectory, as described in the OPEP (Ref. 1).

Once oil spill trajectory modelling is completed, CAPL will start engaging with potentially affected relevant persons and any additional relevant persons identified under Section 8.3.4.1), plus any others identified from the oil spill trajectory modelling. This engagement will include WAFIC and any potentially affected commercial fisheries as required. The process for reaching out to these relevant persons includes direct contact (phone or email) or indirect contact via the CAPL website.

In the event of other emergency events (e.g. potential reportable incident), CAPL will commence any emergency management as required (and in accordance with Section 8.3.9), and consultation with required departments or agencies will occur as per regulatory requirements (e.g. refer to Table 8-13 for incident reporting requirements).

CAPL will also notify any relevant persons (as identified in Table 6 4, and any additional relevant persons identified under Section 8.3.4.1. that requested to be notified in the event of an oil spill or in the event of any other emergency event.

8.3.4.3 Ongoing engagement with First Nations representative bodies

Through the consultation process in preparation of this EP (Section 6), several potential initiatives or scopes for ongoing engagement with First Nations representative bodies were identified, including consideration of:

- ranger programs
- capacity building for emergency response support
- support to assist with identifying and articulating the cultural values and features of Country, including Sea Country values.

These initiatives/scopes are being discussed and progressed with the respective representative bodies.

Where requested, formal engagement plans are in development and if agreed to by CAPL and the relevant representative body, these will be implemented.

Table 8-6 provides a summary of the objectives, scope, and responsibilities of the engagement plans and/or consultation protocols drafted to date. Further information on ongoing consultation and relationship building with First Nations representative bodies is presented in Table 8-7.

Table 8-6: Summary of objectives, scope, and responsibilities in engagement plans and/or consultation protocols

Objectives	Scope	Responsibilities
• provide governance and strategic oversight to guide collaboration and communications • sets out general terms for allocation of resources and recovery of reasonable costs • establish a framework for ongoing consultation • outlines the principles for building relationships: – co-design and co-decide – transparency – walking together.	• consultation meetings • consultation funding • review of information relating to CAPL proposals • confidentiality • negotiation principles • dispute resolution	CAPL responsibilities: • design and plan engagements in advance • engage in person and aim to provide information in plain English • provide access to internal subject matter experts as well as support for external and independent advice • meet reasonable costs and expenses. Joint responsibilities: • share plans and strategies with each other

Objectives	Scope	Responsibilities
	• general correspondence.	• plan and engage early and work together on issues • use the negotiations to build trust and goodwill and to negotiate in good faith • spend time together outside of the boardroom.

Table 8-7: First Nations representative bodies ongoing consultation and relationship building

First Nations representative body	Ongoing Consultation	Relationship Building
Baiyungu Aboriginal Corporation (BAC)	• BAC has requested that ongoing consultation be completed through the PBC, NTGAC • CAPL will keep BAC informed on the timing and status of its activities • CAPL will notify BAC in the event that a reportable incident occurs.	• CAPL provided opportunity to participate in Chevron Community Spirit Grant program and is now providing funding support for a community cultural event in 2024 • CAPL invited BAC participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023).
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	• CAPL has executed an interim cost recovery agreement with BTAC for ongoing consultation and have finalised a Funding Agreement which will be formally endorsed at the April BTAC Board meeting, which CAPL will attend • CAPL and BTAC will hold a one-day common law holder consultation meeting in mid-May 2024..	• CAPL has provided and are implementing an agree Engagement Plan • Cost Recovery mechanisms in place for BTAC informal meetings including on country meetings and events • CAPL invited BTAC participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023) • CAPL has invited BTAC to an on-country consultation on Barrow Island • CAPL has supported BTAC with an expression of interest to participate in a joint venture with the Pilbara Development Commission on the Northern Native Seed Initiative • CAPL provided opportunity to participate in Chevron Community Spirit Grant program • CAPL and BTAC have commenced scoping a potential cultural mapping program
Mardathoonera Cultural Heritage Pty Ltd	• CAPL has provided Engagement Pland and Consultation Protocol which provides cost recovery • CAPL working with MCH to forecast consultation requirements and schedule for 2024.	• Informal meetings with MCH including on country meetings to learn more about Country and Sea Country • CAPL has provided an on-country consultation at Barrow Island and tour (2 nights).

First Nations representative body	Ongoing Consultation	Relationship Building
Murujuga Aboriginal Corporation (MAC)	• MAC has advised CAPL to consult with the relevant PBCs • CAPL will keep MAC informed on the timing and status of its activities • CAPL will notify MAC in the event that a reportable incident occurs • CAPL working with MAC to forecast consultation requirements and schedule for 2024.	• CAPL invited MAC participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023) • CAPL provided opportunity to participate in Chevron Community Spirit Grant program.
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	• CAPL has completed a workshop with the NTGAC board to design ongoing consultation • CAPL has provided an Engagement Plan to NTGAC which provides cost recovery for informal meetings with NTGAC including on country meetings and events • CAPL working with NTGAC to forecast consultation requirements and schedule for 2024.	• CAPL has offered funding support to NTGAC for a resource to assist with consultations and the development of the corporation • CAPL invited NTGAC participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023) • CAPL provided opportunity to participate in Chevron Community Spirit Grant program.
Ngarluma Aboriginal Corporation (NAC)	• CAPL and NAC have executed a consultation meeting protocol which provides cost recovery and agreed meeting schedule • CAPL working with NAC to co-design ongoing consultation • CAPL working with NAC to forecast consultation requirements and schedule for 2024.	• CAPL invited NAC participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023) • CAPL provided opportunity to participate in Chevron Community Spirit Grant program.
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	• CAPL has provided an Engagement Plan to NFYL which provides cost recovery for informal meetings with NYFL including on country meetings and events • CAPL working with NYFL to co-design ongoing consultation • CAPL working with NYFL to forecast consultation requirements and schedule for 2024.	• CAPL invited NYFL participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023) • CAPL provided opportunity to participate in Chevron Community Spirit Grant program and have provided financial support for a social benefits program in Roebourne.

First Nations representative body	Ongoing Consultation	Relationship Building
Robe River Kuruma Aboriginal Corporation (RRKAC)	• RRKAC has requested that we inform them of activities occurring within 2 km of the mouth of the Fortescue River and to inform them of future activities for consideration by their Heritage and Culture Committee • CAPL working with RRKAC to forecast consultation requirements and schedule for 2024.	• CAPL invited WAC participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023) • CAPL has provided funding support to RRKAC through its community spirit grant program to invest in its ranger program.
Wirrawandi Aboriginal Corporation (WAC)	• CAPL and WAC have established a joint working group for ongoing consultation with cost recovery confirmed • CAPL working with WAC to forecast consultation requirements and schedule for 2024.	• CAPL invited WAC participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023) • CAPL provided WAC Board and Elders opportunity to spend time on Barrow Island • CAPL has provided WAC funding support to employ a Ranger Coordinator • CAPL has supported WAC with an expression of interest to participate in a joint venture with the Pilbara Development Commission on the Northern Native Seed Initiative • CAPL provided opportunity to participate in Chevron Community Spirit Grant program.
Yinggarda Aboriginal Corporation (YAC)	• CAPL has provided YAC with a consultation meeting protocol which provides cost recovery and agreed meeting schedule • CAPL is working with YAC to co-design ongoing consultation and forecast consultation requirements for 2024.	• CAPL has discussed ongoing engagement plan with YAC and opportunities to assist the corporation in the achievements of its strategic plan • CAPL invited YAC participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023) • CAPL provided opportunity to participate in Chevron Community Spirit Grant program.

8.3.5 Risk management

The risk management process (Ref. 21) assesses and identifies safeguards, which are the hardware and human actions designed to directly prevent or mitigate an incident or event and is designed to be consistent with the environmental risk management requirements of ISO 14001 *Environmental Management System* (Ref. 26) and ISO 31000:2018 *Risk management – Principles and guidelines* (Ref. 22).

This risk management process is summarised in Section 5 of this EP. Additional risk assessments must be undertaken if the MoC process (Section 8.3.2.2) is triggered. Risk assessments are undertaken in accordance with this process.

The *ABU OE Risk Management Process* (Ref. 21) and the *Management of Change for Facilities and Operations* process (Ref. 32) are the key systems CAPL use to ensure, that in accordance with Regulation 22(2)(a) of the OPGGS(E)R, the impacts and risks of the petroleum activity continue to be identified and reduced to ALARP.

8.3.6 Assurance

Within the OEMS, assurance is a common expectation that supports the OE objective of each focus area. The *ABU OE Assurance Process* (Ref. 36) enables CAPL to deliver assurance that safeguards are established and functioning; it details:

- a framework for managing safeguards and verification activities that assure that CAPL complies with applicable legal and OEMS requirements
- a process to identify and resolve potential noncompliance
- the minimum qualifications and organisational capability to execute this process.

The *ABU OE Assurance Plan* (Ref. 43) documents the CAPL ABU integrated assurance system and associated assurance activities (Figure 8-4). The *ABU OE Assurance Plan* is reviewed and approved annually and includes:

- a list of OE assurance priorities based on risk
- a schedule of assurance activities to evaluate safeguards and verifications (e.g. safeguard assurance workshops, audits, and assurance programs)
- reference to asset assurance plans that outline asset specific assurance activities and risk-based frequency (i.e. field inspection programs, audits, compliance reviews, performance reviews).

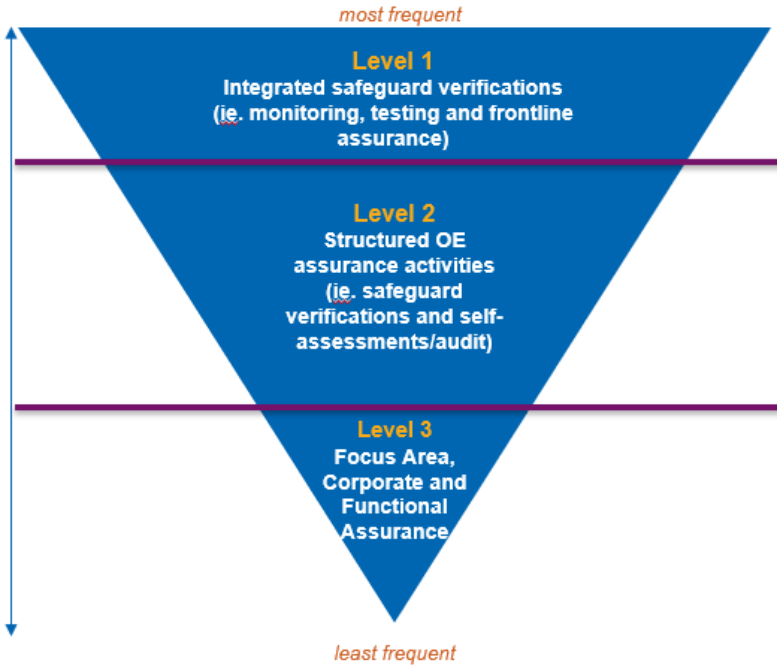

Figure 8-4: ABU integrated assurance system

To support the implementation of the *ABU OE Assurance Process* (Ref. 36), CAPL have developed an ABU integrated assurance system (Figure 8-4), which integrates and leverages assurance activities across the various levels of CAPL business through to the corporate level—to provide confidence that safeguards are in place and functioning as intended. This integrated assurance system includes:

- **Level 1 – Monitoring, testing and frontline assurance**: ongoing, routine, planned verifications of safeguards specific for the asset/facility (e.g. inspections, preventive maintenance, emergency drills and exercises)
- **Level 2 – OE assurance**: OE assurance activities (e.g. assessments, reviews, audits, inspections) that verify safeguards are in place and functioning, and validate that L1 assurance is effective. These assurance activities monitor weaknesses in the management system and compliance with regulatory requirements, and input learnings into the management system cycle
- **Level 3 – Corporate and functional assurance**: Assurance activities undertaken by Chevron, CAPL's functional groups (e.g. HSE, Drilling and Completions, base business) or third parties. These assurance activities test effectiveness of the focus area's complete assurance system and how associated safeguards are being sustained.

Assurance activities are scheduled on a risk-based approach and conducted to verify the effectiveness of safeguards and verifications and the extent to which requirements are met by CAPL.

Assurance activities focus on in-field activities and administrative processes, depending on the activities being undertaken and assurance priorities (these priorities are based on risk) and provide sufficient demonstration that environmental performance outcomes and environmental performance standards have been met and the activity implemented in accordance with this implementation strategy. A record of all assurance activities undertaken, and the outcomes, are maintained and actions are tracked until closure.

As outlined in Section 8.3.1.2, before commencing drilling, well intervention and/or well abandonment activities, a pre-survey vessel inspection will be undertaken to confirm that vessel management systems are consistent with the requirements in this EP.

Prior to the commencement of the petroleum activity, an assurance register specific to the requirements of this EP will be developed. This register will include the commitments established in the EP, such as those related to the EPO/EPS, implementation strategy (where relevant) and stakeholder consultation, as well as details on where evidence of compliance can be found. Assurance activities will be undertaken in accordance with the *ABU OE Assurance Process* (Ref. 36). Any potential non-conformances or opportunities for improvement will be identified, and corrective actions associated with these will be implemented as soon as practicable. Corrective actions will be delegated to the person deemed most appropriate to fulfil the action. Records of inspections will be maintained in accordance with Section 8.3.2.1.

During the petroleum activity, regular HSE inspections will be conducted onboard the MODU and support vessels and an environmental compliance audit will be conducted at least once to review compliance of the commitments established in the EP. Environmental performance standards in the EP will undergo a compliance review and evidence will be gathered for each environmental performance standard to support the end of activity environmental report. Environmental performance during the drilling and/or intervention will be reviewed to ensure that environmental performance standards and environmental performance outcomes are being met, reviewed and where necessary amended to continue to manage the environmental impacts and risks of the petroleum activity to ALARP and acceptable levels.

Assurance related to the drilling, well intervention and/or well abandonment activities described in this EP will be summarised in the end of activity report submitted to NOPSEMA (Section 8.4.3).

8.3.6.1 Managing instances of potential non-compliance

The reporting, investigation, and tracking of non-conformances resulting in citation or enforcement are managed via Chevron's *OE Corporate Standard Incident Investigation* (Ref. 37) and *OE Data Reporting Standard* (Ref. 38). These processes apply to instances where the requirements of this EP have not been met. This process is used if audit findings identify that activities in the scope of this EP are not being implemented in accordance with the risk and impact control measures identified in Section 7.

Audit findings and corrective actions are recorded and tracked in a CAPL compliance assurance database for timely closure of actions. As per Section 8.3.6, any corrective action/s identified during environment inspections must be implemented as soon as practicable during the drilling, well intervention and/or well abandonment activities. Audit findings that identify a breach of an environmental performance outcome or environmental performance standard will be reported in accordance with Section 8.4.2.

Any suggested changes to activities or control measures arising from audit findings or instances of potential noncompliance will be subject to a MoC process in accordance with Section 8.3.2.2.

8.3.7 Contractor operational excellence management

The Contractor Operational Excellence Management (COEM) Process (Ref. 396) is implemented to define CAPL's expectations regarding contractor OE and HSE performance, the qualification of contractors and the monitoring of contractor performance against expectations. When CAPL appoints the primary contractor to control work (including supervising the work of third parties and subcontractors) using their management system, a gap analysis between the CAPL OEMS and the contractor's management system is undertaken to ensure the contractor's management system meets applicable OEMS requirements.

8.3.8 Incident investigation and reporting

Incident investigation and reporting (II&R) expectations are to identify, report, record and investigate incidents, analyse trends, correct deficiencies, and share and adopt relevant lessons learned.

The *Incident Investigation and Reporting (II&R) Execution Manual* (Ref. 39) defines the requirements to report, classify, record, and investigate incidents and near misses, including but not limited to injury, occupational illness, environmental impact, reliability, business disruption, and community concern.

The II&R process includes these requirements:

- training for employees and contractors to recognise and report events
- internal and external notification of events
- investigating incidents at the probable level of consequence, with the rigor of investigation based upon learning opportunity and incident severity
- allocating an incident management sponsor for selected investigations
- sharing alerts, lessons learned, and bulletins
- tracking recommended actions to closure
- analysing event trends.

Events that meet the required criteria are recorded in the CAPL incident management system (IMS). The system holds records of the associated investigation results. The lessons learned from selected investigations are shared to reduce the likelihood of future comparable events.

Specific incident reporting requirements for this EP are detailed in Section 8.4.2.

8.3.9 Emergency management

CAPL's emergency management implementation strategy is described in the following sub-sections. Environmental Performance Outcomes, Standards and Measurement Criteria relating to CAPL's emergency management implementation strategy are included in Section 7.16.3.

In addition to CAPL's overarching emergency management strategies, and with specific reference to vessel-based activities, an approved SOPEP will also be in place (in accordance with vessel class requirements) as required by MARPOL 73/78 Annex I and Marine Order 91 (Marine pollution prevention – oil). In the event of a vessel-based spill event the SOPEP will be implemented by the Vessel Master. Control measures and environmental performance standards relating to

SOPEPs are described in Sections 7.14 and 7.15, and requirements have not been duplicated here.

8.3.9.1 Response document interfaces

In the event of an oil spill the overarching ABU Emergency Response Plan (Ref. 40) interfaces with the ABU OPEP (Ref. 1) and OSMP (Ref. 2), the Development Well *Source Control Emergency Response Plan* (SCERP) (Ref. 171) and Relief Well Plan (Figure 8-5; Table 8-8).

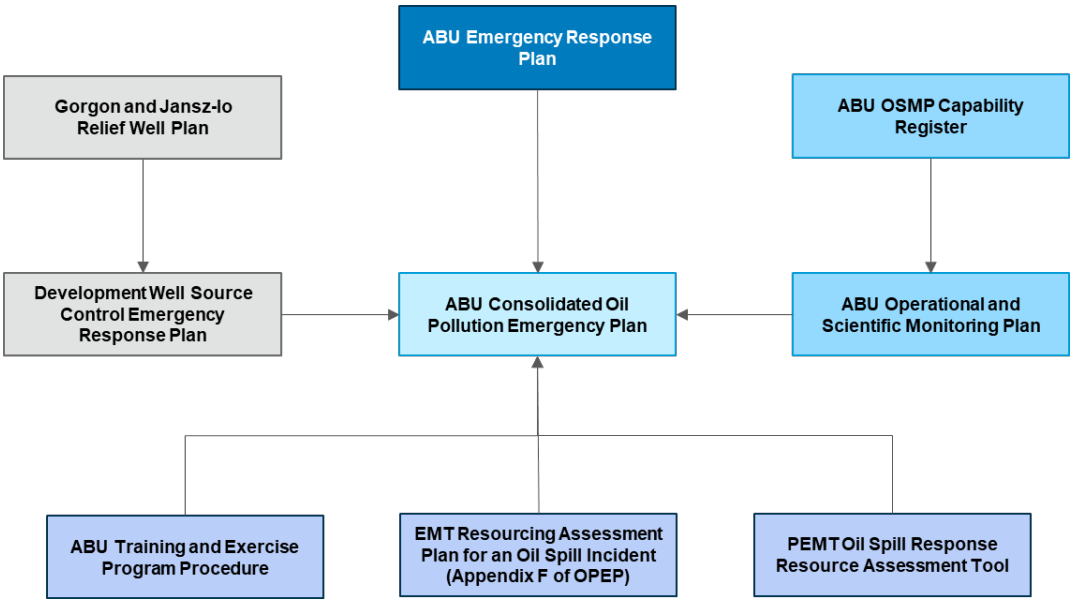

Figure 8-5: Oil spill response document interface for Gorgon and Jansz-Io drilling and completions and well maintenance

Table 8-8: Summary of oil spill response documentation

Document	Description
All ABU activities	
ABU Emergency Response Plan (ERP; Ref. 40)	The ABU ERP describes the emergency management, governance, and coordination arrangements for the Perth Emergency Management Team (PEMT) for emergency incidents across the ABU.
Consolidated OPEP (Ref. 1)	The Consolidated OPEP outlines specific emergency response options and tactics to respond effectively to an oil spill, should a spill occur where CAPL is the Nominated Titleholder (Commonwealth) or Operator (State).
OSMP (Ref. 2)	The OSMP describes the types of environmental monitoring that may be implemented during an emergency event that results in an oil spill to marine or coastal waters. The OSMP is the principal tool for determining the extent, severity, and persistence of environmental impacts from an oil spill. It comprises 2 types of monitoring: operational and scientific.
Chevron Emergency Management ABU Training and Exercise Program Procedure [Ref. 365])	This document outlines the competencies and training requirements for the EMT, ORT, and other personnel during implementation of the OPEP. It includes a summary of oil spill response management training that has been designed to align with the knowledge requirements outlined in the AEP Guidance Document: Incident Management Teams – Knowledge Requirements for Responding to Marine Oil Spills (Ref. 366), specifically the general knowledge requirements for all EMT members and the EMT function specific knowledge requirements.

Document	Description
PEMT Oil Spill Response Resource Assessment Tool (Ref. 380)	This live tool provides a real time assessment of resources available to CAPL to fill the core and support positions identified in the EMT Resourcing Assessment Plan for an Oil Spill Incident (Appendix F in the ABU Consolidated OPEP [Ref. 1]). It quantifies the core and support EMT capability requirements specific to the worst credible scenario described in this EP (LOWC) and demonstrates CAPL has access to personnel to meet the requirements of the Capability Assessment.
Activity-specific (well activities)	
Development Well *Source Control Emergency Response Plan* (SCERP) (Ref. 171)	The Development Well SCERP outlines the source control response arrangements in place for well drilling activities. This document provides the Source Control Branch within the EMT with guidance and checklists for implementing source control strategies in the event of a LOWC.
Relief Well Plan	A Relief Well Plan will provide the detailed design of a relief well and proposed locations. This document will support the Development Well SCERP.

8.3.9.1.1 Source Control Emergency Response Plan

The SCERP (Ref. 171) contains all steps necessary to affect the direct intervention on a well that has experienced LOWC, with the intent to halt or control the release of hydrocarbons to the environment. This may include:

- BOP intervention
- subsea dispersant injection
- relief well drilling
- capping stack installation.

The SCERP (Ref. 171) structure was specifically developed to align with relevant industry guidance and standards, including the Australian Energy Producers (AEP) *Australian Offshore Titleholders Source Control Guideline* (Ref. 371), IOGP's *Source Control Emergency Response Planning Guide for Subsea Wells* (Ref. 372) and NOPSEMA's *Source control planning and procedures Information Paper* (Ref. 373). The SCERP also aligns with source control response expectations within CAPL.

The SCERP (Ref. 171) aligns with the content requirements of the industry guidance and standards documents, and includes:

- source control IMT arrangements and notifications
- source control training and emergency exercises
- response time modelling for source control strategies
- WCD calculation
- relief well planning
  - locations and designs
  - relief well dynamic well kill plan
  - relief well long lead inventory management.
- plume and dispersion study
- source control resources

  - mutual aid arrangements via AEP (previously APPEA) Memorandum of Understanding (MoU)
  - response vessels and tracking.
- capping stack landing analysis and capping stack selection
- BOP intervention
  - well or BOP to capping stack interface analysis.
- debris clearance
- subsea dispersant operations and supply planning
- capping stack
  - capping stack and ROV interfaces
  - capping stack mobilisation and deployment planning
  - wellhead structural integrity analysis.
- SIMOPS planning.

8.3.9.1.2 Relief Well Plan and Capping Stack

As per the SCERP (Ref. 171) and associated RTM, drilling a relief well would be the primary source control option for Gorgon drilling. At the relatively shallow water depths of the Gorgon field, WCD plume and dispersion modelling indicates that gas would reach the sea surface preventing safe direct vertical vessel access to the well for capping stack installation. A capping stack may still be mobilised as an alternative source control response option (with improved RTM) in the event the LOWC flow rate is less than the modelled WCD rate due to an initial or subsequent well bore restriction. The detailed and well specific relief well planning will be contained in a Relief Well Plan.

For Jansz drilling, which takes place in deeper water depth locations, plume modelling indicates that all gas from a WCD LOWC event would be fully dispersed in the water column and no sea surface gas expressions are anticipated. As direct vessel vertical well access is safely achievable at Jansz, installation of a capping stack would be the primary source control response option with the associated reduced RTM. A relief well would be planned and initiated concurrently however as a secondary and contingent source control option. The detailed and well specific capping stack installation plans are contained in the SCERP (Ref. 171).

CAPL relief well planning is based on internal company standards— The ABU Wells *Worst Case Discharge Calculation and Relief Well Planning SOP* (Ref. 374) and the Chevron Corporate CTC Business Unit *Source Control Response Plan* (Ref. 375). These internal standards are aligned with the content and strategy outlined in the OGUK's *Guidelines on Relief Well Planning for Offshore Wells* (Ref. 376).

8.3.9.2 Emergency management arrangements

The emergency management arrangements outline a systematic approach for preventing, planning, responding to, and recovering from emergency events and are intended to provide a standardised corporate management and response structure that details emergency management documentation, Emergency Response Organisation (ERO), facilities and equipment, and training and exercises.

The ERO provides a standardised management and response structure for any emergency. Personnel filling roles within this structure may include full-time professionals, but most will be part-time volunteers drawn from across the workforce.

The system used to organise CAPL's emergency management teams (EMTs) is based on the Incident Command System and provides a standardised approach to the coordination of an emergency response across all hazards, including oil spill response. This program is compatible with the Australasian Inter-service Incident Management System (AIIMS), and the *National Plan for Maritime Environmental Emergencies* (National Plan; Ref. 338) and is consistent with the core aspects presented in the International Maritime Organisation (IMO) equivalent courses.

The ERO comprises the groups listed in Table 8-9; this table also describes the major functions of teams during an emergency.

Figure 8-6 to Figure 8-8 outline the organisational chart of the On-site Response Teams (ORTs) and EMTs. The Crisis Management Teams (CMTs), which focus on the business implications of incidents and events, are further described in the *ABU Crisis Management Plan* (Ref. 44).

As the incident escalates and the workload of each function increases, it may be necessary to delegate specific roles to additional people within each section. These roles may lead a team of people to fulfil the tasks under their control.

To establish emergency response arrangements that can be scaled up or down depending on the nature of the incident by integrating with other local, regional, national, and industry plans and resources, CAPL has adopted a tiered approach in its response system. This tiered-response model scales the number of resources mobilised for a response, and the emergency team activated, according to the severity of the incident. This approach is consistent with the *International Convention on Oil Pollution Preparedness, Response and Cooperation 1990*. The response tiers and resources that may be mobilised for an oil spill incident within CAPL are further described within the OPEP (Ref. 1).

Table 8-9: CAPL emergency management teams

Team	Description
Tier 1 (CAPL)	
On-site Response Teams (ORTs)	Trained responders at the installation who are responsible for on-scene tactical response operations during an incident. ORTs are led by an On-scene Commander (OC) who has incident control during smaller Level 1A incidents, which do not require further escalation to an incident management team. If the Installation Emergency Management Team (IEMT) is activated, the OC will come under the direction of the Operations Section Chief (OSC).
Installation Emergency Management Team (IEMT)	The IEMT is led by an Incident Commander (IC) and operates out of an on-site emergency command centre. The IEMT may be activated to take control of Level 1B incidents and coordinate local resources and ORTs.
Perth Emergency Management Team (PEMT)	The PEMT is led by an IC and operates out of a Perth-based emergency command centre. The PEMT may be activated in a support role to assist IEMTs with the emergency response to major incidents that require coordination of further resources, personnel, and support.

Team	Description
	If required, incident control may also be transferred from the installation to the PEMT to manage the ongoing response (proactive phase) for long-duration, complex incidents such as a major oil spill. The PEMT stands up at the direction of the PEMT IC for Level 2 and 3 incidents.
CAPL Crisis Management Team (CMT)	Comprises senior CAPL executives and ensures emergency response and crisis management operations are carried out consistent with The Chevron Way, Chevron Corporation policies, and the tenets of OE. The CMT stands up at the direction of the CAPL Crisis Manager for Level 3 incidents.
Tier 2 (Regional Response)	
Chevron Corporation's Asia–Pacific Regional Response Team	An enterprise-level team able to support CAPL during the initial response (reactive phase) to a significant incident and help manage the transition to the ongoing response (proactive phase).
Tier 3 (Global Response)	
Chevron Corporation's Functional Response Teams	Enterprise-level teams with specific technical expertise in selected command staff positions and unit positions in the Planning, Logistics, and Finance sections. Team members are trained to support the management of global- and regional-level (Tier 2 and 3) incidents but are available to support any response.
Chevron Corporation's Worldwide Emergency Response Team	An enterprise-level team of Chevron Corporation's most highly trained and experienced personnel capable of filling IMS command and general staff roles of a response organisation, including Deputy IC. Team members are trained to support the management of global-level (Tier 3) incidents but are available to support any response.
Chevron Corporation's Advisory and Resource Team	An enterprise-level initial assessment and support team available to advise during the initial stages of a significant event, assess incident potential, and help the local response team marshal additional resources.

8.3.9.3 Emergency management process

The *Emergency Management OE Process* (Ref. 40) is CAPL's system for emergency management. The process ensures CAPL is prepared to respond immediately and effectively to all emergencies involving contractor- or CAPL-owned or -operated assets as defined in their scope of work.

The emergency management process (Ref. 40) comprises these key elements.

- emergency scenarios, including worst-case, have been identified; these scenarios are based on the findings from risk assessments of significant safety, health and environmental hazards and other sources (e.g. historical incidents)
- emergency response plans are developed and maintained to address emergency scenarios
- a reliability program is in place for inspection, testing and preventive maintenance of critical emergency response equipment and systems supporting emergency response plans
- an incident management system (IMS) is in place capable of immediately and effectively managing all emergencies
- a training and exercise program, including minimum training and exercise requirements, has been developed to establish and maintain emergency response capability

- crisis management plans have been developed to address a potential crisis or significant event
- business continuity plans have been developed in conformance with the *Business Continuity Planning Corporate OE Process* (Ref. 44)

The OPEP (Ref. 1) acts as an operational document to ensure an appropriate response to the emergency events described in this EP. Smaller spills will be monitored, evaluated, and cleaned up as part of routine duties, where relevant and appropriate to the nature and scale of the spill, and will not require activation of the ORT or OPEP. Several emergency management subprocesses are outlined below that are integral to emergency preparedness and management.

8.3.9.4 Chain of command (emergency response)

A well-delineated EMT chain of command has been established for emergency response (Figure 8-6 to Figure 8-8). As incidents grow in size, or complexity, command may transfer several times. Within the response structure, command may transfer between On-scene Commanders (OC) at the tactical level. For a major incident, incident command may transfer to a designated Control Agency or to the Perth EMT, if required.

Although the identity of those filling command positions may change during the incident, continuity of responsibility and accountability will be maintained. Typically, specialists for particular response options will fulfil Task Leader positions in the ORT where they will be expected to oversee a team or particular response operations.

Throughout an incident, a formal handover will be conducted whenever any command or control position is transferred from one person to another.

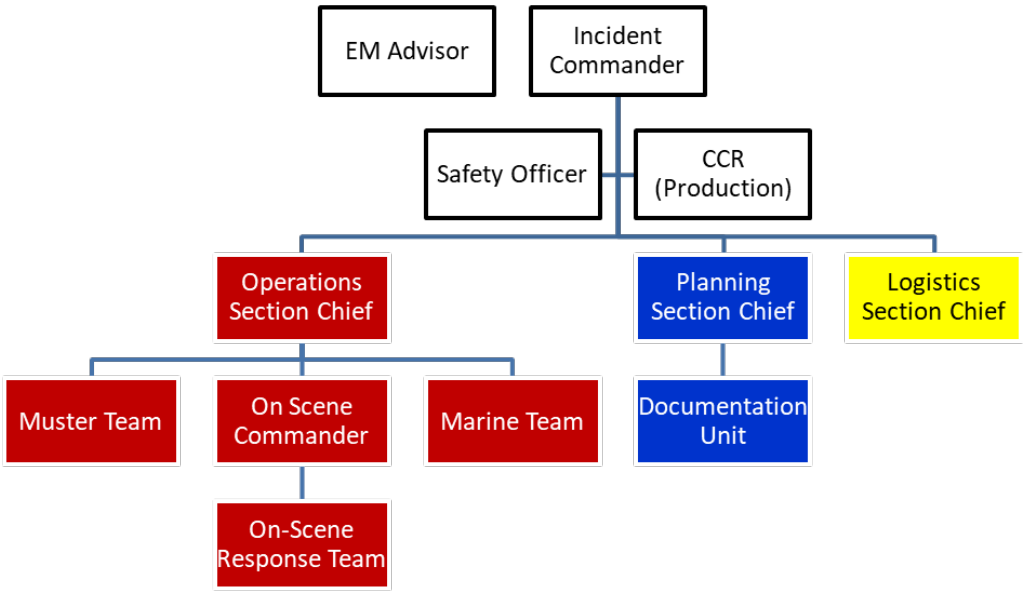

Figure 8-6: Basic installation EMT organisation chart

Figure 8-7: Expanded EMT organisation chart

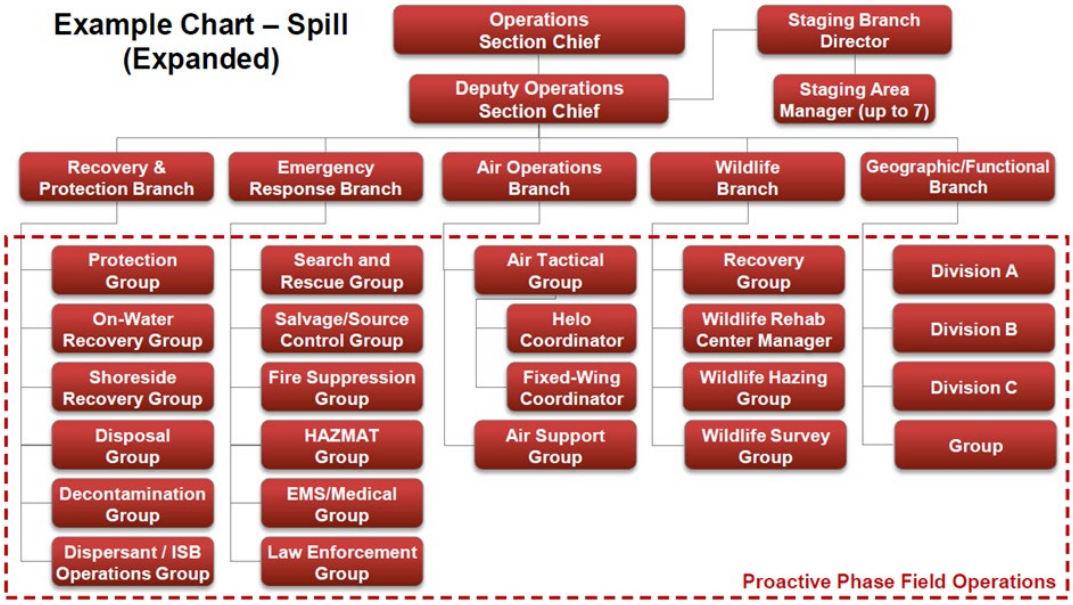

Figure 8-8: Example expanded Operations Section organisation chart

8.3.9.5 Roles and responsibilities (emergency response)

Table 8-10 provides additional information about the structure of these teams and the key individual roles and responsibilities during emergency response. Not all roles presented in Figure 8-6 to Figure 8-8 are described; these are presented as examples only and the final structure of the EMT would be shaped by the specific requirements of the incident. Further information on all Chevron EMT roles are provided in the ABU Emergency Response Plan (Ref. 40)

Table 8-10: Key roles and responsibilities—emergency response

Role	Responsibilities
On-Site Response Team	
On-Scene Commander (OC) *(Vessel Master)*	• Safely and effectively organises and manages the ORT response operations • Keeps the EMT informed regarding the nature and status of the incident and on-site tactical response operations.
Site Safety Officer	• Ensures that appropriate actions are taken to protect the safety and health of ORT response personnel.
Task Leader	• Safely carries out their assignment consistent with directions received from the OC, branch director, division, or group supervisor.
Emergency Management Team	
Incident Commander (IC)	• Manages the overall emergency response operations and ensures that they are carried out safely, effectively, and efficiently • Establishes direct line of communications with the OC • Mobilises the EMT and assigns additional support from other response teams (as appropriate to the incident) for Level 2 and 3 incidents that require support beyond the ORT.
Operations Section Chief (OSC)	• Provides strategic direction and support to the OC and muster and/or shelter area managers • Receives information regarding the nature and status of the ORT and provides support for mustering and/or shelter-in-place operations • Disseminates information to the IC and other members of the EMT.
Planning Section Chief	• Focuses on the incident's potential using the compilation and display of information regarding the nature and status of an incident and emergency response operations • Assists the IC in defining strategic objectives • Assists the IC in providing information to the Level 3 EMT • Compiles and retains documentation.
Logistics Section Chief	• Obtains personnel, equipment, materials, and supplies needed to mount and sustain emergency response operations • Provides services necessary to ensure that emergency response operations are carried out safely and efficiently.

8.3.9.6 Training and Competency (emergency response)

Competencies and training requirements for the EMT, ORT, and other personnel during implementation of the OPEP (Ref. 1) are detailed in the *Emergency Management ABU Training and Exercise Program Procedure* [Ref. 365]. Competency and training records for personnel, including contractors and subcontractors, are maintained and available via live Oil Spill Response and Emergency Management readiness dashboards.

Training and course information, including frequency and content, are also described in the Chevron Emergency Management ABU Training and Exercise Program Procedure [Ref. 365]. Training is delivered via a mix of computer-based training or face-to-face, depending on the particular course, and all EMT positions have minimum training and competency requirements identified.

Oil spill response management training has been designed to align with the knowledge requirements outlined in the AEP *Guidance Document: Incident Management Teams – Knowledge Requirements for Responding to Marine Oil*

Spills (Ref. 366), specifically the general knowledge requirements for all EMT members and the EMT function specific knowledge requirements.

Specific details on the oil spill training packages, including their content and alignment with the AEP guidance, and role specific training requirements can be found in the Chevron *Emergency Management ABU Training and Exercise Program Procedure* [Ref. 365].

8.3.9.7 Oil spill response resourcing and capability

CAPL has multiple EMT resourcing arrangements in place to respond to a potential WCD scenario (i.e. full LOWC) including internal ABU EMT capacity (inclusive of Source Control Section), Regional and Global CAPL support teams and functional groups, Oil Spill Response Organisations (OSROs) and industry mutual aid agreements.

Appendix F of the ABU Consolidated OPEP (Ref. 1) outlines CAPL's EMT Resourcing Assessment Plan for an Oil Spill Incident and evaluates EMT capability requirements. It quantifies and justifies the core and support EMT capability requirements required for a generalised LOWC oil spill scenario (based on 13 weeks) and summarises the assumptions used to develop the EMT capability needs assessment (such as allowances for redundancy, rostering, shift coverage and rotation).

The PEMT Oil Spill Response Resource Assessment Tool (Ref. 380) provides a real time assessment of resources available to CAPL to fill the core and support positions identified in the EMT Resourcing Assessment Plan for an Oil Spill Incident (Appendix F in the ABU Consolidated OPEP [Ref. 1]). Using activity-specific worst-case spill scenarios (such as the LOWC scenario described in this EP), the tool can demonstrate that sufficient capability is in place.

The PEMT Oil Spill Response Resource Assessment Tool (Ref. 380) quantifies the core and support EMT capability requirements specific to the worst credible scenario described in this EP (LOWC) and demonstrates that at the time of writing, CAPL maintains access to personnel to fill these roles (based on information contained within the PEMT Oil Spill Response Resource Assessment Tool (Ref. 380).

8.3.9.7.1 CAPL ABU resources

CAPL maintains a PEMT with a 24/7 call out roster available to be stood up at any time if required. This includes 13 on-call positions sourced from a pool of trained personnel. Each on-call PEMT member must be within 1 hour of the Perth office at all times, and the PEMT duty roster enables the formation of the PEMT within 2 hours of notification. Further information on the PEMT is contained in the ABU Emergency Response Plan (Ref. 40).

Current numbers of qualified EMT personnel, including those trained in accordance with the training requirements outlined in the Chevron Emergency Management ABU Training and Exercise Program Procedure (Ref. 365), are reflected in the PEMT Oil Spill Response Resource Assessment Tool (Ref. 380). In addition, CAPL currently has 'all hazards' personnel, and this capability would be able to be inducted/trained in the oil spill response functions before entering the EMT (as outlined in Chevron Emergency Management ABU Training and Exercise Program Procedure [Ref. 365]), as the response transitions from a rapidly evolving reactive response phase to a more proactive, steady-state, project phase response.

8.3.9.7.2 CAPL regional and worldwide global teams

As per the Chevron Corporate *Emergency ABU Response Teams and Resources Procedure* (Ref. 367) the Chevron Centre for Emergency Preparedness and Response (CEPR) maintains a global mutual-aid capability, available on a 24/7 basis to quickly and effectively provide enterprise-wide support for major incidents and events. This capability shall include pre-identified, trained, and fit-for-duty response teams capable of filling Incident Management System positions, access to industry owned response cooperatives, and access to internal experts and key external vendors. It includes the following services.

The Advisory and Resource Team (ART)

The ART is an initial assessment and support team available to provide advice during the initial stages of an event, to assess incident potential, assist the local response team in marshalling additional resources, and to keep corporate management briefed on the situation or incident. The ART is comprised of a management representative from the impacted operating company, a representative of CEPR, plus a subject matter expert in each of the following areas: public affairs, environmental, safety, and law. The ART team is available via conference call within 2 hours (or less) of notification, and may also mobilise to the incident site to continue with the assessment and provide assistance to the incident management team.

Worldwide Emergency Response Team (WWERT)

The WWERT is a team of Chevron's most highly trained and experienced personnel capable of filling IMS Command and General Staff roles of a response organisation, including Deputy Incident Commander. WWERT members are trained to support the management of global-level (Tier 3) incidents but are available to support any response. Team members are subject matter experts in emergency management and in developing incident action plans.

Functional Teams

There are 13 Functional response teams with specific technical expertise in selected Command Staff positions (safety officer, legal officer) and unit positions in the Planning, Logistics and Finance sections. Functional team members are trained to support management of global and regional level (Tier 2 and 3) incidents but are available to support any response.

Regional Response Teams (RRT)

There are 2 corporate RRTs: Europe/Africa/Middle East; and Asia-Pacific. The RRTs are Regional level (Tier 2) response teams trained to support the initial response (reactive phase) of a significant incident within their respective regions and assist in managing the transition to the ongoing response (proactive phase). The RRTs include personnel capable of filling positions including the Deputy Incident Commander, and Section Chiefs for the Operations, Planning, and Logistics Sections, and specialist to fill the Safety, Documentation, and Public Affairs/Liaison positions.

8.3.9.7.3 Oil spill response organisation arrangements

CAPL maintains contractual arrangements with oil spill response organisations (OSROs), which include providing technical specialists to supplement the CAPL EMT, as detailed in the OPEP (Ref. 1).

Australian Marine Oil Spill Centre (AMOSC)

CAPL is a participating company in AMOSC. This arrangement provides CAPL with access to the AMOSC personnel and the AMOSC Core-Group, under AMOSPlan.

The AMOSC Core-Group is an Australian industry initiative that was initially crafted in 1992. It is unique within the international context and is noted for being innovative and effective to rapidly expand and surge well trained personnel into a spill response. The AMOSC Core-Group has attended most Australian-based spills and also several offshore spills.

The AMOSC Core-Group averages around 100 personnel at any one time (subject to fluctuations), with expertise split between IMT and field based personnel.

AMOSC Core Group policy requires all Core-Group personnel to undertake initial training, followed by competency revalidation/training every 2 years. Typically, AMOSC manage the Core-Group revalidation/training by conducting 3 one-week Core-Group training/workshops per year. AMOSC coordinates the routine testing, monitoring and monthly reporting of Core-Group personnel availability.

Oil Spill Response Limited (OSRL)

CAPL is a Participant member with OSRL, which guarantees access to Tier 3 technical advice, resources and expertise 365 days a year on a 24-hours a day basis. OSRL have capacity to mobilise additional equipment and personnel to ABU from their global bases. Anyone within the ABU PEMT can notify OSRL of an incident, however only the nominated CAPL personnel may request the assistance of OSRL using the Mobilisation Form, as per the Service Level Agreement.

The OSRL service level statements provides for:

- 24/7 call-out arrangements
- guaranteed initial response from OSRL of 5 technical support personnel (EMT or field personnel) for 5 days
- surge to guaranteed 18 OSRL personnel, upon request from the CAPL EMT
- depending on size/complexity, OSRL maintain 80 response team personnel globally, who are potentially able to be provided to support an ongoing Level 3 event, on a best-endeavours basis.

OSRL service level statement defines the types of services provided by the 18-person surge capability as:

- technical advice and incident management coaching within the command centre
- developing an Incident Management Plan
- Tier 1 / 2 equipment readiness and contractor training
- in-country logistics planning and support for inbound equipment
- impact assessment and advice on response strategy selection
- Shoreline Cleanup Assessment Technique (SCAT) and aerial surveillance / quantification surveys

- tactical response planning.

8.3.9.7.4 Industry mutual aid arrangements

AEP Memorandum of Understanding (MoU) framework

As a member company, CAPL would seek to engage the services of Perth-based specialist personnel (as required) from other Petroleum Titleholders under the AEP MoU. The MoU agreement documents the commitment to share rigs, equipment, and service personnel in the event of a major loss of containment incident, significantly increasing the resources available to a titleholder company.

OSRL Mutual Aid Framework Agreement—subsea well intervention services (SWIS)

As a member company, CAPL has access to and can request support from other SWIS members under the OSRL Mutual Aid provisions for source control specialist support. This includes support from any of the SWIS member companies around the world that are signed on to the mutual aid agreement with OSRL SWIS.

8.3.9.7.5 Well control specialists

CAPL Global Source Control

The Global Source control roster provides CAPL names, locations and positions to allow the ABU PEMT SC Branch to mobilise individuals into the PEMT to sit in the SC branch.

Third-party technical specialists

As per the Offshore Development Well SCERP (Ref. 171), CAPL has Master Service Agreements in place with established well control specialist organisations namely:

- Chevron Technical Centre (CTC)
- The Response Group
- Wild Well Control.

8.3.9.8 Oil spill exercise schedule

The CAPL *Emergency Management 5 Year Training and Exercise Schedule* (Ref. 45) describes the schedule of training and exercise required for all emergency events. The training and exercise program incorporates CAPL's oil spill exercise schedule for oil spill training, drills, and exercises, including oiled wildlife response and OSMP implementation. As CAPL'S response arrangements are common among its assets, and resource capabilities are shared, the testing and exercise schedule has been developed to test the various response options. The focus changes for each exercise to ensure any unique aspects of that location (e.g. resources at risk, first-strike equipment) are tested.

The objective is to test and maintain the capability to respond to emergency events. The exercises aim to test:

- notification, activation, and mobilisation of the ORT and EMT
- efficiency and effectiveness of equipment deployment

- efficiency and effectiveness of communication systems.

The testing schedule is a live document that is subject to change. The *5 Year Training and Exercise Schedule* (Ref. 45) outlines the proposed testing arrangements to be completed, including the exercise types (Table 8-11) and proposed level of response to be tested (Table 8-12) that may be used to meet the defined objectives. A minimum of one test for each level will be conducted each year.

Table 8-11: Exercise types

Type	Details
Notification exercise	• Tests the procedures to notify and activate the EMTs, support organisations, and regulators
Tabletop exercise	• Normally involves interactive discussions of a simulated scenario among members of an EMT; personnel or equipment are not mobilised
Drill	• Conducts field activities such as equipment deployment, shoreline assessment, monitoring etc.
Functional exercise	• Activates at least one EMT to establish command, control, and coordination of a serious emergency event • Often more complex as it simulates several different aspects of an oil spill incident and may involve third parties.

Table 8-12: Exercise levels

Level	Details
Level 1 – ORT	• May be held in conjunction with a Level 2 EMT exercise • Designed to evaluate the ability of ORTs to implement CAPL's Emergency Management System as it applies to ORTs • ORTs are encouraged to conduct as many exercises as they want each year that do not include the ERT or a Level 2 EMT.
Level 2 – EMT	• Exercises may include the participation of an ORT and may be held in conjunction with a Level 3 EMT exercise • Usual duration – 1–2 hours • Designed to evaluate a Level 2 EMT's ability to notify and activate team members, set up a Level 2 EMT emergency command centre, and implement CAPL's Emergency Management System as it applies to Level 2 EMTs.
Level 3 – EMT	• Each exercise may include the participation of a Level 2 EMT and/or ORT • Usual duration – 3–6 hours • Designed to evaluate the EMT's ability to notify and activate team members, transfer command to a Level 3 EMT Emergency Command Centre and implement the CAPL's Emergency Management System as it applies to incident escalation.
Oiled Wildlife	• Exercises may include the participation of an ORT and may be held in conjunction with a Level 3 EMT exercise • Usual duration – 3–6 hours • Designed to evaluate the Oiled Wildlife Branch's ability to notify and activate oiled wildlife response teams and implement a response in line with ABU and DBCA oiled wildlife plans and manuals.
Operational and Scientific Monitoring (OSMP)	• Exercises may be held in conjunction with a Level 3 EMT exercise, or conducted as a standalone exercise • Usual duration – 3–6 hours • Designed to evaluate the EMT's ability to notify and activate OSMP team members and external service providers, and test the arrangements and capability in place for operational and scientific monitoring.

The training and exercise program outlines the process for evaluating training, drills, and exercises against defined objectives, and incorporating lessons learned. An after-action report is generated for all Level 2 (and above) exercises, which is used during spill exercises to assess the effectiveness of the exercise against its objectives and to record recommendations. Relevant actions are then assigned to the responsible party where they are tracked to completion using internal processes. Exercise planners will be required to refer to previous recommendations for continual review and improvement.

Response arrangements as detailed in the OPEP (Ref. 1) must be tested:

- when they are introduced
- when they are significantly amended
- not later than 12 months after the most recent test
- if a new location for the activity is added to this EP after the response arrangements have been tested, and before the next test is conducted: test the response arrangements in relation to the new location as soon as practicable after it is added to this EP.

8.3.9.8.1 Source control drills and exercises

In addition to the training and exercise schedule outlined in the CAPL *Emergency Management 5 Year Training and Exercise Schedule* (Ref. 45), source control exercise specific to the credible worst-case LOWC event described in this EP are carried out in accordance with the ABU Offshore Development Wells SCERP (Ref. 171).

Two exercise will be used to exercise and test components outlined in the SCERP:

- Discussion Exercise (DISCEX) in the form of a workshop or seminar
- Functional Exercise in the form of a scenario-based simulation (No actual deployment of equipment)

A DISCEX (familiarisation/ information session) will be conducted before commencing drilling or intervention operations, during which the CAPL PEMT and Source Control Branch can provide an overview of the Source Control Emergency Response Plan components and source control tactics that may be used in the unlikely event of Loss of Well Control. Chevron's Houston resources that would likely be involved in the PEMT Source Control Branch may also receive the familiarisation/ information session.

A Functional Exercise will be conducted before commencing well operations incorporating elements of the CAPL PEMT Command and General Staff, Source Control Branch (SCB) Perth resources, Source Control Branch Houston resources (as may be required) and selected support specialist contractors. This exercise may be incorporated into an oil spill response exercise.

DISCEX or Functional Exercises objectives may include:

People

- Practice activation and mobilisation of SCB Perth and Houston functions
- Validate successful interface of Houston-based SCB resources with Perth IMT SCB
- Practice developing SCB strategies and tactics to meet objectives.

Equipment

- Validate vessel tracking software (Sea/Response) used to identify vessels with ROV support for site survey, debris clearance/BOP intervention and SSDI
- Validate capping stack transport and deployment vessel using vessel tracking software
- Validate AMOSC SFRT / OSRL Subsea Incident Response Toolkit (SIRT) or OSRL Dispersant Delivery System (DDS) transport timings from AMOSC and OSRL to facilitate SSDI operations
- Validate OSRL Water Column Monitoring Equipment transport timings into Australia.

Procedure and Process

- Validate OSRL Singapore Capping Stack and ancillary equipment activation process.

Exercises are completed at least 3 months before any planned offshore drilling campaigns. Exercise evaluation will be undertaken by selected exercise evaluators drawn both internally within Chevron and externally by specialist incident management /source control training providers. Any actions from exercises are tracked and closed out via the CAPL action tracker and lessons learnt incorporated into subsequent tests. Where required, response documentation shall be updated to incorporate learnings derived during response testing.

8.4 Environmental monitoring and reporting

8.4.1 Environmental monitoring

Regulation 22(6) of OPGGS(E)R requires that the implementation strategy provides for sufficient monitoring of, and maintaining a quantitative record of, emissions and discharges such that this record can be used to assess whether the environmental performance outcomes and standards in the EP are being met.

CAPL and vessel contractors will monitor and record emissions and discharges as detailed in Section 7to ensure that that this record can be used to assess whether the environmental performance outcomes and standards in this EP are being met.

If an emergency condition resulting in a Level 2 or 3 spill event occurs, CAPL will implement the OSMP (Ref. 2), which is identified as a control measure in Sections 7.15, 7.16, 7.17.4.1, and 7.17.4.3. The OSMP describes a program of monitoring, and is the principal tool for determining the extent, severity, and persistence of environmental impacts from an emergency condition and the emergency response activities to be undertaken by CAPL.

8.4.2 Incident reporting

Environmental incidents will be reported by CAPL in accordance with Table 8-13.

Table 8-13: Incident reporting

Incident reporting	
Recordable Incident reporting – Regulation 50	
Legislative definition of ‘recordable incident’: *‘Recordable incident, for an activity, means a breach of an environmental performance outcome or environmental performance standard, in the environment plan that applies to the activity, that is not a reportable incident’* Recordable incidents are breaches of the environmental performance outcomes and standards described in Section 5.7.	
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. If no recordable incidents occur during the reporting month, a ‘nil report’ will be submitted.	Submit written report to NOPSEMA by the 15th of each month

Incident reporting	
Reportable Incident reporting – regulations 47, 48, and 49	
Legislative definition of 'reportable incident': *'Reportable incident, for an activity means an incident relating to an activity that has caused, or has the potential to cause, moderate to significant environmental damage'.* Therefore, in alignment with Chevron Corporation's Integrated Risk Prioritization Matrix (Table 5-1), 'reportable incidents' under this EP include those events (not planned activities) that have been risk assessed within Section 6 as having a consequence level between Moderate (4) and Catastrophic (1). In accordance with this definition, the reportable incidents with the potential to cause moderate to significant environmental damage identified under this EP are: • introduction of an IMP (Section 7.7) • vessel collision emergency condition (Section 7.15) • well control emergency condition (Section 7.16). Incident reporting is assessed on a case-by-case basis to determine if they trigger a reportable incident as defined by the OPGGS(E)R and this EP.	
Reporting requirements	**Report to**
Verbal or written notification must be undertaken within 2 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: 1300 674 472 In Australia: 08 6188 8990 From overseas: +61 8 6188 8990 Email: submissions@nopsema.gov.au
Verbal notifications 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: submissions@nopsema.gov.au • National Offshore Petroleum Titles Authority: info@nopta.gov.au
Additional Reporting Requirements	
Reporting requirements	**Report to**
An oil/gas pollution incident that occurs within a marine park or is likely to impact on a marine park. The notification should include: • titleholder details • time and location of the incident (including name of marine park likely to be affected) • proposed response arrangements as per the OPEP (e.g. dispersant, containment, etc.) • confirmation of providing access to relevant monitoring and evaluation reports when available • contact details for the response coordinator.	Report verbally to the DNP (24-hour) Marine Compliance Duty Officer as soon as practicable, and also provide a follow-up email. Phone: 0419 293 465 Email: marine.compliance@environment.gov.au
Death or injury to individual(s) from an EPBC Act Listed Species as a result of the petroleum activity	Report injury to or death of EPBC Act Listed Threatened or Migratory species within 7 business days of observation to DCCEEW or equivalent:

Incident reporting	
	• Phone: +61 2 6274 1111 • Email: EPBC.Permits@environment.gov.au
Vessel collision with marine mammals (whales)	Reported as soon as practicable. https://data.marinemammals.gov.au/report/shipstrike
Presence of any suspected IMP or disease within 24 hours	DPIRD: • Email: biosecurity@fish.wa.gov.au Phone: FishWatch 24-hour hotline: 1800 815 507
Unplanned release that is expected to impact land or water within WA State jurisdiction	Reported as soon as practicable. petroleum.environment@dmirs.wa.gov.au
	Report verbally to the DoT MEER Duty Officer within 2 hours, and also provide a follow-up email with a pollution report (POLREP) attached. Phone: 08 948 9924 Email: Report verbally to the DNP (24-hour) Marine Compliance Duty Officer as soon as practicable, and also provide a follow-up email. Phone: 0419 293 465 Email: marine.compliance@environment.gov.au.

8.4.3 Routine environmental reporting

Regulation 51 of the OPGGS(E)R requires environmental performance reporting for the activity described in this EP, as summarised in Table 8-14. Routine notifications required by Regulation 54 of the OPGGS(E)R, and additional notifications as required by other legislation or guidelines, are included in Table 8-14.

Table 8-14: Routine external reporting or notification requirements

Reporting requirement	Description	Reporting to	Timing
Environmental performance reporting – Regulation 51			
Environmental performance reporting	A report detailing environmental performance of the activity detailed in this EP	NOPSEMA submissions@nopsema.gov.au Phone: 1300 674 472 In Australia: 08 6188 8990 From overseas: +61 8 6188 8990	Annually
Notification of start and end of activity – Regulation 54			
Notification of start of activity	CAPL must complete Form FM1405 and submit to NOPSEMA at least 10 days before commencing the activity	NOPSEMA submissions@nopsema.gov.au or: https://securefile.nopsema.gov.au/filedrop/submissions	Once, before commencing the activity
Notification of conclusion of activity	CAPL must complete Form FM1405 and submit to NOPSEMA within 10 days of completing the activity	NOPSEMA submissions@nopsema.gov.au or: https://securefile.nopsema.gov.au/filedrop/submissions	Once, after completing the activity

Reporting requirement	Description	Reporting to	Timing
Additional notification requirements			
Notification of start of activity	CAPL will provide DEMIRS a pre-start notification confirming the start date of the proposed activity	DEMIRS: Petroleum.environment@dmirs.wa.gov.au	Once, at least 4 weeks before commencing the activity
Notification of conclusion of activity	CAPL must notify DEMIRS after completing the activity	DEMIRS: Petroleum.environment@dmirs.wa.gov.au	Once, within 1 week of completing the activity

8.5 Environment Plan review

If required, any revisions and/or resubmission of this EP to NOPSEMA, in accordance with Regulation 39 of the OPGGS(E)R, will be undertaken in accordance with the OEMS, and particularly the MoC process (Section 8.3.2.2).

9 Acronyms and abbreviations

Table 9-1 defines the acronyms and abbreviations used in this document.

Table 9-1: Acronyms and abbreviations

Term	Definition
µPa	Micropascal
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABU	Australian Business Unit
ACMA	Australian Communications and Media Authority
ACN	Australian Company Number
ACT	Australian Capital Territory
AEP	Australian Energy Producers (formerly APPEA)
AFMA	Australian Fisheries Management Authority
AHO	Australian Hydrographic Office
AIIMS	Australasian Inter-service Incident Management System
AIS	Automated identification system
ALARP	As low as reasonably practicable
AMOSC	Australian Marine Oil Spill Centre
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
ANZG	Australian and New Zealand guidelines for fresh and marine water quality
API	American petroleum index
APPEA	Former Australian Petroleum Production and Exploration Association (now AEP)
AR6	Sixth Assessment Report (AR6) of the United Nations Intergovernmental Panel on Climate Change (IPCC)
ART	Advisory and Resource Team
AS	Australian Standard
AUSCOAST	Australian Coastal (weather warning)
BAC	Baiyungu Aboriginal Corporation
BIA	Biologically important area
BIAWA	Boating Industry Association Western Australia
BOP	Blowout preventor
BPM	Barrels Per Minute
BRS	Bureau of Rural Sciences
BTAC	Buurabalayji Thalanyji Aboriginal Corporation
CALM Act	Western Australian *Conservation and Land Management Act 1984*
CAPL	Chevron Australia Pty Ltd
CAR	Containment and recovery
CBT	Computer-based training
CEFAS	Centre for Environment, Fisheries and Aquaculture Science

Term	Definition
CEPR	Centre for Emergency Preparedness and Response
CHARM	Chemical Hazard Assessment and Risk Management
cm	Centimetre
CMT	Crisis Management Team
CO	Carbon monoxide
CO_2	Carbon dioxide
CoW	Control of Work
cP	Centipoise
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Commonwealth Department of Agriculture, Fisheries and Forestry
DAWE	Commonwealth Department of Agriculture, Water and the Environment (now denominated Department of Climate Change, Energy, the Environment and Water) (Former name for DAFF)
dB	Decibel
DBCA	Western Australia Department of Biodiversity, Conservation and Attractions
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DDS	Dispersant Delivery System
DE	Diatomaceous Earth
DEMIRS	Western Australian Department of Energy, Mines, Industry Regulation and Safety (was DMIRS)
DISCEX	Discussion Exercise
DMIRS	Former Western Australian Department of Mines, Industry Regulation and Safety (now DEMIRS)
DNP	Director of National Parks
DoD	Commonwealth Department of Defence
DoT	Western Australian Department of Transport
DP	Dynamic positioning
DPIRD	Western Australian Department of Primary Industries and Regional Development
DWER	Western Australian Department of Water and Environment Regulation
DWH	Deepwater Horizon
EEZ	Exclusive economic zone
EMBA	Environment that may be affected
EMT	Emergency Management Team
ENGO	Environmental nongovernmental organisation
EP	Environment Plan
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ERO	Emergency Response Organisation
ERP	Emergency Response Plan
ESD	Ecologically Sustainable Development

Term	Definition
EUL	Environment Unit Lead
EUR	Estimated Ultimate Recovery
FCAFC	Federal Court of Australia (Full Court)
FPSO	Floating Production Storage and Offloading (facility)
FT	Functional Team
g/m^2	Grams per square metre
GFP	Gorgon Foundation Project
GHG	Greenhouse gas
Gt	Gigatonne
HB	Handbook
HFO	Heavy fuel oil
HSE	Health, safety, and environment
HWM	High water mark
HXT	Horizontal christmas tree
IADC	International Association of Drilling Contractors
IAPP	International Air Pollution Prevention
IBRA	Interim Biogeographic Regionalisation for Australia
IAA	Impact Assessment Area
IC	Incident Commander
ICS	Incident commander system
ID	Identity / identification
IEE	International Energy Efficiency
IEMT	Installation Emergency Management Team
II&R	Incident investigation and reporting
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMO	International Maritime Organisation
IMP	Invasive marine pest
IMS	Incident management system
IMT	Incident Management Team
IOGP	International Association of Oil & Gas Producers
IPCC	Intergovernmental Panel on Climate Change
ISQG	Interim Sediment Quality Guidelines
ISO	International Organization for Standardisation
IT	Information Technology
ITOPF	International Tanker Owners Pollution Federation Limited
IUCN	International Union for Conservation of Nature
IWCF	International Well Control Forum
JASMINE	JASCO Animal Simulation Model Including Noise Exposure

Term	Definition
JRCC	Joint Resource Coordination Centre
KAC	Kariyarra Aboriginal Corporation
KEF	Key ecological feature
kg	Kilogram
km	Kilometre
LGM	Last glacial maximum
LNG	Liquefied Natural Gas
LOC	Loss of containment
LoR	Limit of reporting
LOWC	Loss of well control
LWI	Light Well Intervention vessel
LWM	Low water mark
m	Metre
M1, M2 etc.	Manifold numbers
m^2	Square metre
m^3	Cubic metre
MAC	Malgana Aboriginal Corporation
MARPOL	The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978; also known as MARPOL 73/78.
MARS	Maritime Arrivals Reporting System
MBES	Multibeam Echosounder
MD	Measured depth
MDO	Marine Diesel Oil
MEER	Maritime Environmental Emergency Response
MEG	Monoethylene Glycol
MES	Monitoring, evaluation, and surveillance
MFO	Marine Fauna Observer
MGO	Marine Gas Oil
MMA	Marine Management Area
MMScf	Million standard cubic feet
MMScf/d	Million standard cubic feet per day
MNES	Matters of national environmental significance
MoC	Management of change
MODU	Mobile offshore drilling unit
MoU	Memorandum of Understanding
MSC	Management System Cycle
MSV	Multi-Service Vessel
MuruAC	Murujuga Aboriginal Corporation

Term	Definition
MW	Megawatt
N/A	Not Applicable
NAC	Nanda Aboriginal Corporation
NADF	Non-aqueous drill fluids
NCWHAC	Ningaloo Coast World Heritage Advisory Committee
NEBA	Net Environmental Benefit Analysis
NEPM	National Environmental Protection Measure
NERA	National Energy Resources Australia
NGER Act	Commonwealth *National Greenhouse and Energy Reporting Act 2007*
NMFS	National Marine Fisheries Service (US)
NO_2	Nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration (US)
NOPSEMA	National Offshore Petroleum Safety and Environment Management Authority (Australia)
NOPTA	National Offshore Petroleum Titles Administrator (Australia)
NO_x	Nitrogen oxides (NO and NO_2)
NT	Northern Territory
NTA	Native Title Act 1993
NTGAC	Nganhurra Thanardi Garrbu Aboriginal Corporation
NTRB	Native title representative body
NWMR	North-west Marine Region
NWS	North West Shelf
NWSTF	North West Slope Trawl Fishery
NYFL	Ngarluma Yindjibarndi Foundation Ltd
NZS	New Zealand Standard
O_3	Ozone
OA	Operational Area
OC	On-Scene Commander
OCNS	Offshore Chemical Notification Scheme
OE	Operational Excellence
OEMS	Operational Excellence Management System
OGUK	Oil and Gas UK
OHGP	Open-hole Gravel Pack
OIE	Offset Installation Equipment
OIM	Offshore Installation Manager
OPEP	Oil Pollution Emergency Plan
OPGGS Act	Commonwealth *Offshore Petroleum and Greenhouse Gas Storage Act 2006*
OPGGS(E)R	Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023

Term	Definition
ORT	On-site Response Team
OSC	Operations Section Chief
OSCA	Oil Spill Control Agents
OSMP	Operational and Scientific Monitoring Plan
OSPAR	Oslo–Paris Convention for the Protection of the Marine Environment of the North East Atlantic
OSRL	Oil Spill Response Limited
OSRO	Oil Spill Response Organisations
OSV	Offshore support vessel
OVID	Offshore Vessel Inspection Database (owned by Oil Companies International Marine Forum)
OWR	Oiled wildlife response
PAH	Polycyclic Aromatic Hydrocarbons
PBC	Prescribed Bodies Corporate
PEMT	Perth Emergency Management Team
PK	Peak pressure level
PLONOR	Pose little or no risk to the environment;
$PM_{2.5}$	Particulate matter with a diameter of 2.5 micrometres or less
PMST	Protected Matters Search Tool
POLREP	Pollution Report
ppb	Parts per billion
ppg	Pounds per gallon
ppm	Parts per million
PPP	Protection Prioritisation Process
psi	Pounds per square inch
PTS	Permanent Threshold Shift
PTW	Permit to Work
RDIF	Reservoir drill-in fluid
RMS	Root mean square
RNTBC	Registered Native Title Body Corporate
ROV	Remotely operated vehicle
RRK	Robe River Kuruma
RRKAC	Robe River Kuruma Aboriginal Corporation
RRT	Regional Response Teams
RTM	Response Time Models
SBWHAC	Shark Bay World Heritage Advisory Committee
SC	Source Control
SCAT	Shoreline Cleanup Assessment Technique
SCB	Source Control Branch

Term	Definition
SCERP	Source Control Emergency Response Plan
SCF	Standard Cubic Feet
SCM	Standard Cubic Metres
SCSSV	Surface Control Subsurface Safety Valve
SEEMP	Ship Energy Efficiency Management Plan
SEL	Sound Exposure Level
SFRT	Subsea First-response Toolkit
SHC	Shoreline Clean-up
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	Simultaneous Operations
SIRT	Subsea Incident Response Toolkit
SLA	Safe Lift Area
SMPEP	Shipboard Marine Pollution Emergency Plan
SNA	Safe Navigation Area
SO_2	Sulfur dioxide
SOP	Standard Operational / Operating Procedure
SOPEP	Ship Oil Pollution Emergency Plan
SO_x	Sulfur oxides
SPD	Shoreline Protection and Deflection
SPL	Sound Pressure Level
SSDI	Subsea Dispersant Injection
SSS	Side scanning sonar
SWIS	Subsea Well Intervention Services
T or t	Tonne
TAPL	Texaco Australia Pty Ltd
TBT	Tributyltin
TD	Total depth
TEC	Threatened Ecological Community
TPH	Total petroleum hydrocarbons
TRG	Tactical Response Guide
TSS	Total suspended solids
TTS	Temporary Threshold Shift
UCH Act	Commonwealth *Underwater Cultural Heritage Act 2018*
UK	United Kingdom
US / USA	United States of America
VSP	Vertical Seismic Profiling
VXT	Vertical configuration of subsea christmas trees
WA	Western Australia

Term	Definition
WAC	Wirrawandi Aboriginal Corporation
WAFIC	Western Australian Fisheries Industry Council
WBF	Water-based fluids
WBM	Water-based mud
WBRDIF	Water-based Reservoir Drill-In Fluid
WCD	Worst credible discharge
Wm^{-2}	Watt Per Square Metre
WOMP	Well Operations Management Plan
WRL	Western Rock Lobster
WWERT	World-Wide Emergency Response Team
YAC	Yinggarda Aboriginal Corporation
YMAC	Yamatji Marlpa Aboriginal Corporation

10 References

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

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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 engagement—information sheets

the human energy company®

gorgon and jansz-io drilling, completions and well maintenance

information sheet, october 2023

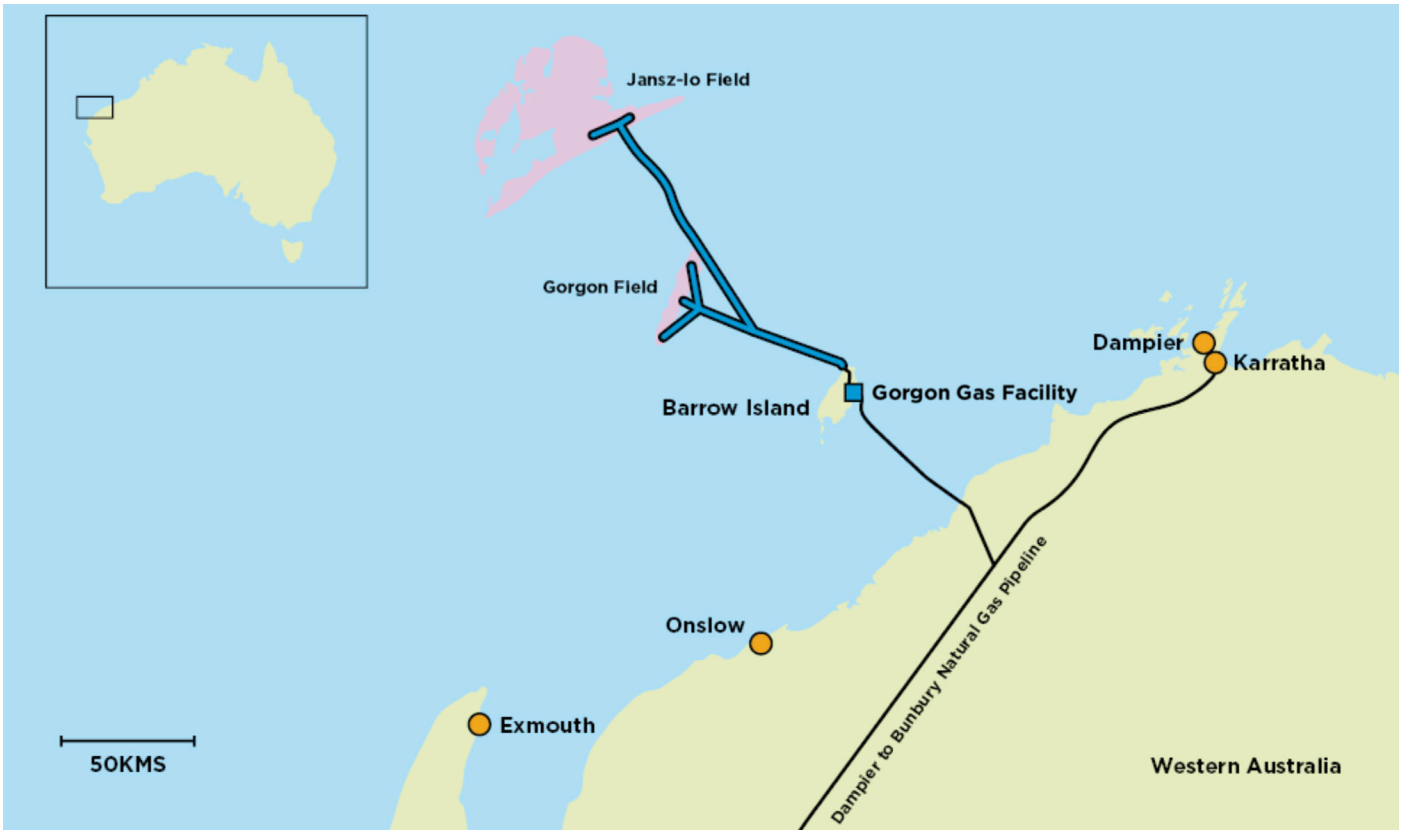

figure 1. location of the Gorgon and Jansz-Io gas fields

overview

Chevron Australia, on behalf of the Gorgon Joint Venture, operates the Gorgon Project (Gorgon) in Western Australia (WA).

Gorgon offshore facilities include 29 production wells in the Gorgon and Jansz-Io gas fields. The produced gas from the wells is gathered at several subsea structures installed at each field and transported via pipelines to the Gorgon Gas Facility on Barrow Island.

From the facility, gas is processed for export as liquefied natural gas (LNG) or piped to the mainland for WA domestic gas users.

We are now undertaking a routine revision of the *Gorgon and Jansz-Io Drilling, Completions and Well Maintenance Environment Plan* (EP) as required by Commonwealth regulations to ensure it remains current.

The EP accounts for well maintenance activities, as well as contingency for re-drilling of existing production wells and plug and abandonment activities.

This information is intended to assist 'relevant persons' to make an informed assessment of our activities and to provide input and feedback to enhance our EP.

Relevant persons are those whose functions, interests or activities may be affected by our activities. This includes Traditional Owners and Custodians' spiritual and cultural connection to land and sea Country, commercial and recreational fishing, tourism, individuals or groups in local communities.

Updated October 2023

location and water depth

The Gorgon gas field is located within production licences WA-37-L and WA-38-L, 130 kilometres off the north-west coast of WA, and 65 kilometres north-west of Barrow Island in water depths of approximately 200 metres.

The Jansz-Io gas fields are located within production licences WA-36-L, WA-39-L and WA-40-L, approximately 200 kilometres off the north-west coast of WA in water depths of approximately 1,350 metres.

All activities will occur within an operational area that extends to a 5-kilometre radius around the well locations shown in Table 1.

Table 1: production well coordinates and approximate water depths

wells	latitude (wgs 84)	longitude (wgs 84)	water depth (m)
gorgon field			
GOR-1A	20°24'29.13" S	114°50'56.00" E	216 m
GOR-1B	20°24'27.69" S	114°50'57.03" E	216 m
GOR-1C	20°24'28.37" S	114°50'56.84" E	215 m
GOR-1D	20°24'28.61" S	114°50'57.73" E	215 m
GOR-1E	20°24'29.17" S	114°50'58.31" E	215 m
GOR-1F	20°24'30.02" S	114°50'58.54" E	215 m
GOR-1G	20°24´29.87" S	114°50'59.26" E	216 m
GOR-2B	20°27´36.54" S	114°50'31.39" E	199 m
GOR-2C	20°27´37.10" S	114°50'31.96" E	199 m
GOR-3B	20°31'11.28" S	114°49'25.85" E	199 m
GOR-3C	20°31'11.84" S	114°49'26.42" E	199 m
GOR-4C	20°34'38.62" S	114°46'38.40" E	250 m
GOR-4D	20°34'38.34" S	114°46'37.54" E	250 m
GOR-4E	20°34'37.79" S	114°46'36.95" E	250 m
GOR-4F	20°34'36.94" S	114°46'36.39" E	250 m
jansz-lo field			
JZI-1B	19°49'36.51" S	114°34'13.94" E	1338 m
JZI-1C	19°49'36.40" S	114°34'12.96" E	1338 m
JZI-1D	19°49'35.44" S	114°34'12.47" E	1338 m
JZI-1E	19°49'34.62" S	114°34'12.95" E	1338 m
JZI-1F	19°49'33.97" S	114°34'12.93" E	1338 m
JZI-2B	19°47'28.31" S	114°38'40.03" E	1349 m
JZI-2C	19°47'28.40" S	114°38'41.00" E	1349 m
JZI-2D	19°47'29.36" S	114°38'41.54" E	1349 m
JZI-2E	19°47'30.17" S	114°38'41.01" E	1349 m
JZI-2F	19°47'30.83" S	114°38'41.04" E	1349 m
JZI-3C	19°51'11.42" S	114°30'54.64" E	1315 m
JZI-3D	19°51'10.40" S	114°30'54.33" E	1315 m
JZI-3E	19°51'09.69" S	114°30'54.97" E	1315 m
JZI-3F	19°51'09.04" S	114°30'55.05" E	1315 m

activity summary

In 2024, Chevron Australia plans to undertake well intervention activities on four wells in the Gorgon and Jansz-Io gas fields.

The EP will also account for activities that are not currently planned but may occur including re-drilling of existing wells, other well interventions, well maintenance and repairs, data acquisition and plug and abandonment.

A mobile offshore drilling unit (MODU) or intervention vessel and up to three support vessels will be used to complete these activities.

schedule and duration

Drilling, completions and well maintenance activities may be required throughout the life of the Gorgon offshore facilities.

These activities may be undertaken at any time of year and would take approximately 65 days to complete.

marine exclusion zone

A 500-metre safety exclusion zone will be requested around the MODU or intervention vessel for the duration of the activities.

environment that may be affected (EMBA)

As part of our environmental assessment and consultation process, we create an EMBA map to demonstrate the largest geographical area that may be impacted by planned events or unplanned emergency events.

Figure 2 shows the operational area for the proposed activities, as well as the broader EMBA which is based on a worst-case environmental scenario, which in this case is an unplanned release event from a loss of well control.

The EMBA has been defined through combining 300 simulations of loss of well control under three different hydrological and meteorological conditions. This means that in the highly unlikely event an unplanned release does occur, the entire EMBA would not be impacted.

If there were an unplanned release, cultural, ecological and social values and sensitivities may be exposed to hydrocarbons.

Table 2 summarises the potential impacts/risks and proposed controls to manage these to levels that are acceptable and as low as reasonably practicable (ALARP).

approvals process

Petroleum activities in Commonwealth waters are regulated by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA).

Before petroleum activities can take place, Chevron Australia must develop an EP which will be assessed by NOPSEMA in accordance with the requirements of the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations (2009).*

These regulations require us to consult with relevant persons whose functions, interests and activities may be affected by the petroleum activity.

Following consultation, we will develop an EP which will:

- describe the environment in which operations are planned to take place;
- include an assessment of environmental impacts and risks arising from the activities;
- identify control measures to manage the potential impacts and risks to levels that are acceptable and ALARP; and
- outline how Chevron Australia has engaged with relevant persons and how their feedback has been considered and addressed.

Before activities can commence, the EP must be assessed and accepted by NOPSEMA.

your input

We are now seeking your feedback and input if you consider your functions, interests, or activities may be affected based on the information summarised in Table 2. We encourage you to provide details of any additional aspects or control measures or to ask for further information or consultation.

You can contact us at:

- 1800 225 195
- australia.chevron.com/feedback
- or scan the QR code

If a relevant person requests their feedback be treated as sensitive and confidential, Chevron Australia will make this known to NOPSEMA.

what's next?

The feedback we receive during consultation will be used to inform and enhance the EP before it is submitted to NOPSEMA for assessment.

We commit to keeping you informed and providing responses to any relevant person who so requests.

privacy notice

If you choose to provide feedback, Chevron Australia will collect your name and contact details, for the purposes of maintaining contact with you and including your feedback in our submission to NOPSEMA. Provision of this information is purely voluntary, however if you choose not to provide it, we may not be able to contact you in the future.

Chevron may transfer your information to NOPSEMA if required and, if you do not identify it as sensitive, to other Chevron affiliates including our head office in the United States. For further information regarding how we protect your personal information, and your rights, please refer to our privacy notice at australia.chevron.com/privacy.

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

aspect	potential interaction (impacts/risks)	proposed control measures
planned activities		
Physical presence of mobile offshore drilling unit (MODU), wellhead, other subsea equipment and vessels within the Operational Area (OA)	• Presence of MODU, wellhead, other subsea equipment and vessels within the OA has the potential to interact and disrupt other marine users • Presence of MODU, wellhead, other subsea equipment and vessels within the OA has the potential to interact and disrupt marine fauna	• Marine safety information to be issued via AUSCOAST and/or Notice to Mariners where required prior to commencing the petroleum activity • Relevant parties will be advised of the commencement of activities. • Vessels will meet the crew competency, navigation equipment, and radar requirements of the *Chevron Corporation Marine Standard* • In accordance with *EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans,* vessels will implement caution and no approach zones, where practicable
Seabed disturbance from anchors used for mooring, drilling and well intervention activities and temporary parking of equipment	• Seabed disturbance may result in alteration of benthic marine habitats and localised and temporary reduction in water quality	• Mooring analysis will be undertaken before MODU anchoring • Mooring line tension will be monitored during the petroleum activity • Vessels will meet the crew competency, navigation equipment, and radar requirements of the *Chevron Corporation Marine Standard*
Light emissions	• Navigation and operational lighting from MODU and vessels as well as flaring activities within the OA may result in a localised and temporary change in ambient light • Change in ambient light may result in a temporary attractant for light-sensitive species	• Vessels will meet lighting requirements of the *Chevron Corporation Marine Standard* • MODU and support vessels working at night will be required to reduce lighting to the minimum required for safe operations
Air emissions	• Combustion of fuel from MODU, vessels and helicopters as well as venting and flaring of hydrocarbons within the OA may result in a localised and temporary reduction in air quality and a contribution to the reduction of the global atmospheric carbon budget	• Reduced sulfur content fuel will be used • Vessels will comply with the requirements of Marine Order 97 (MARPOL 73/78 Annex VI) in relation to air pollution

Underwater sound from drilling activities, vessels and helicopter operations	• Drilling activities, vessels and helicopter operations within the OA may result in localised and temporary change in ambient underwater sound
	• Change in ambient sound may result in behavioural disturbance, injury or auditory impairment to marine fauna
		• In accordance with *EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetacean:*
		  • vessels will implement caution and no approach zones, where practicable
		  • helicopters will not operate at a height lower than 1650 feet or within 500 m of a cetacean, where practicable
		  • helicopters will not approach a cetacean from head on

Planned discharge from MODU and vessel operations	• Planned discharges from MODU and vessel operations may result in localised and temporary change in water quality	• Vessels will comply with the requirements of Marine Order 96 (MARPOL 73/78 Annex IV) in relation to sewage discharge • Vessels will comply with the requirements of Marine Order 95 (MARPOL 73/78 Annex V) in relation to food waste discharge • Vessels will comply with the requirements of Marine Order 91 (MARPOL 73/78 Annex I) in relation to oily bilge water discharges
Planned discharges from drilling and well interventions	• Planned discharges from drilling activities may result in localised and temporary reduction in water quality and alteration or smothering of benthic habitat • A change in ambient water quality may result in indirect impacts to fauna arising from chemical toxicity	• Fluids planned for discharge are subject to the hazardous materials selection process as per *Chevron Australia's Hazardous Materials Management Procedure* • Discharges of drilling fluids and cuttings will be managed in accordance with *Chevron Australia's Well Fluid Field Guidelines Offshore* • Drilling and cementing procedures will be developed prior to commencement of the petroleum activity • Heavy metals concentrations in stock barite will be consistent with relevant codes and standards • Critical equipment will be maintained in accordance with manufacturers specifications
unplanned activities		
Invasive marine pests	• Planned discharge of ballast water or the presence of biofouling on MODU or vessels may have the potential to result in the introduction of an invasive marine pest	• Vessels will meet the requirements of *Chevron Australia's Quarantine Procedure for Marine Vessels* • Ballast water exchanges will be managed in accordance with the *Australian Ballast Water Management Requirements* • Vessels greater than 400 GT with an antifoul coating are to maintain an up-to-date international antifouling coating certification in accordance with the *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006* and/or relevant codes and standards • Where required, vessel pre-arrival information will be reported through the Maritime Arrivals Reporting System as per the Commonwealth *Biosecurity Act 2015*
Release of waste	• MODU and vessel operations activities may result in an unplanned release of waste to environment causing marine pollution	• Vessels will comply with the requirements of Marine Order 95 (MARPOL 73/78 Annex V) in relation to managing waste (garbage) offshore

Minor loss of containment	• Unplanned release of hazardous material to the environment may result in indirect impacts to fauna arising from chemical toxicity	• Vessels will meet the requirements of the *Chevron Corporation Marine Standard,* including the pre-mobilisation inspections of equipment, couplings and secondary containment • Bulk transfers of drilling fluids to be undertaken in accordance with *Chevron Australia's Well Fluid Field Guidelines Offshore* • Critical equipment will be maintained in accordance with manufacturers specifications • A permit system will be implemented to control the isolation of overboard drainage aboard the MODU • Vessels will comply with the requirements of Marine Order 91 (MARPOL 73/78 Annex I) in relation to having an approved *Ship Oil Pollution Emergency Plan* in place.
Vessel collision event	A vessel collision event may occur as a result of a loss of Dynamic Positioning, navigational error or floundering due to weather: • the potential environmental impacts associated with hydrocarbon exposures from a vessel collision event may result in marine pollution, smothering of subtidal and intertidal habitats, indirect impacts to fisheries, reduction in amenity (resulting in impacts to tourism and recreation) and changes to values and sensitivities of marine protected areas	• Vessels will meet the crew competency, navigation equipment, and radar requirements of the *Chevron Corporation Marine Standard* • Notification to relevant agencies of activities and vessel movements to allow them to send warnings and/or notices to mariners prior to commencing activities • Vessels will comply with the requirements of Marine Order 91 (MARPOL 73/78 Annex I) in relation to having an approved *Ship Oil Pollution Emergency Plan* in place • Emergency response implemented in accordance with the response arrangements and strategies detailed in *Chevron Australia's Oil Pollution Emergency Plan* • Where required, operational and scientific monitoring undertaken in accordance with *Chevron Australia's Operational and Scientific Monitoring Plan*

Loss of well control	An unplanned loss of effective well control may occur due to an unplanned hydrocarbon influx, breach of well fluids, or loss of hydrostatic barrier: • the potential environmental impacts associated with hydrocarbon exposures from a loss of well control may result in marine pollution, smothering of subtidal and intertidal habitats, indirect impacts to fisheries, and reduction in amenity (resulting in impacts to tourism and recreation) and changes to values and sensitivities of marine protected areas	• A NOPSEMA-accepted *Well Operations Management Plan* will be in place prior to the commencement of the petroleum activity • A blowout preventer will be installed and tested • Certifications as required by *Chevron Australia's Wellsafe Standard Operating Procedure* will be in place prior to commencement of the petroleum activity • Critical equipment will be maintained in accordance with manufacturers' specifications • Emergency responses will be implemented in accordance with the *Source Control Emergency Response Plan* and the response arrangements and strategies detailed in *Chevron Australia's Oil Pollution Emergency Plan* • Where required, operational and scientific monitoring undertaken in accordance with *Chevron Australia's Operational and Scientific Monitoring Plan*
emergency response		
Planned discharges - chemical dispersant	• In the event of a worst-case spill event, chemical dispersant may be applied to support response objectives and minimise the potential environmental impacts. Chemical dispersant application has the potential to change ambient water quality resulting in marine pollution causing sublethal or lethal effects to marine fauna and/or subtidal or intertidal habitats	• Emergency responses will be implemented in accordance with the *Source Control Emergency Response Plan* and the response arrangements and strategies detailed in *Chevron Australia's Oil Pollution Emergency Plan* • Where required, operational and scientific monitoring will be undertaken in accordance with *Chevron Australia's Operational and Scientific Monitoring Plan*
Ground disturbance – shoreline spill response	• In the event of a worst-case spill event, if shoreline is impacted, implementing shoreline clean-up techniques involves people and equipment, which may disturb shoreline habitat with subsequent impacts to fauna	• Where required, operational and scientific monitoring will be undertaken in accordance with *Chevron Australia's Operational and Scientific Monitoring Plan*
Physical presence— oiled wildlife response	• In the event of a worst-case spill event, if fauna is affected, the handling and treating of marine fauna will result in personnel interacting with marine fauna	• Where required, operational and scientific monitoring will be undertaken in accordance with *Chevron Australia's Operational and Scientific Monitoring Plan*

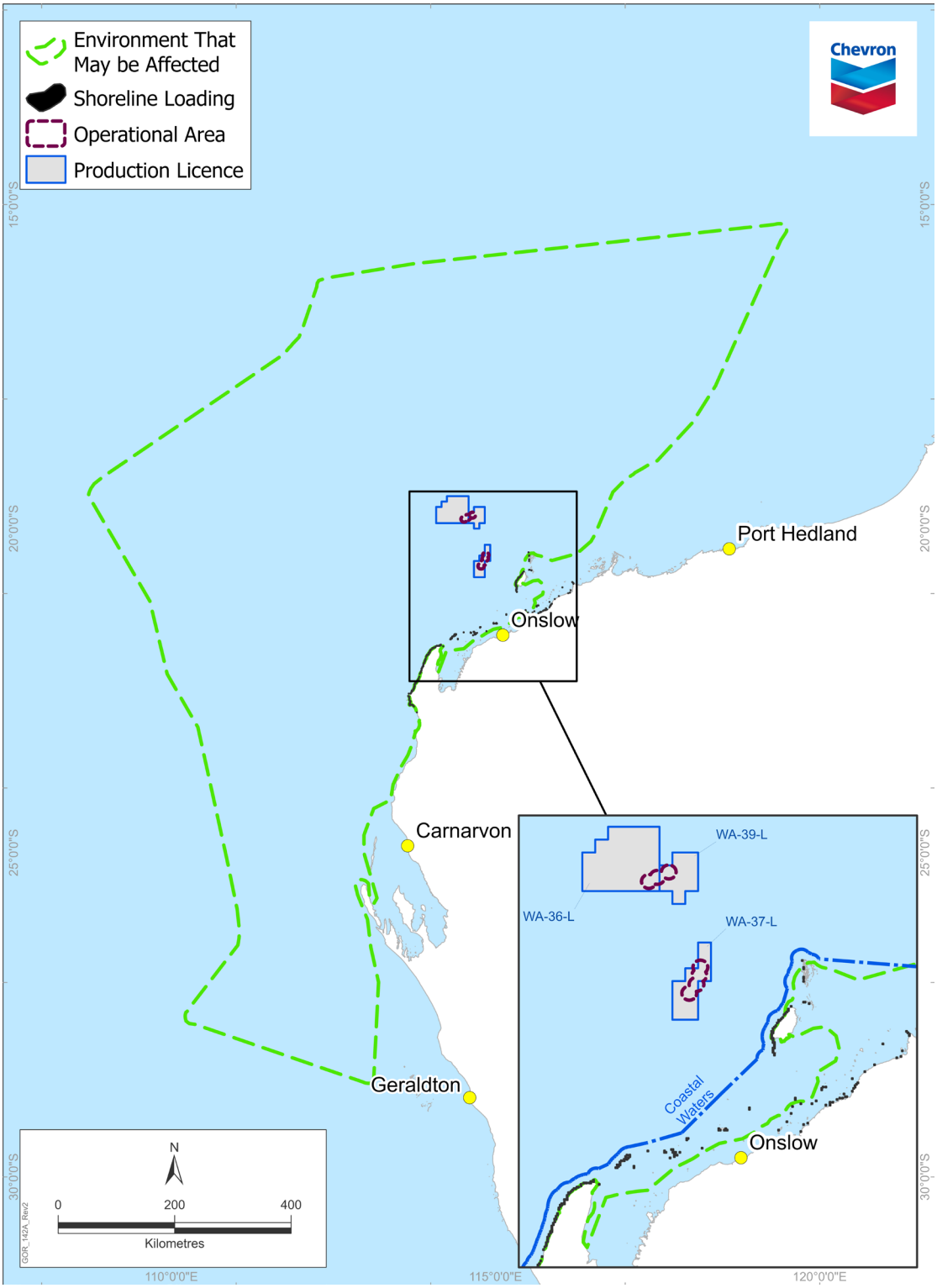

figure 2: gorgon and jansz-io drilling, completions and well maintenance EMBA map

environment plan

seeking relevant persons' input

Chevron has been operating in Australia for more than 70 years – creating enduring benefits and delivering reliable, affordable energy. We welcome feedback to enhance our environmental management measures and support the ongoing supply of natural gas to Western Australia and the Asia Pacific region.

our activities

Chevron Australia is undertaking a routine revision of the *Gorgon and Jansz-Io Drilling, Completions and Well Maintenance Environment Plan (EP).*

The Gorgon and Jansz-Io gas fields are located between 130 to 200 kilometres off the north-west coast of Western Australia at water depths of 200 to 1,350 metres.

In 2024, we plan to undertake well intervention activities on four wells. The EP will also account for activities that are not currently planned but may occur including re-drilling of existing wells, other well interventions, well maintenance and repairs, data acquisition and plug and abandonment.

environment that may be affected (EMBA)

As part of our environmental assessment and consultation process, we create an EMBA map to demonstrate the largest geographical area that may be impacted by planned events or unplanned emergency events.

The map shows the operational area for the proposed activities, the broader EMBA which is based on a highly unlikely unplanned release event from a loss of well control, and potential impacts to shoreline from hydrocarbon loading.

The EMBA has been defined through combining 300 simulations of loss of well control under three different hydrological and meteorological conditions. This means that in the highly unlikely event an unplanned release does occur, the entire EMBA would not be impacted.

Chevron Australia has systematic control measures to prevent and mitigate emergencies and to reduce the impact of planned activities on the environment.

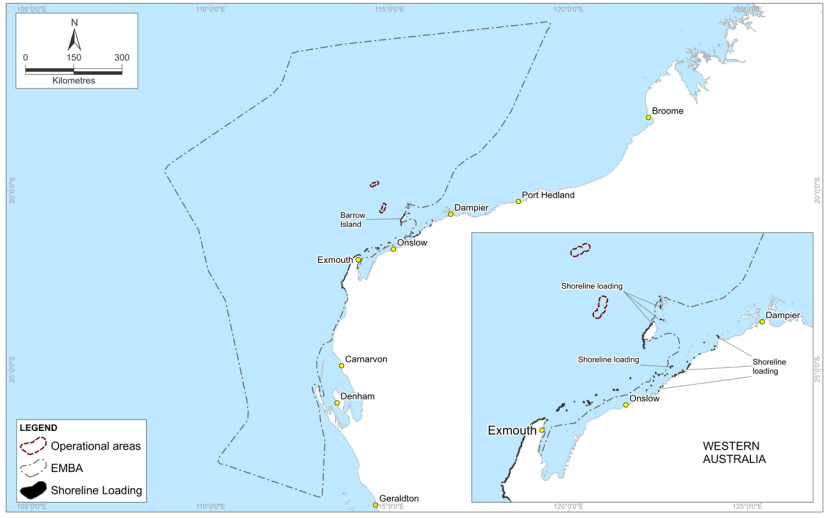

figure 1: EMBA map

we want to hear from you

We are seeking your input on whether your functions, interests or activities may be affected within this area. These may include spiritual and cultural connection to land and sea Country, commercial and recreational fishing, tourism, and local communities.

Visit **australia.chevron.com/feedback**, phone tollfree on **1800 225 195** or scan the **QR code** for more information or to provide feedback.

activity information

gorgon and jansz-io drilling, completions and well maintenance

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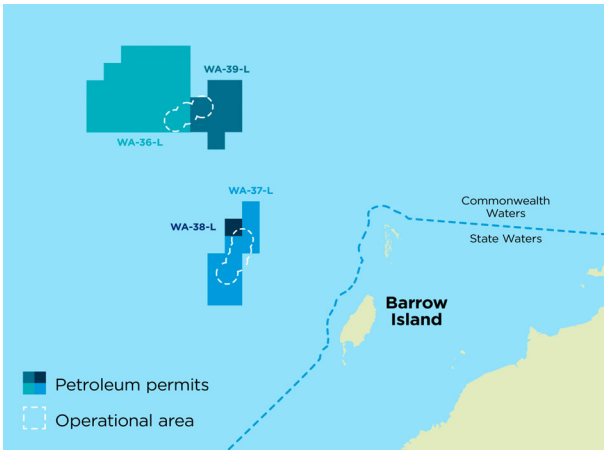
location and water depth



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All activities will occur within an operational area that extends to a 5-kilometre radius around the well locations shown in table 1.

Jump to detailed maps below

activity summary

In 2024, Chevron Australia plans to undertake well intervention activities on four wells in the Gorgon and Jansz-Io gas fields.

The EP will also account for activities that are not currently planned but may occur including re-drilling of existing wells, other well interventions, well maintenance and repairs, data acquisition and plug and abandonment.

A mobile offshore drilling unit (MODU) or intervention vessel and up to three support vessels will be used to complete these activities.

schedule and duration

Drilling, completions and well maintenance activities may be required throughout the life of the Gorgon offshore facilities.

These activities may be undertaken at any time of year and would take approximately 65 days to complete.

marine exclusion zone

A 500-metre safety exclusion zone will be requested around the MODU or intervention vessel for the duration of the activities.

EMBA – environment that may be affected

As part of our environmental assessment and consultation process, we create an EMBA map to demonstrate the largest geographical area that may be impacted by planned events or unplanned emergency events.

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approvals process

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These regulations require us to consult with relevant persons whose functions, interests and activities may be affected by the petroleum activity.

Following consultation, we will develop an EP which will:

- describe the environment in which operations are planned to take place;
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Before activities can commence, the EP must be assessed and accepted by NOPSEMA.

your feedback

We are now seeking your feedback and input if you consider your functions, interests, or activities may be affected based on the information summarised in Table 2. We encourage you to provide details of any additional aspects or control measures or to ask for further information or consultation.

You can contact us toll free on 1800 225 195 or leave feedback online below.

If a relevant person requests their feedback be treated as sensitive and confidential, Chevron Australia will make this known to NOPSEMA.

To begin providing feedback for **Gorgon and Jansz-Io drilling, completions and well maintenance**, select a feedback category

what's next

The feedback we receive during consultation will be used to inform and enhance the EP before it is submitted to NOPSEMA for assessment.

We commit to keeping you informed and providing responses to any relevant person who so requests.

privacy notice

If you choose to provide feedback, Chevron Australia will collect your name and contact details, for the purposes of maintaining contact with you and including your feedback in our submission to NOPSEMA. Provision of this information is purely voluntary, however if you choose not to provide it, we may not be able to contact you in the future. Chevron may transfer your information to NOPSEMA if required and, if you do not identify it as sensitive, to other Chevron affiliates including our head office in the United States.

For further information regarding how we protect your personal information, and your rights, please refer to our privacy notice.

further information

detailed maps and tables

Figure 1. location of the Gorgon and Jansz-Io gas fields.

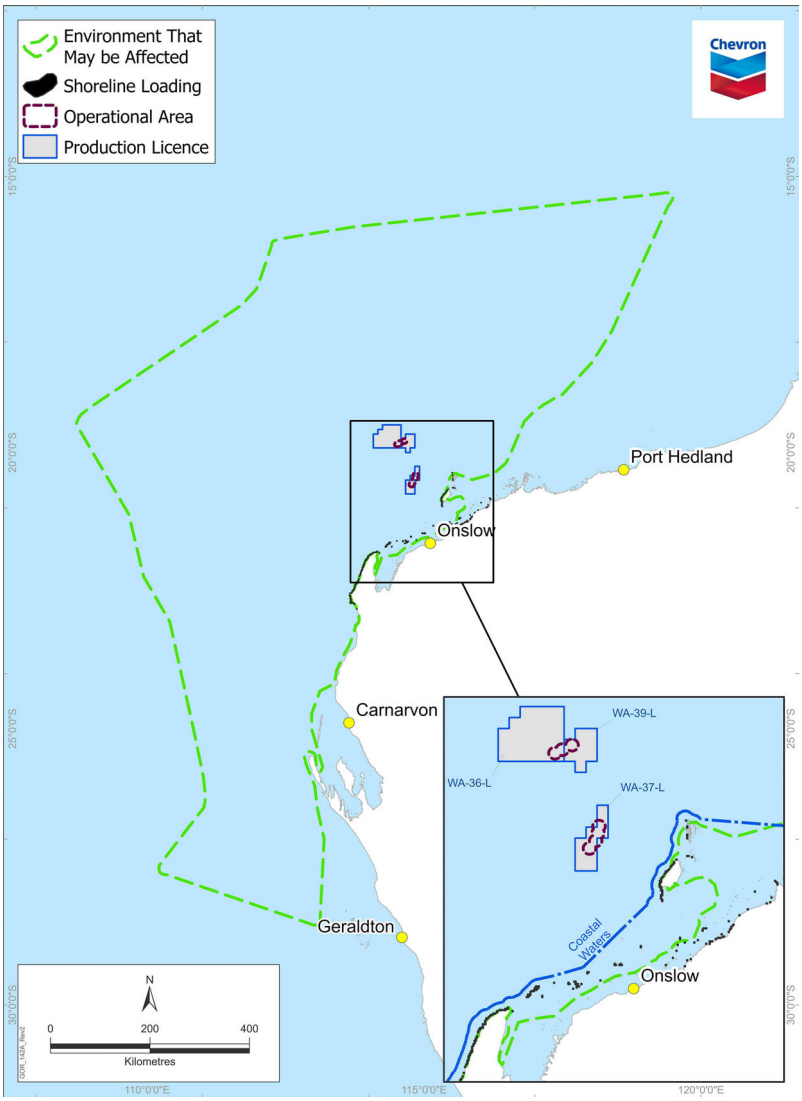

Figure 2. Gorgon and Jansz-Io drilling, completions and well maintenance EMBA map.

Table 1: Production well coordinates and approximate water depths – view here.

Table 2: Summary of impacts/risks and key proposed controls – view here.

resources

Consultation in the course of preparing an environment plan – NOPSEMA

Environment plan content requirements – NOPSEMA

Environmental requirements – NOPSEMA

Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations

NOPSEMA Assessment Process Environment Plans

Chevron Operational Excellence Management System (OEMS)

Gorgon and Jansz-io Drilling, Completions and Well Maintenance Fact Sheet

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

Aspect	Potential Interaction (impacts/risks)	Proposed control measures
PLANNED ACTIVITIES		
Physical presence of mobile offshore drilling unit (MODU), wellhead, other subsea equipment and vessels within the Operational Area (OA)	• Presence of MODU, wellhead, other subsea equipment and vessels within the OA has the potential to interact and disrupt other marine users • Presence of MODU, wellhead, other subsea equipment and vessels within the OA has the potential to interact and disrupt marine fauna	• Marine safety information to be issued via AUSCOAST and/or Notice to Mariners where required prior to commencing the petroleum activity • Relevant parties will be advised of the commencement of activities. • Vessels will meet the crew competency, navigation equipment, and radar requirements of the Chevron Corporation Marine Standard • In accordance with EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans, vessels will implement caution and no approach zones, where practicable
Seabed disturbance from anchors used for mooring, drilling and well intervention activities and temporary parking of equipment	• Seabed disturbance may result in alteration of benthic marine habitats and localised and temporary reduction in water quality	• Mooring analysis will be undertaken before MODU anchoring • Mooring line tension will be monitored during the petroleum activity • Vessels will meet the crew competency, navigation equipment, and radar requirements of the Chevron Corporation Marine Standard
Light emissions	• Navigation and operational lighting from MODU and vessels as well as flaring activities within the OA may result in a localised and temporary change in ambient light • Change in ambient light may result in a temporary attractant for light-sensitive species	• Vessels will meet lighting requirements of the Chevron Corporation Marine Standard • MODU and support vessels working at night will be required to reduce lighting to the minimum required for safe operations
Air emissions	• Combustion of fuel from MODU, vessels and helicopters as well as venting and flaring of hydrocarbons within the OA may result in a localised and temporary reduction in air quality and a contribution to the reduction of the global atmospheric carbon budget	• Reduced sulfur content fuel will be used • Vessels will comply with the requirements of Marine Order 97 (MARPOL 73/78 Annex VI) in relation to air pollution
Underwater sound from drilling activities, vessels and helicopter operations	• Drilling activities, vessels and helicopter operations within the OA may result in localised and temporary change in ambient underwater sound	In accordance with EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetacean: • vessels will implement caution and no approach zones, where practicable • helicopters will not operate at a height lower than 1650 feet or within 500 m of a cetacean, where practicable

Aspect	Potential Interaction (impacts/risks)	Proposed control measures
	• Change in ambient sound may result in behavioural disturbance, injury or auditory impairment to marine fauna	• helicopters will not approach a cetacean from head on
Planned discharge from MODU and vessel operations	• Planned discharges from MODU and vessel operations may result in localised and temporary change in water quality	• Vessels will comply with the requirements of Marine Order 96 (MARPOL 73/78 Annex IV) in relation to sewage discharge • Vessels will comply with the requirements of Marine Order 95 (MARPOL 73/78 Annex V) in relation to food waste discharge • Vessels will comply with the requirements of Marine Order 91 (MARPOL 73/78 Annex I) in relation to oily bilge water discharges
Planned discharges from drilling and well interventions	• Planned discharges from drilling activities may result in localised and temporary reduction in water quality and alteration or smothering of benthic habitat • A change in ambient water quality may result in indirect impacts to fauna arising from chemical toxicity	• Fluids planned for discharge are subject to the hazardous materials selection process as per Chevron Australia's Hazardous Materials Management Procedure • Discharges of drilling fluids and cuttings will be managed in accordance with Chevron Australia's Well Fluid Field Guidelines Offshore • Drilling and cementing procedures will be developed prior to commencement of the petroleum activity • Heavy metals concentrations in stock barite will be consistent with relevant codes and standards • Critical equipment will be maintained in accordance with manufacturers specifications
UNPLANNED ACTIVITIES		
Invasive marine pests	• Planned discharge of ballast water or the presence of biofouling on MODU or vessels may have the potential to result in the introduction of an invasive marine pest	• Vessels will meet the requirements of Chevron Australia's Quarantine Procedure for Marine Vessels • Ballast water exchanges will be managed in accordance with the Australian Ballast Water Management Requirements • Vessels greater than 400 GT with an antifoul coating are to maintain an up-to-date international antifouling coating certification in accordance with the Protection of the Sea (Harmful Anti-fouling Systems) Act 2006 and/or relevant codes and standards • Where required, vessel pre-arrival information will be reported through the Maritime Arrivals Reporting System as per the Commonwealth Biosecurity Act 2015
Release of waste	• MODU and vessel operations activities may result in an unplanned release of waste to environment causing marine pollution	• Vessels will comply with the requirements of Marine Order 95 (MARPOL 73/78 Annex V) in relation to managing waste (garbage) offshore

Aspect	Potential Interaction (impacts/risks)	Proposed control measures
Minor loss of containment	• Unplanned release of hazardous material to the environment may result in indirect impacts to fauna arising from chemical toxicity	• Vessels will meet the requirements of the Chevron Corporation Marine Standard, including the pre-mobilisation inspections of equipment, couplings and secondary containment • Bulk transfers of drilling fluids to be undertaken in accordance with Chevron Australia's Well Fluid Field Guidelines Offshore • Critical equipment will be maintained in accordance with manufacturers specifications • A permit system will be implemented to control the isolation of overboard drainage aboard the MODU • Vessels will comply with the requirements of Marine Order 91 (MARPOL 73/78 Annex I) in relation to having an approved Ship Oil Pollution Emergency Plan in place.
Vessel collision event	A vessel collision event may occur as a result of a loss of Dynamic Positioning, navigational error or floundering due to weather: • the potential environmental impacts associated with hydrocarbon exposures from a vessel collision event may result in marine pollution, smothering of subtidal and intertidal habitats, indirect impacts to fisheries, reduction in amenity (resulting in impacts to tourism and recreation) and changes to values and sensitivities of marine protected areas	• Vessels will meet the crew competency, navigation equipment, and radar requirements of the Chevron Corporation Marine Standard • Notification to relevant agencies of activities and vessel movements to allow them to send warnings and/or notices to mariners prior to commencing activities • Vessels will comply with the requirements of Marine Order 91 (MARPOL 73/78 Annex I) in relation to having an approved Ship Oil Pollution Emergency Plan in place • Emergency response implemented in accordance with the response arrangements and strategies detailed in Chevron Australia's Oil Pollution Emergency Plan • Where required, operational and scientific monitoring undertaken in accordance with Chevron Australia's Operational and Scientific Monitoring Plan
Loss of well control	An unplanned loss of effective well control may occur due to an unplanned hydrocarbon influx, breach of well fluids, or loss of hydrostatic barrier: • the potential environmental impacts associated with hydrocarbon exposures from a loss of well control may result in marine pollution, smothering of subtidal and intertidal habitats, indirect impacts to fisheries, and reduction in amenity (resulting in impacts to tourism and recreation) and changes to values and sensitivities of marine protected areas	• A NOPSEMA-accepted Well Operations Management Plan will be in place prior to the commencement of the petroleum activity • A blowout preventer will be installed and tested • Certifications as required by Chevron Australia's Wellsafe Standard Operating Procedure will be in place prior to commencement of the petroleum activity • Critical equipment will be maintained in accordance with manufacturers' specifications • Emergency responses will be implemented in accordance with the Source Control Emergency Response Plan and the response arrangements and strategies detailed in Chevron Australia's Oil Pollution Emergency Plan

Aspect	Potential Interaction (impacts/risks)	Proposed control measures
		• Where required, operational and scientific monitoring undertaken in accordance with Chevron Australia's
EMERGENCY RESPONSE		
Planned discharges – chemical dispersant	• In the event of a worst-case spill event, chemical dispersant may be applied to support response objectives and minimise the potential environmental impacts. Chemical dispersant application has the potential to change ambient water quality resulting in marine pollution causing sublethal or lethal effects to marine fauna and/or subtidal or intertidal habitats	• Emergency responses will be implemented in accordance with the Source Control Emergency Response Plan and the response arrangements and strategies detailed in Chevron Australia's Oil Pollution Emergency Plan • Where required, operational and scientific monitoring will be undertaken in accordance with Chevron Australia's Operational and Scientific Monitoring Plan
Ground disturbance – shoreline spill response	• In the event of a worst-case spill event, if shoreline is impacted, implementing shoreline clean-up techniques involves people and equipment, which may disturb shoreline habitat with subsequent impacts to fauna	• Where required, operational and scientific monitoring will be undertaken in accordance with Chevron Australia's Operational and Scientific Monitoring Plan
Physical presence – oiled wildlife response	• In the event of a worst-case spill event, if fauna is affected, the handling and treating of marine fauna will result in personnel interacting with marine fauna	• Where required, operational and scientific monitoring will be undertaken in accordance with Chevron Australia's Operational and Scientific Monitoring Plan

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30,395 followers
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We are undertaking a 5-year revision of our Gorgon and Jansz-Io Drilling, Completions and Well Maintenance Environment Plan and wish to consult with people and organisations whose functions, interests or activities may be affected.

More information about the activity that can help you identify if you are a relevant person can be found here https://lnkd.in/gc6y4E4d

Appendix C Protected Matters search reports (OA and EMBAs)

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Sep-2024

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	24
Listed Migratory Species:	39

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	63
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	1

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	30
Key Ecological Features (Marine):	2
Biologically Important Areas:	5
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Phaethon rubricauda westralis](#) Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

Scientific Name	Threatened Category	Presence Text
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	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
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat 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
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species	[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known 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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat 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
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat 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]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
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 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

Scientific Name	Threatened Category	Presence Text
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

Scientific Name	Threatened Category	Presence Text
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
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 sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
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

Current Scientific Name	Status	Type of Presence
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat 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

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
Aug - Sep		

Scientific Name	Behaviour	Presence
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Gorgon Gas Development	2003/1294		Post-Approval
Controlled action			
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Not controlled action			
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Not controlled action (particular manner)			
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-	2013/6901	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
13, offshore WA		(Particular Manner)	
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Continental Slope Demersal Fish Communities	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

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

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Sep-2024

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	24
Listed Migratory Species:	39

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	63
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	1

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	30
Key Ecological Features (Marine):	2
Biologically Important Areas:	5
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Phaethon rubricauda westralis](#) Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

Scientific Name	Threatened Category	Presence Text
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	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
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat 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
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species	[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known 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 known to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat 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
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat 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]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
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 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

Scientific Name	Threatened Category	Presence Text
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

Scientific Name	Threatened Category	Presence Text
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
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 sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
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

Current Scientific Name	Status	Type of Presence
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat may occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat 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

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
Aug - Sep		

Scientific Name	Behaviour	Presence
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Gorgon Gas Development	2003/1294		Post-Approval
Controlled action			
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Not controlled action			
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Not controlled action (particular manner)			
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-	2013/6901	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
13, offshore WA		(Particular Manner)	
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Continental Slope Demersal Fish Communities	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

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

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Sep-2024

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	17
Listed Migratory Species:	31

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	24
Whales and Other Cetaceans:	26
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	18
Key Ecological Features (Marine):	2
Biologically Important Areas:	2
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
SHARK		
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
[Sphyrna lewini](#) Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
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
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
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
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may 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
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus		
Sperm Whale [59]		Species or species habitat may occur within area
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]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		

Scientific Name	Threatened Category	Presence Text
[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]	Vulnerable	Species or species habitat may occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat likely to occur within area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat may occur within area
[Phaethon lepturus fulvus](#) Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Reptile		

Scientific Name	Threatened Category	Presence Text
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		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 Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
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 sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
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

Current Scientific Name	Status	Type of Presence
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
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

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Gorgon Gas Development	2003/1294		Post-Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Not controlled action			
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Not controlled action (particular manner)			
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region	
Continental Slope Demersal Fish Communities	North-west	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area
Exmouth Plateau	North-west	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area

Biologically Important Areas [Resource Information]

Scientific Name		Behaviour	Presence
Seabirds			
Ardenna pacifica Wedge-tailed Shearwater [84292]	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area	Breeding	Known to occur
Whales			
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]		Migration	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

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

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Sep-2024

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	17
Listed Migratory Species:	31

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	24
Whales and Other Cetaceans:	26
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	18
Key Ecological Features (Marine):	2
Biologically Important Areas:	2
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Sternula nereis nereis](#) Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Species or species habitat likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
SHARK		
[Carcharodon carcharias](#) White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
[Sphyrna lewini](#) Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat may occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
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
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
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
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may 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
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus		
Sperm Whale [59]		Species or species habitat may occur within area
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]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		

Scientific Name	Threatened Category	Presence Text
[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]	Vulnerable	Species or species habitat may occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
[Calonectris leucomelas](#) Streaked Shearwater [1077]		Species or species habitat likely to occur within area
[Fregata ariel](#) Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area
[Macronectes giganteus](#) Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
[Phaethon lepturus](#) White-tailed Tropicbird [1014]		Species or species habitat may occur within area
[Phaethon lepturus fulvus](#) Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Reptile		

Scientific Name	Threatened Category	Presence Text
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		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 Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
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 sima Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
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

Current Scientific Name	Status	Type of Presence
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
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

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Gorgon Gas Development	2003/1294		Post-Approval
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Not controlled action			
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Not controlled action (particular manner)			
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region	
Continental Slope Demersal Fish Communities	North-west	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area
Exmouth Plateau	North-west	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area

Biologically Important Areas [Resource Information]

Scientific Name		Behaviour	Presence
Seabirds			
Ardenna pacifica Wedge-tailed Shearwater [84292]	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area	Breeding	Known to occur
Whales			
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]		Migration	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

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

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Sep-2024

Summary

Matters of National Environment Significance

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

World Heritage Properties:	2
National Heritage Places:	4
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	4
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	76
Listed Migratory Species:	81

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	73
Commonwealth Heritage Places:	3
Listed Marine Species:	151
Whales and Other Cetaceans:	37
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	22
Habitat Critical to the Survival of Marine Turtles:	4

Extra Information

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

State and Territory Reserves:	35
Regional Forest Agreements:	None
Nationally Important Wetlands:	2
EPBC Act Referrals:	215
Key Ecological Features (Marine):	10
Biologically Important Areas:	47
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status
Shark Bay, Western Australia	WA	Declared property
The Ningaloo Coast	WA	Declared property

National Heritage Places [Resource Information]

Name	State	Legal Status
Historic		
HMAS Sydney II and HSK Kormoran Shipwreck Sites	EXT	Listed place
Dirk Hartog Landing Site 1616 - Cape Inscription Area	WA	Listed place
Natural		
Shark Bay, Western Australia	WA	Listed place
The Ningaloo Coast	WA	Listed place

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		

Scientific Name	Threatened Category	Presence Text
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Malurus leucopterus edouardi White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
Malurus leucopterus leucopterus White-winged Fairy-wren (Dirk Hartog Island), Dirk Hartog Black-and-White Fairy-wren [26004]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area
CRUSTACEAN		
[Kumonga exleyi](#) Cape Range Remipede [86875]	Vulnerable	Species or species habitat likely to occur within area
FISH		
[Milyeringa veritas](#) Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat known to occur within area
[Ophisternon candidum](#) Blind Cave Eel [66678]	Vulnerable	Species or species habitat known to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
[Bettongia lesueur Barrow and Boodie Islands subspecies](#) Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Bettongia lesueur lesueur Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat known to occur within area
Bettongia penicillata ogilbyi Woylie [66844]	Endangered	Species or species habitat likely to occur within area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isoodon auratus barrowensis Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes conspicillatus conspicillatus Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes hirsutus bernieri Rufous Hare-wallaby (Bernier Island) [66662]	Vulnerable	Translocated population known to occur within area
Lagorchestes hirsutus Central Australian subspecies Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area
Lagorchestes hirsutus dorreae Rufous Hare-wallaby (Dorre Island) [66663]	Vulnerable	Species or species habitat known to occur within area
Lagostrophus fasciatus fasciatus Banded Hare-wallaby, Merrnine, Marnine, Munning [66664]	Vulnerable	Species or species habitat known to occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Osphranter robustus isabellinus		
Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Perameles bougainville		
Shark Bay Bandicoot [278]	Endangered	Species or species habitat known to occur within area
Petrogale lateralis lateralis		
Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Rhinonicteris aurantia (Pilbara form)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
REPTILE		
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama		
Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Ctenotus zastictus		
Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Egernia stokesii badia		
Western Spiny-tailed Skink, Baudin Island Spiny-tailed Skink [64483]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Lepidochelys olivacea		
Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Congregation or aggregation known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Centrophorus uyato		
Little Gulper Shark [68446]	Conservation Dependent	Species or species habitat likely to occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat known to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
Dugong dugon Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat known to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Species or species habitat known to occur within area
Tringa glareola Wood Sandpiper [829]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Xenus cinereus		
Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50127]	WA
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50125]	WA
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50129]	WA
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50128]	WA
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50124]	WA
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50126]	WA
Defence - EXMOUTH VLF TRANSMITTER STATION [50123]	WA
Defence - EXMOUTH VLF TRANSMITTER STATION [50122]	WA
Defence - LEARMONTH - AIR WEAPONS RANGE [50193]	WA
Defence - LEARMONTH - RAAF BASE [50100]	WA
Defence - LEARMONTH - RAAF BASE [50097]	WA
Defence - LEARMONTH - RAAF BASE [50106]	WA
Defence - LEARMONTH - RAAF BASE [50101]	WA
Defence - LEARMONTH - RAAF BASE [50107]	WA
Defence - LEARMONTH - RAAF BASE [50108]	WA
Defence - LEARMONTH - RAAF BASE [50103]	WA
Defence - LEARMONTH - RAAF BASE [50109]	WA

Commonwealth Land Name	State
Defence - LEARMONTH RADAR SITE - TWIN TANKS EXMOUTH [50002]	WA
Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]	WA
Unknown	
Commonwealth Land - [51469]	WA
Commonwealth Land - [51464]	WA
Commonwealth Land - [51459]	WA
Commonwealth Land - [51458]	WA
Commonwealth Land - [51453]	WA
Commonwealth Land - [51452]	WA
Commonwealth Land - [51472]	WA
Commonwealth Land - [51468]	WA
Commonwealth Land - [52236]	WA
Commonwealth Land - [52195]	WA
Commonwealth Land - [52098]	WA
Commonwealth Land - [51466]	WA
Commonwealth Land - [51467]	WA
Commonwealth Land - [51460]	WA
Commonwealth Land - [51461]	WA
Commonwealth Land - [51462]	WA
Commonwealth Land - [51463]	WA
Commonwealth Land - [52109]	WA
Commonwealth Land - [51465]	WA
Commonwealth Land - [51449]	WA
Commonwealth Land - [52110]	WA
Commonwealth Land - [51445]	WA
Commonwealth Land - [51448]	WA

Commonwealth Land Name	State
Commonwealth Land - [51447]	WA
Commonwealth Land - [51444]	WA
Commonwealth Land - [51443]	WA
Commonwealth Land - [51446]	WA
Commonwealth Land - [51442]	WA
Commonwealth Land - [51456]	WA
Commonwealth Land - [51451]	WA
Commonwealth Land - [51450]	WA
Commonwealth Land - [51455]	WA
Commonwealth Land - [51454]	WA
Commonwealth Land - [51457]	WA
Commonwealth Land - [52104]	WA
Commonwealth Land - [51475]	WA
Commonwealth Land - [52103]	WA
Commonwealth Land - [52107]	WA
Commonwealth Land - [52105]	WA
Commonwealth Land - [52102]	WA
Commonwealth Land - [52100]	WA
Commonwealth Land - [52101]	WA
Commonwealth Land - [51884]	WA
Commonwealth Land - [51477]	WA
Commonwealth Land - [51476]	WA
Commonwealth Land - [51470]	WA
Commonwealth Land - [51471]	WA
Commonwealth Land - [51473]	WA
Commonwealth Land - [51474]	WA
Commonwealth Land - [52106]	WA

Commonwealth Land Name	State
Commonwealth Land - [52108]	WA
Commonwealth Land - [52099]	WA
Commonwealth Land - [52097]	WA
Commonwealth Land - [52198]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
HMAS Sydney II and HSK Kormoran Shipwreck Sites	EXT	Listed place
Natural		
Learmonth Air Weapons Range Facility	WA	Listed place
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna carneipes as Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area
Calidris tenuirostris Great Knot [862]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Chalcites osculans as Chrysococcyx osculans		
Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius ruficapillus		
Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae		
Silver Gull [82326]		Breeding known to occur within area
Diomedea amsterdamensis		
Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea epomophora		
Southern Royal Albatross [89221]	Vulnerable	Species or species habitat may occur within area
Diomedea exulans		
Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area
Hirundo rustica Barn Swallow [662]		Species or species habitat known to occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Larus pacificus Pacific Gull [811]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]	Endangered	Species or species habitat known to occur within area overfly marine area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius phaeopus Whimbrel [849]		Species or species habitat known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat known to occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Pluvialis squatarola Grey Plover [865]	Vulnerable	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Pterodroma macroptera Great-winged Petrel [1035]		Foraging, feeding or related behaviour known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Puffinus assimilis Little Shearwater [59363]		Foraging, feeding or related behaviour known to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area
Stercorarius antarcticus as Catharacta skua Brown Skua [85039]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]		Breeding known to occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
[Thalassarche impavida](#) Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
[Thalassarche melanophris](#) Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
[Thalassarche steadi](#) White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
[Thalasseus bengalensis as Sterna bengalensis](#) Lesser Crested Tern [66546]		Breeding known to occur within area
[Thalasseus bergii as Sterna bergii](#) Greater Crested Tern [83000]		Breeding known to occur within area
[Tringa brevipes as Heteroscelus brevipes](#) Grey-tailed Tattler [851]		Species or species habitat known to occur within area
[Tringa glareola](#) Wood Sandpiper [829]		Species or species habitat known to occur within area overfly marine area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
[Xenus cinereus](#) Terek Sandpiper [59300]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Fish		
[Acentronura australe](#) Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
[Acentronura larsonae](#) Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus dunckeri Red-hair Pipefish, Duncker's Pipefish [66220]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus subelongatus West Australian Seahorse [66722]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Mitotichthys meraculus Western Crested Pipefish [66259]		Species or species habitat may occur within area
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
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
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Breeding known to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Sea Snake [66061]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
[Eubalaena australis](#) Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Globicephala melas](#) Long-finned Pilot Whale [59282]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Indopacetus pacificus](#) Longman's Beaked Whale [72]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[Kogia sima](#) Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
[Lagenodelphis hosei](#) Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
[Megaptera novaeangliae](#) Humpback Whale [38]		Breeding known to occur within area
[Mesoplodon bowdoini](#) Andrew's Beaked Whale [73]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
[Mesoplodon densirostris](#) Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
[Mesoplodon ginkgodens](#) Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
[Mesoplodon grayi](#) Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area
[Mesoplodon layardii](#) Strap-toothed Beaked Whale, Strap-toothed Whale, Layard's Beaked Whale [25556]		Species or species habitat may occur within area
[Mesoplodon mirus](#) True's Beaked Whale [54]		Species or species habitat may occur within area
[Orcaella heinsohni](#) Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
[Orcinus orca](#) Killer Whale, Orca [46]		Species or species habitat may occur within area
[Peponocephala electra](#) Melon-headed Whale [47]		Species or species habitat may occur within area
[Physeter macrocephalus](#) Sperm Whale [59]		Species or species habitat may occur within area
[Pseudorca crassidens](#) False Killer Whale [48]		Species or species habitat likely to occur within area
[Sousa sahulensis](#) Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area

Current Scientific Name	Status	Type of Presence
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks	[Resource Information]
Park Name	Zone & IUCN Categories
Abrolhos	Habitat Protection Zone (IUCN IV)
Carnarvon Canyon	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)

Park Name	Zone & IUCN Categories
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Multiple Use Zone (IUCN VI)
Abrolhos	Multiple Use Zone (IUCN VI)
Argo-Rowley Terrace	Multiple Use Zone (IUCN VI)
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Shark Bay	Multiple Use Zone (IUCN VI)
Abrolhos	National Park Zone (IUCN II)
Abrolhos	National Park Zone (IUCN II)
Abrolhos Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area	National Park Zone (IUCN II)
Argo-Rowley Terrace	National Park Zone (IUCN II)
Gascoyne	National Park Zone (IUCN II)
Ningaloo	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)
Ningaloo	Recreational Use Zone (IUCN IV)
Abrolhos	Special Purpose Zone (IUCN VI)
Abrolhos	Special Purpose Zone (IUCN VI)
Argo-Rowley Terrace Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur
Nov-Feb		

Scientific Name	Behaviour	Presence
Caretta caretta		
Loggerhead Turtle [1763]	Nesting	Known to occur

Nov - May		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Airlie Island	Nature Reserve	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Park	WA
Barrow Island	Marine Management Area	WA
Bernier And Dorre Islands	Nature Reserve	WA
Bessieres Island	Nature Reserve	WA
Boodie, Double Middle Islands	Nature Reserve	WA
Bundegi Coastal Park	5(1)(h) Reserve	WA
Cape Range	National Park	WA
Cape Range (South)	National Park	WA
Dirk Hartog Island	National Park	WA
Great Sandy Island	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
Little Rocky Island	Nature Reserve	WA
Locker Island	Nature Reserve	WA
Lowendal Islands	Nature Reserve	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Montebello Islands	Conservation Park	WA

Protected Area Name	Reserve Type	State
Muiron Islands	Nature Reserve	WA
Muiron Islands	Marine Management Area	WA
Ningaloo	Marine Park	WA
North Sandy Island	Nature Reserve	WA
Nyingguulu (Ningaloo) Coastal Reserve	5(1)(h) Reserve	WA
Round Island	Nature Reserve	WA
Serrurier Island	Nature Reserve	WA
Shark Bay	Marine Park	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA37338	5(1)(h) Reserve	WA
Unnamed WA37500	5(1)(g) Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA41080	5(1)(h) Reserve	WA
Unnamed WA44665	5(1)(h) Reserve	WA
Unnamed WA44667	5(1)(h) Reserve	WA
Victor Island	Nature Reserve	WA

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Cape Range Subterranean Waterways	WA
Shark Bay East	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Gorgon Gas Development	2003/1294		Post-Approval
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693		Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Project Highclere Cable Lay and Operation	2022/09203		Completed
Single Jetty Deep Water Port Renewable Hub, WA	2021/8942		Assessment
Action clearly unacceptable			
Highlands 3D Marine Seismic Survey	2012/6680	Action Clearly Unacceptable	Completed
Controlled action			
'Van Gogh' Petroleum Field Development	2007/3213	Controlled Action	Post-Approval
Boating Facility	2002/830	Controlled Action	Completed
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Construction and operation of a Solar Salt Project, SW Onslow, WA	2016/7793	Controlled Action	Assessment Approach
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Development of Angel gas and condensate field, North West Shelf	2004/1805	Controlled Action	Post-Approval
Development of Browse Basin Gas Fields (Upstream)	2008/4111	Controlled Action	Completed
Development of Coniston/Novara fields within the Exmouth Sub-basin	2011/5995	Controlled Action	Post-Approval
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Greater Gorgon Development - Optical Fibre Cable, Mainland to Barrow Island	2005/2141	Controlled Action	Completed
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
Mauds Landing Marina	2000/98	Controlled Action	Completed
Nava-1 Cable System	2001/510	Controlled Action	Completed
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Pyrenees Oil Fields Development	2005/2034	Controlled Action	Post-Approval
Simpson Oil Field Development	2001/227	Controlled Action	Post-Approval
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Yardie Creek Road Realignment Project	2021/8967	Controlled Action	Assessment Approach
Not controlled action			
'Goodwyn A' Low Pressure Train Project	2003/914	Not Controlled Action	Completed
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
Airlie Island soil and groundwater investigations, Exmouth Gulf, offshore Pilbara coast	2014/7250	Not Controlled Action	Completed
APX-West Fibre-optic telecommunications cable system, WA to Singapore	2013/7102	Not Controlled Action	Completed
archaeological surveys & excavation at historic sites, Cape Inscription	2006/3027	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Baniyas-1 Exploration Well, EP-424, near Onslow	2007/3282	Not Controlled Action	Completed
Barrow Island 2D Seismic survey	2006/2667	Not Controlled Action	Completed
Boating Facility	2002/832	Not Controlled Action	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed
Cazadores 2D seismic survey	2004/1720	Not Controlled Action	Completed
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033	Not Controlled Action	Completed
Differential Global Positioning System (DGPS)	2001/445	Not Controlled Action	Completed
Drilling between Kalbarri and Cliff Head	2005/2185	Not Controlled Action	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Exploration Well (Taunton-2)	2002/731	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
Hadda 1,Flying Foam 1,Magnat 1 exploration drill	2004/1697	Not Controlled Action	Completed
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	Not Controlled Action	Completed
Huascaran-1 exploration well (WA-292-P)	2001/539	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
INDIGO West Submarine Telecommunications Cable, WA	2017/8126	Not Controlled Action	Completed
Infill Production Well (Griffin-9)	2001/417	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Klammer 2D Seismic Survey	2002/868	Not Controlled Action	Completed
Mahimahi Aquaculture Facility	2002/891	Not Controlled Action	Completed
Maia-Gaea Exploration wells	2000/17	Not Controlled Action	Completed
Manaslu - 1 and Huascaran - 1 Offshore Exploration Wells	2001/235	Not Controlled Action	Completed
Mermaid Marine Australia Desalination Project	2011/5916	Not Controlled Action	Completed
Montesa-1 and Bultaco-1 Exploration Wells	2000/102	Not Controlled Action	Completed
North Rankin B gas compression facility	2005/2500	Not Controlled Action	Completed
Pipeline System Modifications Project	2000/3	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	Not Controlled Action	Completed
Seismic Survey, Bremer Basin, Mentelle Basin and Zeewyck Sub-basin	2004/1700	Not Controlled Action	Completed
Spool Base Facility	2001/263	Not Controlled Action	Completed
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	Not Controlled Action	Completed
sub-sea tieback of Perseus field wells	2004/1326	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
Thevenard Island Retirement Project	2015/7423	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
WA-295-P Kerr-McGee Exploration Wells	2001/152	Not Controlled Action	Completed
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
2D and 3D seismic surveys	2005/2151	Not Controlled Action (Particular Manner)	Post-Approval
2D marine seismic survey	2012/6296	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey	2008/4493	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey	2005/2146	Not Controlled Action (Particular Manner)	Post-Approval
2D Seismic Survey Permit Area WA-352-P	2008/4628	Not Controlled Action (Particular Manner)	Post-Approval
2D seismic survey within permit WA-291	2007/3265	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey (WA-482-P, WA-363-P), WA	2013/6761	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey in the Carnarvon Bsin on the North West Shelf	2002/778	Not Controlled Action (Particular Manner)	Post-Approval
3D sesmic survey	2006/2781	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval
Agrippina 3D Seismic Marine Survey	2009/5212	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Artemis-1 Drilling Program (WA-360-P)	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081	Not Controlled Action (Particular Manner)	Post-Approval
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular Manner)	Post-Approval
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval
Decommissioning of the Legendre facilities	2010/5681	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular Manner)	Completed
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Fletcher-Finucane Development, WA26-L and WA191-P	2011/6123	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Gazelle 3D Marine Seismic Survey in WA-399-P and WA-42-L	2010/5570	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Harpy 1 exploration well	2001/183	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Kingtree & Ironstone-1 Exploration Wells	2011/5935	Not Controlled Action (Particular Manner)	Post-Approval
Klimt 2D Marine Seismic Survey	2007/3856	Not Controlled Action (Particular Manner)	Post-Approval
Laverda 3D Marine Seismic Survey and Vincent M1 4D Marine Seismic Survey	2010/5415	Not Controlled Action (Particular Manner)	Post-Approval
Laying a submarine optical fibre telecommunications cable, Perth to Singapore and Jakarta	2014/7332	Not Controlled Action (Particular Manner)	Post-Approval
Leopard 2D marine seismic survey	2005/2290	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Macedon Gas Field Development	2008/4605	Not Controlled Action (Particular Manner)	Post-Approval
Marine reconnaissance survey	2008/4466	Not Controlled Action (Particular Manner)	Post-Approval
Mariner Non-Exclusive 2D Seismic Survey	2011/6172	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Canning Multi Client 2D Marine Seismic Survey	2010/5393	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Drilling Campaign	2011/5830	Not Controlled Action (Particular Manner)	Post-Approval
Offshore Fibre Optic Cable Network Construction & Operation, Port Hedland WA to Darwin NT	2014/7223	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Outer Canning exploration drilling program off NW coast of WA	2012/6618	Not Controlled Action (Particular Manner)	Post-Approval
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval
Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
Repsol 3d & 2D Marine Seismic Survey	2012/6658	Not Controlled Action (Particular Manner)	Post-Approval
Rose 3D Seismic Program	2008/4239	Not Controlled Action (Particular Manner)	Post-Approval
Rydal-1 Petroleum Exploration Well, WA	2012/6522	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Salsa 3D Marine Seismic Survey	2010/5629	Not Controlled Action (Particular Manner)	Post-Approval
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
search for HMAS Sydney	2006/3071	Not Controlled Action (Particular Manner)	Post-Approval
Skorpion Marine Seismic Survey WA	2001/416	Not Controlled Action (Particular Manner)	Post-Approval
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval
Stag 4D & Reindeer MAZ Marine Seismic Surveys, WA	2013/7080	Not Controlled Action (Particular Manner)	Post-Approval
Stag Off-bottom Cable Seismic Survey	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tantabiddi Boat Ramp Sand Bypassing	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a 3D marine seismic survey	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval
Vincent M1 and Enfield M5 4D Marine Seismic Survey	2010/5720	Not Controlled Action (Particular Manner)	Post-Approval
Warramunga Non-Inclusive 3D Seismic Survey	2008/4553	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone 3D MAZ Marine Seismic Survey	2011/6058	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Referral decision			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed
3D Seismic Survey	2008/4219	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed
Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)	2010/5507	Referral Decision	Completed

Key Ecological Features

[Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name		Region
Ancient coastline at 125 m depth contour		North-west
Ancient coastline at 90-120m depth	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area	South-west
Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula		North-west
Commonwealth waters adjacent to Ningaloo Reef		North-west
Continental Slope Demersal Fish Communities		North-west

Name	Region
Exmouth Plateau	North-west
Glomar Shoals	North-west
Perth Canyon and adjacent shelf break, and other west coast canyons	South-west
Western demersal slope and associated fish communities	South-west
Western rock lobster	South-west

Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Dugong		
Dugong dugon Dugong [28]	Breeding	Known to occur
Dugong dugon Dugong [28]	Calving	Known to occur
Dugong dugon Dugong [28]	Foraging	Known to occur
Dugong dugon Dugong [28]	Foraging (high density seagrass beds)	Known to occur
Dugong dugon Dugong [28]	Nursing	Known to occur
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Internesting	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Aggregation	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Basking	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Aggregation	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Known to occur

Scientific Name		Behaviour	Presence
Natator depressus Flatback Turtle [59257]		Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]		Mating	Known to occur
Natator depressus Flatback Turtle [59257]		Nesting	Known to occur
Seabirds			
Anous stolidus Common Noddy [825]	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area	Foraging (provisioning young)	Known to occur
Anous tenuirorstris melanops Australian Lesser Noddy [26000]	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area	Foraging (provisioning young)	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]		Foraging (in high numbers)	Known to occur
Onychoprion anaethetus Bridled Tern [82845]		Foraging (in high numbers)	Known to occur
Onychoprion fuscata Sooty Tern [82847]		Foraging	Known to occur
Pelagodroma marina White-faced Storm-petrel [1016]		Foraging (in high numbers)	Known to occur
Phaethon lepturus White-tailed Tropicbird [1014]		Breeding	Known to occur
Puffinus assimilis tunneyi Little Shearwater [59363]		Foraging (in high numbers)	Known to occur

Scientific Name		Behaviour	Presence
[Sterna dougallii](#) Roseate Tern [817]		Breeding	Known to occur
[Sterna dougallii](#) Roseate Tern [817]	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area	Foraging (provisioning young)	Known to occur
[Sternula albifrons sinensis](#) Little Tern [82850]	Error in report. A review of the Protected Matters Search Tool dataset and additional GIS checks do not show any overlap of this BIA with the Operational Area	Resting	Known to occur
[Sternula nereis](#) Fairy Tern [82949]		Breeding	Known to occur
[Thalasseus bengalensis](#) Lesser Crested Tern [66546]		Breeding	Known to occur
Sharks			
[Rhincodon typus](#) Whale Shark [66680]		Foraging	Known to occur
[Rhincodon typus](#) Whale Shark [66680]		Foraging (high density prey)	Known to occur
Whales			
[Balaenoptera musculus brevicauda](#) Pygmy Blue Whale [81317]		Foraging	Known to occur
[Balaenoptera musculus brevicauda](#) Pygmy Blue Whale [81317]		Known Foraging Area	Known to occur
[Balaenoptera musculus brevicauda](#) Pygmy Blue Whale [81317]		Migration	Known to occur
[Megaptera novaeangliae](#) Humpback Whale [38]		Migration (north and south)	Known to occur
[Megaptera novaeangliae](#) Humpback Whale [38]		Resting	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

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

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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

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Hydrocarbon Social EMBA
Note the Hydrocarbon Social EMBA is a combination of the Hydrocarbon Ecological EMBA PMST search and this PMST Search

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Sep-2024

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	46
Listed Migratory Species:	53

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	95
Whales and Other Cetaceans:	14
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

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

State and Territory Reserves:	7
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	14
Key Ecological Features (Marine):	None
Biologically Important Areas:	23
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.		
Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Malurus leucopterus edouardi		
White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pezoporus occidentalis		
Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
FISH		
Milyeringa veritas		
Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat may occur within area
MAMMAL		

Scientific Name	Threatened Category	Presence Text
Balaenoptera musculus		
Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Bettongia lesueur Barrow and Boodie Islands subspecies		
Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Translocated population known to occur within area
Dasyurus hallucatus		
Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat known to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat may occur within area
Isoodon auratus barrowensis		
Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes conspicillatus conspicillatus		
Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat known to occur within area
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Osphranter robustus isabellinus		
Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Petrogale lateralis lateralis		
Black-flanked Rock-wallaby, Mororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Rhinonicteris aurantia (Pilbara form)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat may occur within area
PLANT		
Minuria tridens		
Minnie Daisy [13753]	Vulnerable	Species or species habitat may occur within area
REPTILE		

Scientific Name	Threatened Category	Presence Text
[Aipysurus apraefrontalis](#) Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
[Aipysurus foliosquama](#) Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
[Chelonia mydas](#) Green Turtle [1765]	Vulnerable	Breeding known to occur within area
[Ctenotus zastictus](#) Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat likely to occur within area
[Dermochelys coriacea](#) Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
[Liasis olivaceus barroni](#) Pilbara Olive Python [66699]	Vulnerable	Species or species habitat likely to occur within area
[Natator depressus](#) Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
SHARK		
[Carcharias taurus (west coast population)](#) Grey Nurse Shark (west coast population) [68752]	Vulnerable	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
[Pristis clavata](#) Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna pacifica		
Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Hydroprogne caspia		
Caspian Tern [808]		Breeding known to occur within area
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Onychoprion anaethetus Bridled Tern [82845]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Breeding known to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		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
Carcharhinus longimanus Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
[Pristis pristis](#)		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat likely to occur within area
[Pristis zijsron](#)		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
[Rhincodon typus](#)		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
[Sousa sahulensis as Sousa chinensis](#)		
Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
[Tursiops aduncus (Arafura/Timor Sea populations)](#)		
Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Migratory Terrestrial Species		
[Hirundo rustica](#)		
Barn Swallow [662]		Species or species habitat may occur within area
[Motacilla cinerea](#)		
Grey Wagtail [642]		Species or species habitat may occur within area
[Motacilla flava](#)		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
[Actitis hypoleucos](#)		
Common Sandpiper [59309]		Species or species habitat known to occur within area
[Calidris acuminata](#)		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
[Calidris canutus](#)		
Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Thalasseus bergii Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Ardenna pacifica as Puffinus pacificus Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area
Chroicocephalus novaehollandiae as Larus novaehollandiae Silver Gull [82326]		Breeding known to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat may occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Breeding known to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Rostratula australis as Rostratula benghalensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sterna dougallii		
Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons		
Little Tern [82849]		Breeding known to occur within area
Sternula nereis as Sterna nereis		
Fairy Tern [82949]		Breeding known to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalasseus bengalensis as Sterna bengalensis		
Lesser Crested Tern [66546]		Breeding known to occur within area
Thalasseus bergii as Sterna bergii		
Greater Crested Tern [83000]		Breeding known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine 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

Scientific Name	Threatened Category	Presence Text
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 area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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

Scientific Name	Threatened Category	Presence Text
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
Mammal		
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Reptile		
Aipysurus apraefrontalis Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Port Darwin Sea Snake, Black-ringed Mangrove Sea Snake [1100]		Species or species habitat may occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis macdowelli as Hydrophis mcdowelli		
MacDowell's Sea Snake, Small-headed Sea Snake, [75601]		Species or species habitat may occur within area
Hydrophis major as Disteira major		
Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus		
Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii		
Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus		
Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii		
Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera 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
Delphinus delphis		
Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
Aug - Sep		

Scientific Name	Behaviour	Presence
Natator depressus		
Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur
Nov - May		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Management Area	WA
Great Sandy Island	Nature Reserve	WA
Lowendal Islands	Nature Reserve	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Montebello Islands	Conservation Park	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Gorgon Gas Development	2003/1294		Post-Approval
Controlled action			
Balmoral South Iron Ore Mine	2008/4236	Controlled Action	Post-Approval
Binowee Iron Ore Project	2001/366	Controlled Action	Proposed Decision
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Eramurra Industrial Salt Project, near Karratha, WA	2019/8448	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval
Greater Gorgon Development - Optical Fibre Cable, Mainland to Barrow Island	2005/2141	Controlled Action	Completed
Proposed West Pilbara Iron Ore Project	2009/4706	Controlled Action	Post-Approval
Simpson Oil Field Development	2001/227	Controlled Action	Post-Approval
Not controlled action			
Expansion of the Sino Iron Ore Mine and export facilities, Cape Preston, WA	2017/7862	Not Controlled Action	Completed
Expansion Proposal, Mineralogy Cape Preston Iron Ore Project, Cape Preston, WA	2009/5010	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Not controlled action (particular manner)			
West Panaeus 3D seismic survey	2006/3141	Not Controlled Action (Particular Manner)	Post-Approval

Biologically Important Areas		[Resource Information]
Scientific Name	Behaviour	Presence
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Caretta caretta Loggerhead Turtle [1763]	Nesting	Known to occur
Chelonia mydas Green Turtle [1765]	Aggregation	Known to occur

Scientific Name	Behaviour	Presence
Chelonia mydas Green Turtle [1765]	Basking	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Mating	Known to occur
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur

Scientific Name	Behaviour	Presence
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Whales		
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

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

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Appendix D Relevant Persons consultation summary

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1.1 Regulation 25(1)(a) - Commonwealth, State or Northern Territory agency or authority to which the activities to be carried out under the EP, or the revision of the EP, may be relevant

1.1.1 Commonwealth departments or agencies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Australian Fisheries Management Authority (AFMA)	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	08/03/2024	001165	Email	CAPL sent a follow up email to AFMA requesting feedback on the EP. CAPL noted that it may contact AFMA again by phone to confirm receipt of the information.	No objection or claim raised		
	14/03/2024	001163	Email	AFMA thanked CAPL for the notification AFMA suggested engaging with operators, via the Commonwealth Fisheries Association (CFA) and WAFIC, who have entitlements to fish within the proposed area.	AFMA suggested engaging with operators within the region.	**Claim has merit:** As the activities have the potential to impact fishers, it is fair and reasonable to engage with fishers within the area.	No action required. Over the course of consultation, relevant fishing industry associations and fishery businesses were engaged with.
	04/04/2024	001164	Email	CAPL responded to AFMA and informed them they were consulting with WAFIC and CFA for this EP.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AFMA on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • AFMA has not raised any objections or claims relating to the activity. AFMA suggested CAPL engage with operators within the region. Over the course of consultation, relevant fishing industry associations and fishery businesses were engaged with. • CAPL has provided a reasonable period and sufficient information to AFMA to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Australian Hydrographic Office (AHO)	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	21/12/2023	001115	Email	An automated response received from AHO acknowledged that CAPL's email had been received by the AHO, and the data would be registered, assessed, prioritised and validated.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AHO on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • AHO has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to AHO to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Australian Maritime Safety Authority (AMSA)	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/01/2024 - 25/01/2024	OB-001095	Email	AMSA raised the following: 1. Requirement to notify JRCC before operations commence 2. Requirement to notify AHO no less than four working weeks before operations commence 3. Vessels should exhibit appropriate lights and shapes to reflect the nature of operations and in compliance with the International Rules for Preventing Collisions at Sea (COLREGs), and that the navigation status in set correctly in vessel's Automatic Identification System (AIS) unit 4. CAPL to evaluate and implement adequate anti-collision measures. CAPL thanked AMSA for its response regarding the EP Revision. CAPL clarified that the EP Revision relates to well intervention and maintenance of the existing Gorgon and Jansz production wells and does not include exploration activities. CAPL provided a response to AMSA addressing the raised notification requirements and control measures. CAPL summarised the controls that have been adopted for the EP Revision regarding risk of collision mitigation measures and the existing notification commitments. No response received.	AMSA raised multiple notification requirements and control measures in relation to physical presence and other marine users.	**Claim has merit** All vessel collision, notification and lighting requirements are commonplace and industry standard. All claims are fair and reasonable for this offshore activity, and should be captured within the EP.	Notifications to AMSA JRCC and AHO are standard control measures and are included as both a control in Section 7.1 and notifications Table 8-5. Vessels are required to operate in accordance with any Class, Flag or Port State laws and regulations. This includes the use of appropriate signals to reflect nature of vessel operations. Vessels will comply with COLREGs. The unplanned event of vessel collision has been evaluated in Section 7.1.5 of the EP, including consideration of anti-collision measures.
				Summary: • CAPL commenced consultation with AMSA on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • AMSA raised multiple notification requirements and control measures regarding physical interaction with other marine users. CAPL acknowledged the advice and ensured that the EP was in alignment with this feedback. • CAPL has provided a reasonable period and sufficient information to AMSA to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Department of Agriculture, Fisheries and Forestry (DAFF)	20/12/2023-11/03/2024	001279	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024. CAPL contacted DAFF to follow up on the email sent in December 2023, requesting feedback on the EP. CAPL noted that it had not received a response. No response was received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DAFF on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • DAFF has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to DAFF to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Department of Climate Change, Energy, the Environment and Water - DCCEEW	20/12/2023-08/03/2024	001281	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024. CAPL contacted DCCEEW to follow up on the email sent in December 2023, requesting feedback on the EP. CAPL noted that it had not received a response and advised it would phone to confirm receipt of the information. No response was received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DCCEEW on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • DCCEEW has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to DCCEEW to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Department of Climate Change, Energy, the Environment and Water - Director of National Parks (DNP)	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	11/03/2024-13/07/2024	001602	Email	CAPL sent a follow up email requesting feedback on the EP. CAPL noted that it had not received a response. DNP thanked CAPL for the opportunity to comment on the EP Revision. DNP noted: • The planned activities do not overlap with any Australian Marine Parks, so no authorisation is required from the Director of National Parks (DNP). • DNP does not require further notification on the EP unless details regarding the activity change and result in an overlap with or new impact to a marine park, or for emergency responses. • Environmental Plan (EP) Preparation: When preparing the EP for petroleum activities, consider the values of Australian Marine Parks. Ensure the EP manages all impacts and risks to an acceptable level and aligns with the management plan objectives. • Emergency Response Notification: In case of oil/gas pollution incidents within or likely to impact a marine park, notify the DNP immediately with details of the incident and proposed response arrangements.	DNP stated that CAPL should ensure that the EP: • identifies and manages all impacts and risks on Australian marine park values (including ecosystem values) to an acceptable level and has considered all options to avoid or reduce them to as low as reasonably practicable. • Notification requirements for oil/gas pollution incidences which occur within a marine park or are likely to impact on a marine park as soon as possible.	**Claims have merit** • As the Operational Area and EMBA overlap Australian Marine Parks, CAPL acknowledge that the risk assessment should detail impacts and risks on marine park values within the risk assessment, and should demonstrate that they managed to an acceptable level and ALARP. • CAPL acknowledges the notification requirements for spill events that occur in or may impact a marine park as soon as possible.	Claims have been addressed in the EP.
				Summary:			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL commenced consultation with DNP on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • DNP has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to DNP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Department of Defence (DoD)	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	21/12/2023	001105	Email	DoD advised CAPL they had begun consultation with DoD stakeholders and will provide feedback in early February 2024.	No objection or claim raised		
	31/01/2024	001103	Email	DoD thanked CAPLs email regarding the proposed operations within Commonwealth waters. DoD noted that the activity areas are located outside of any Defence Training Areas and restricted airspace. DoD advised CAPL that an unexploded ordnance (UXO) may be present on and in the sea floor. DoD notified CAPL of Australian Hydrographic Service (AHS) Notices to Mariners (NOTMAR) notification requirements.	DoD advised CAPL: • Potential presence of UXO on and in the seafloor. • To contact AHS for Notices to Mariners three weeks prior to the actual commencement of activities where applicable.	**Claims have merit** • There are no known UXOs present within the proposed operational areas, however CAPL notes there may be UXOs present on and in the sea floor. • It is considered fair and reasonable to notify the AHO.	No changes made to the EP. UXOs are discussed in Section 4.4.6 of the EP. Notifications to AHO is a standard control measure and is included as both a control in Section 7.1 and notifications Table 8-5.
	07/02/2024-07/02/2024	001104	Email	CAPL thanked DoD for their email. CAPL acknowledged the DoD's advice regarding unexploded ordnances but notes the area has undergone previous disturbance and multiple pre- and post-activity surveys. Currently, there are no plans for any further seabed disturbance beyond unplanned well intervention activities. CAPL noted it will continue to liaise with the Australian Hydrographic Service (AHS) for Notices to Mariners and ensure that the AHS is notified three weeks prior to the commencement of activities.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DoD on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • DoD has not raised any objections or claims relating to the activity. DoD noted the AHS notification requirements, and also informed CAPL of the potential presence of UXO in the region. CAPL acknowledged this information, and ensured the EP was aligned with this feedback. • CAPL has provided a reasonable period and sufficient information to DoD to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.1.2 State agencies or authorities

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Department of Biodiversity, Conservation and Attractions (DBCA)	21/12/2023	CN-001063	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	02/01/2024	OB-001050	Email	DBCA reiterated gas production activities in proximity to ecologically sensitive receptors including marine parks and other reserves managed by DBCA under the CALM Act. Need for comprehensive baseline monitoring of these receptors and oil spill response preparedness. DBCA notes the activity is located nearby marine parks and island conservation reserves, including Barrow Island Nature Reserve (R 11648) and Barrow Island Marine Management Area (M 11). DBCA also noted that any required access to reserves managed by DBCA or the taking / disturbance of threatened fauna in State waters would require additional approvals and early consultation with DBCA.	DBCA raised: 1. The presence of sensitive receptors such as marine parks, including Barrow Island Nature Reserve and Barrow Island Marine Management Area. 2. The requirement for further approvals and engagement with DBCA if access to reserves or taking / disturbance to threatened fauna in State waters is required.	**Claim has merit:** 1. CAPL acknowledge the presence and relevance of sensitive receptors such as marine parks **Claim does not have merit:** 2. CAPL acknowledges the requirements raised by the DBCA, however the activity does not occur in State waters, and as such no further approvals or engagement with DBCA is required.	Section 4.5.2 and 4.5.3 of the EP addresses claims raised.
				Summary: • CAPL commenced consultation with DBCA on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • DBCA raised the presence of sensitive receptors such as marine parks, including Barrow Island Nature Reserve and Barrow Island Marine Management Area. They also noted further the DBCA requirements if activities were to occur in State waters. • CAPL has provided a reasonable period and sufficient information to DBCA to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Department of Primary Industries and Regional Development (WA DPIRD): Fisheries	20/12/2023 - 22/03/2024	001167	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024. CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received. No response was received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DPIRD on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• DPIRD has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to DPIRD to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Department of Transport (DoT) - Maritime Environmental Emergency Response (MEER) - Marine Pollution	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	08/03/2024	001280	Email	CAPL sent a follow up email requesting feedback on the EP. CAPL noted that it had not received a response.	No objection or claim raised		
	12/03/2024	001174	Email	DOT advised CAPL that if there is a risk of a spill impacting State waters from the proposed activity that information must be provided in accordance with the requirements of the Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020).	DOT raised the requirements of the Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020).	**Claim has merit:** CAPL acknowledge that the activity has the potential to result in a spill that impacts state waters, and that DOT must be consulted in accordance with the Department of Transport Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020).	No change made to EP. Reporting requirement to DoT for spills potentially affecting State waters is already included in Section 8.4.2 (Table 8-13). CAPL provided a response and closed out this engagement with DOT.
	25/03/2024	001175	Email	CAPL provided DOT information relating to the EP in accordance with the Department of Transport Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020).	No objection or claim raised		
	12/04/2024	001270	Email	DoT responded to CAPL advising they had no queries at this stage.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DoT on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • DoT has not raised any objections or claims relating to the activity. DoT notified CAPL of the requirements of the Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020). CAPL ensured the EP was in alignment with this guidance note, and closed out the engagement with DoT. • CAPL has provided a reasonable period and sufficient information to DoT to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Department of Water & Environmental Regulation (DWER)	21/12/2023	CN-001080	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPL's consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/03/2024	001523	Email	DWER provided CAPL with a letter advising to engage with the Department's EPA Services directorate. CAPL responded to EPA representative (cc'd in the correspondence) to advise if there was any further information required. No response was received.	DWER advised CAPL to engage with the Department's EPA Services directorate.	**Claim has merit:** As a relevant person, advice on additional relevant persons is considered fair and reasonable.	No change made to the EP. Further engagement with EPA Services has taken place.

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				Summary: • CAPL commenced consultation with DWER on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • DWER has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to DWER to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Pilbara Ports Authority	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPL's consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	22/03/2024	001168	Email	CAPL sent a follow up email requesting feedback on the EP. CAPL noted that it had not received a response.	No objection or claim raised		
	25/03/2024	001493	Email	Pilbara Ports Authority requested CAPL to update the contact list and provided a new contact email address. CAPL confirmed they would update their records.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Pilbara Ports Authority on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Pilbara Ports Authority has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Pilbara Ports Authority to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.2 Regulation 25(1)(b) - Department of the responsible State Minister

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Department of Energy, Mines, Industry Regulation and Safety (WA DEMIRS)	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	22/03/2024	001166	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received. No response received.	No objection or claim raised		
				Summary:			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL commenced consultation with WA DEMIRS on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • WA DEMIRS has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information WA DEMIRS to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.3 Regulation 25(1)(d) - Person or organisation whose functions, interests, or activities may be affected by the petroleum activity

1.3.1 First Nations people and/or representative bodies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Baiyungu Aboriginal Corporation (BAC)	21/12/2023	CN-001055	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	07/03/2024	001150	Phone	CAPL contacted BAC and left voicemail.	No objection or claim raised		
	26/03/2024	001156	Phone	CAPL contacted BAC and left voicemail.	No objection or claim raised		
	05/04/2024	001193	Email	CAPL contacted BAC to advise a voicemail has been left with BAC requesting a time to meet and discuss the EP revision and future Ranger opportunities. CAPL advised BAC they have also been trying to contact NTGAC however no response has been received. CAPL requested return BAC to return phone call.	No objection or claim raised		
	18/04/2024	001369	Email	CAPL sent an email to follow up regarding the EP Revision. CAPL advised the consultation period has closed, but CAPL remains committed to meaningful consultation and would welcome the opportunity to present to board. CAPL advised they had made multiple attempts to make contact via email and telephone CAPL mentioned upcoming training and development opportunities. CAPL advised the EP Revision will account for previously approved well intervention activities on four wells in the Gorgon and Jansz-Io gas fields in 2024.	No objection or claim raised		
				Summary: • CAPL commenced consultation with BAC on 21 December 2023 via an email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • BAC has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to BAC to make an informed assessment of the possible consequences			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	21/12/2023	CN-001056	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	19/12/2023-21/12/2023	OC-001042	Email	BTAC emailed CAPL outlining steps it proposed to best facilitate consultation on EPs in a meaningful and timely way. CAPL emailed BTAC and confirmed that it appreciated the opportunity to provide clarification on the consultation process. CAPL confirmed support for BTAC to engage an independent environment specialist to review future information sheets. CAPL accepted invitation to meet the board in February 2024.	No objection or claim raised		
	22/12/2023	OC-001043	Phone	CAPL contacted BTAC to discuss plan to meet in preparation for the board meeting in January and February 2024.	No objection or claim raised		
	13/01/2024	001325	Email	CAPL provided BTAC with draft of proposed relationship roadmap and EP schedule via email, prior to presentation at the BTAC Board meeting. CAPL also advised that they would review the funding agreement and engagement plan.	No objection or claim raised		
	31/01/2024	001326	Email	CAPL sent BTAC an email proposing changes to the funding agreement to reflect the separate work streams between BTAC and CAPL. CAPL advised that the intent of the funding agreement is to cover obligations and funding between CAPL and BTAC with respect to the EP consultations which would be subsumed into a broader Relationship Agreement.	No objection or claim raised		
	06/02/2024	001332	Email	CAPL sent email to BTAC outlining discussions points for meeting occurring later that day. BTAC responded to CAPL's email requesting CAPL to include additional discussion points to the agenda.	No objection or claim raised		
	07/02/2024-19/02/2024	001334	Email	BTAC and CAPL discussed changes to the funding agreement. BTAC advised CAPL that they were developing the agenda for the upcoming board meeting requested reviewed funding agreement. CAPL sent BTAC the draft relationship roadmap document for BTAC's review and requested BTAC to advise CAPL if the documents will be presented at the BTAC board meeting.	No objection or claim raised		
	19/02/2024	001336	Email	BTAC contact CAPL via email to advise date of BTAC's general meeting and an Authorisation meeting and matters regarding BTAC CAPL employees. CAPL responded to BTAC acknowledging request and advised the relevant people will be made aware.	No objection or claim raised		
	22/02/2024	001337	Email	CAPL sent BTAC revised funding agreement, acknowledging that BTAC amendments had been accepted by CAPL. CAPL advised next steps if accepted by BTAC.	No objection or claim raised		
	23/02/2024-26/02/2024	001338	Email	CAPL sent BTAC the agenda for meeting occurring on the 27 February 2024. CAPL included questions regarding the agenda for BTAC to answer. BTAC responded to CAPL questions regarding the agenda. CAPL replied to BTAC email acknowledging BTAC's answers.	No objection or claim raised		
	27/02/2024	001638	Face to Face	CAPL met with BTAC to discuss the implementation of the Engagement Plan and meeting schedule for EP consultation.	No objection or claim raised		
	06/03/2024	001341	Email	CAPL sent BTAC calendar invite for kick off meeting for the cultural mapping program. BTAC thanked CAPL for the calendar invitation and advised that they are not available to attend. BTAC requested CAPL to reschedule.	No objection or claim raised		
	08/03/2024	001342	Email	CAPL sent BTAC meeting minutes from meeting on 27 February 2024 (Record ID 001638).	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL requested that BTAC review minutes and make any amendments required to ensure the minutes are a reflection of the conversation and actions.			
	14/03/2024	001343	Email	CAPL sent BTAC the agenda of kick off meeting for the cultural mapping program (Record ID 001640).	No objection or claim raised		
	14/03/2024	001640	Face to Face	CAPL met with BTAC to review draft proposal for cultural mapping program and discuss next steps to progress cultural mapping proposal.	No objection or claim raised		
	03/04/2024	001373	Email	CAPL provided BTAC with the Monthly Update for March 2024, including the following in relation to EP consultation: • Meeting with BTAC board and relevant representatives to review and co-design the consultation process (11 April) • Complete consultation on EP Revision (May) • Communicate the offshore project proposal (OPP) public comments period (May)	No objection or claim raised		
	04/04/2024	001727	Face to Face	BTAC CEO meet with CAPL MD & Operations Director to discuss the relationship.	No objection or claim raised		
	05/04/2024- 10/04/2024	001376	Email	BTAC sent CAPL an email confirming that CAPL has been allocated 2 hours during the BTAC board meeting on 11 April 2024 for EP consultation. CAPL provided a proposed agenda. BTAC provided feedback and queries on the agenda, to which CAPL responded.	No objection or claim raised		
	10/04/2024	001384	Phone	BTAC called CAPL representative to discuss concerns related to a previous meeting that occurred on the 4 April 2024.	No objection or claim raised		
	11/04/2024	001264	Face-to-face	CAPL met with BTAC board to consult on the EP Revision. BTAC advised on arrival that due to perceived conflicts of interest for two BTAC directors, they would not be able to participate in consultation. BTAC confirmed that this would then mean that a quorum cannot be formed and that the meeting could not be continued.	No objection or claim raised		
	11/04/2024	001387	Email	CAPL emailed BTAC with presentation contents for BTAC board meeting regarding EP consultation.	No objection or claim raised		
	15/04/2024	001274	Email	CAPL wrote to BTAC following the attempt to consult with the BTAC board meeting on 11 April. CAPL advised that it was still willing to meet with the BTAC board to consult on the EP. CAPL provided copied BTAC with the: • EP Revision information sheet • link to the current EP on the NOPSEMA website • NOPSEMA guideline on consultation.	No objection or claim raised		
	15/04/2024	001276	Phone	BTAC contacted CAPL via phone to discuss a further meeting to be held with external facilitators.	No objection or claim raised		
		001390	Email	BTAC sent CAPL executed funding agreement for CAPL's countersignature. BTAC requested a receipt once countersigned.	No objection or claim raised		
	15/04/2024- 09/05/2024	001392	Email	Email correspondence between BTAC and CAPL regarding truth-telling session between CAPL and BTAC.	No objection or claim raised		
	09/05/2024	001396	Email	CAPL provided BTAC with the Monthly Update for April 2024. Includes summary of CAPL consultation requests. • March 2024 - Requested consultation meeting dates for EP Revision. The consultation window closes in May 2024 - awaiting BTAC response. • April 2024 - Requesting an opportunity to provide the BTAC board with an overview and project update on Barrow Island decommissioning and visit to Barrow Island – awaiting BTAC response. • April 2024 - Requesting consultation meeting dates for another CAPL EP. Consultation is planned to occur between June and August 2024 - awaiting BTAC response.	No objection or claim raised		

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	05/06/2024	001485	Email	CAPL emailed BTAC to confirm that the consultation period for the EP Revision has closed. CAPL stated that they have made several attempts to consult with BTAC and sought the opportunity to engage with them on their preferred consultation approach. CAPL further advised that they had not been granted an opportunity to consult with BTAC during this consultation period but remain committed to meaningful consultation and would welcome the opportunity to engage with BTAC for upcoming activities and receive feedback for consideration in any future environmental plans.	No objection or claim raised		
				Summary: • CAPL commenced consultation with BTAC on 21 December 2023 by sending an email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • BTAC has not raised any objections or claims relating to the activity. BTAC provided feedback on the CAPL relationship agreement, and provided feedback on how best to consult. CAPL will continue to consult BTAC as per its request in accordance with CAPL's ongoing consultation arrangements. • CAPL has provided a reasonable period and sufficient information to BTAC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Kariyarra Aboriginal Corporation (KAC)	21/12/2023	CN-001067	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	17/01/2024	001410	Email	CAPL contacted KAC via email requesting to arrange meeting to discuss the EP Revision	No objection or claim raised		
	05/03/2024- 03/04/2024	001634	Email	CAPL contacted KAC to arrange a meeting to discuss the EP Revision. CAPL sent a follow up email to KAC to notify them that the consultation period for the EP Revision will be closing on 5 April 2024. CAPL confirmed it had not received a response from KAC regarding the EP Revision. CAPL advised it still welcome the opportunity to engage with KAC for upcoming activities and receive feedback for consideration in any future environmental plans.	No objection or claim raised		
	05/03/2024- 04/04/2024	001189	Email	CAPL contacted KAC to request an introductory chat to discuss the EP revision. CAPL sent KAC its submission on Clarifying Consultation requirements for offshore petroleum and greenhouse gas storage regulatory approvals.	No objection or claim raised		
	08/04/2024	OC-001100	Phone	CAPL contacted KAC to confirm interest in further discussion about EP following email sent to KAC in December 2023. KAC advised that they hadn't reviewed the email yet and would respond as soon as possible.	No objection or claim raised		
	03/05/2024	001635	Email	KAC accepted CAPL's request to meet by sending CAPL a meeting invite to discuss Ranger training opportunities in Port Hedland.	No objection or claim raised		
	31/05/2024	001397	Email	CAPL contacted KAC via email to confirm that the consultation period for the EP Revision had closed and requested meeting with KAC to discuss upcoming training opportunities and future EP consultations.	No objection or claim raised		
				Summary: • CAPL commenced consultation with KAC on 21 December 2023 via an email advising they had been identified as a relevant person with			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • KAC has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to KAC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Malgana Aboriginal Corporation (Malgana)	21/12/2023	CN-001067	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	16/01/2024-06/02/2024	001146	Email	CAPL sent a follow up email to Malgana to arrange a time to discuss the EP Revision. Malgana notified CAPL of changes to the organisation and provided alternative contact details. CAPL sent a follow up email to request a telephone call.	No objection or claim raised		
	16/01/2024	001407	Email	CAPL contacted Malgana via email requesting to arrange meeting to discuss the EP Revision	No objection or claim raised		
	04/03/2024-05/03/2024	001417	Email	Malgana contacted CAPL via email introducing the new Chair of the corporation. CAPL responded to Malgana's email requesting to arrange an introductory meeting and to discuss consultation on the EP Revision	No objection or claim raised		
	07/03/2024-07/03/2024	001151	Phone	CAPL contact Malgana by phone to discuss arranging a meeting to discuss EP and ranger training opportunities.	No objection or claim raised		
	26/03/2024	001155	Phone	CAPL contacted Malgana and left voicemail.	No objection or claim raised		
	08/03/2024-26/03/2024	001191	Email	CAPL left voicemail with Malgana requesting a time to meet and discuss the EP revision and future Ranger opportunities. CAPL requested Malgana to return the phone call.	No objection or claim raised		
	03/04/2024	001177	Email	CAPL sent a follow up email to Malgana to advise consultation for the EP Revision will be closing on 5 April 2024. CAPL confirmed they had not received a response to its emails and phone calls regarding the opportunity to consult on these activities. CAPL welcomed the opportunity to engage with future consultation and Ranger development opportunities	No objection or claim raised		
	31/05/2024	001398	Email	CAPL contacted Malgana via email to confirm that the consultation period for the EP Revision had closed and requested meeting with Malgana to discuss other opportunities.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Malgana on 21 December 2023 via an email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Malgana has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to MAC to make an informed assessment of the possible consequences			

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				of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Mardathoonera Cultural Heritage Pty Ltd (MCH)	21/12/2023	CN-001071	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	24/01/2024	001413	Email	CAPL contacted MCH via email to coordinate a 2024 planning meeting to discuss and co-design the consultation for upcoming EPs. CAPL also recommended an independent anthropologist to assist MCH with audio recording of cultural information.	No objection or claim raised		
	01/02/2024	001256	Face-to-face	CAPL met with MCH to discuss the following topics: • Overview and discussion focused on EP activities, including the EP Revision. • Co-design of on-going consultation planning for 2024. • Planning for 2024. CAPL SME's presented on technical aspects of its EP activities. MCH expressed concerns about potential impacts of earthquakes and leaving well heads in situ. Information sheets were provided to MCH. CAPL and MCH discussed urgency to close out consultation on EP. MCH advised that EP sections (for another CAPL activity) had been sent to their environmental specialist for review. CAPL and MCH confirmed a follow up meeting to discuss further questions about their EPs and to finalise details for upcoming BWI trip.	MCH expressed concerns about potential impacts of earthquakes and leaving well heads in situ.	**Claim has merit:** CAPL note concern regarding earthquakes. CAPL note MCH's preference for wellheads to be removed. MCH are entitled to express their opinion as a relevant person, and CAPL acknowledge this response.	No change made to the EP. CAPL provided a response and further information relating to MCH's query.
	07/02/2024	001231	Email	CAPL provided MCH a copy of the minutes from the meeting held on 1 February 2024 (Record ID 001256). CAPL requested MCH to review minutes and provide information of any items to be added.	No objection or claim raised.		
	07/02/2024- 16/02/2024	001220	Email	CAPL and MCH discussed: • Comments on consultation agreements • Timing options for an upcoming visit BWI and to consult on the drilling EPs.	No objection or claim raised		
	19/02/2024	OC-001108	Phone	MCH contacted CAPL to discuss visit to BWI. CAPL advised that it was still waiting on dates and requested MCH advise. MCH advised that they wanted more detail in the consultation agreement. CAPL reiterated that it welcomed feedback and additions and for MCH to send these through via email and track changes. CAPL confirmed that it would be in Karratha and would be available to meet to discuss the agreement.	No objection or claim raised		
	19/02/2024	001249	Email	CAPL sent an email to MCH following on from a phone call made 19 February 2024. CAPL summarized the key points discussed: • CAPL to travel to Karratha to discuss the Consultation agreement. CAPL requested MCH provide any additional details to be added to the agreement. • Travel to Barrow Island.	No objection or claim raised		
	26/02/2024	001114	Phone	CAPL contacted MCH to follow up an opportunity to meet and finalise plans for consultation.	No objection or claim raised		
	29/02/2024	001117	Phone	CAPL spoke with MCH to discuss the opportunity to consult on their EPs. The following topics were discussed: • Requirement to consult in the next fortnight. • Confirmation of payment terms MCH advised that they would provide comments on agreement later today.	No objection or claim raised		
		001127	Phone	CAPL sent MCH texts in order to arrange a time to meet in order to confirm consultation dates for EP. CAPL sent MCH texts in order to arrange a time to meet in order to confirm consultation dates for EP	No objection or claim raised		

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	01/03/2024	001126	Phone	CAPL left voicemail for MCH	No objection or claim raised		
	01/03/2024	001135	Phone	MCH contacted CAPL by telephone to confirm that comments to negotiation and consultation agreements had been reviewed by legal and that CAPL could expect comments. MCH advised that they would confirm within 24 hours a time to meet to discuss agreements and consultation. MCH advised that they had new legal representation.	No objection or claim raised		
	05/03/2024	001138	Phone	CAPL spoke with MCH requesting progress update on meeting for finalising agreements and EP consultation. CAPL and MCH agreed that CAPL would forward list of outstanding items. CAPL agreed to provide accommodation support to enable meeting in Perth this week.	No objection or claim raised		
	05/03/2024	001143	Phone	MCH advised CAPL to progress organisation of meetings through MCH delegate.	No objection or claim raised		
	05/03/2024	001225	Email	CAPL provided MCH a summary of outstanding actions relating to comments on consultation and negotiation agreements, planning for upcoming consultation meetings and BWI trip.	No objection or claim raised		
	06/03/2024	001246	Email	CAPL emailed MCH requesting a time to meet to discuss the agendas for the upcoming consultation meetings.	No objection or claim raised.		
	06/03/2024	001245	Email	CAPL emailed MCH outlining the agenda and attendees for upcoming meetings relating to the negotiation and consultation agreement and consultation on well related EP's, including this EP Revision. CAPL referenced potential collaboration opportunities. CAPL also provided a copy of the full submission and exec summary for the Submission on 'Clarifying Consultation requirements for offshore petroleum and greenhouse gas storage regulatory approvals'.	No objection or claim raised.		
	08/03/2024	001243	Email	CAPL provided MCH the following information for the meeting on 8 March 2024 (Record ID 001257): • Meeting overview slides • CAPL submission 'Clarifying Consultation requirements for offshore petroleum and greenhouse gas storage regulatory approvals' • Drilling / Wells Overview	No objection or claim raised.		
	08/03/2024	001257	Face-to-face	CAPL met with MCH to discuss consultation on EP and to progress discussions about ongoing engagement plan and cost recovery. CAPL provided an overview and introduction to its current EPs, including this EP Revision. CAPL provided MCH with EP information sheets, drilling fact sheet, submission on clarifying consultation. CAPL and MCH discussed dates for trip to Barrow Island.	No objection or claim raised		
	08/03/2024	001224	Email	CAPL thanked MCH for their attendance on 8 March 2024 (Record ID 001257). CAPL summarised: • CAPLs submission on 'Clarifying Consultation requirements for offshore petroleum and greenhouse gas storage regulatory approvals' • Drilling / Wells Overview • Referred MCH to publicly available information sheets on current EPs, including this EP Revision. • Provided an updated Engagement Plan CAPL requested MCH to provide negotiation agreements comments for CAPL review. CAPL also provided an update on potential Barrow Island trip. CAPL noted that it would provide relevant sections of its Exploration EPs, once available.	No objection or claim raised		
	09/03/2024- 11/03/2024	001239	Email	MCH provided CAPL with the draft negotiation protocol. CAPL thanked MCH for the marked-up negotiation agreement and referenced some of the points raised by MCH. CAPL noted that it would still like to meet on 13 March 2024 as scheduled.	No objection or claim raised		

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	12/03/2024	001223	Email	MCH provided CAPL with the draft negotiation protocol for review. CAPL confirmed receipt of the draft negotiation protocol and confirmed the attendees for an upcoming meeting.	No objection or claim raised		
	13/03/2024	001258	Face-to-face	CAPL met with MCH to discuss their current EPs, including this EP Revision. The following topics were discussed: • Overview of how CAPL explores, drills, operates, maintains and retires a well. During the meeting, MCH asked questions regarding: • timing of seismic activities • cement and drill fluids used • source of water was used in the drilling process • ongoing safety of the well. MCH raised the issue of leaking wells. • how CAPL manages a well in an emergency situation • CAPL's renewables projects • well retirement and the removal of well heads. MCH's preference is for the well heads to be removed. • how often wells were inspected. CAPL confirmed that it would confirm this information with MCH. CAPL was asked how often wells were inspected. CAPL confirmed that it would confirm this information with MCH. MCH confirmed that it would provide sections of CAPL's EP to their EP specialist for review, a copy of the EP had been provided previously to MCH (Record ID 001257). CAPL confirmed that it would look forward to consulting with MCH in the future on seismic activities.	MCH requested information on how often wells are inspected. MCH noted that it was their preference for the wellhead to be removed.	**Claims have merit** As a relevant person, MCH's request for information on well inspection is considered fair and reasonable. CAPL note MCH's preference for wellheads to be removed. MCH are entitled to express their opinion as a relevant person, and CAPL acknowledge this response. Additionally, it is noted that this statement of preference was made regarding wellheads outside of the scope of this activity.	No change made to the EP. CAPL provided a response to MCH's query and closed out this engagement.
	14/03/2024	001142	Phone	CAPL confirmed a meeting with MCH via text for Friday 15 March.	No objection or claim raised		
	15/03/2024- 28/03/2024	001221	Email	CAPL sent a summary email to MCH outlining: • Postponing BWI trip to a later date • Outlining scope and dates for MCH consultation input and feedback. CAPL noted that the timeframes for consultation align with that provided previously through co-design in 2023 • Summary of other recent correspondence with MCH • Addressed MCH query relating to First Nations Engineering and future decommissioning works on Barrow Island. CAPL resent the email on 23 March 2024 noting that a response had not been received and requesting any advice as soon as practicable. CAPL noted that some dates for MCH consultation input and feedback had moved.	No objection or claim raised		
	15/03/2024	001140	Face-to-face	CAPL met with MCH to finalise details for BWI visit and to discuss future meetings and consultation. CAPL and MCH co-designed a work in progress email where detail could be added by each party to update each other and track progress. MCH confirmed that not all participants would now be available for BWI trip. CAPL confirmed that it would therefore cancel and postpone to a time which suited everyone.	No objection or claim raised		
	20/03/2024	001147	Phone	MCH contacted CAPL by phone to discuss progress. CAPL confirmed that it was still waiting for MCH to provide comments and feedback on negotiation and consultation protocols.	No objection or claim raised		
	26/03/2024	001222	Email	Consultant for MCH contacted CAPL to arrange a meeting regarding the relationship between CAPL and MCH.	MCH requested a meeting.	**Claims have merit** As a relevant person, MCH's request for a meeting is fair and reasonable.	No change made to the EP.
	08/04/2024	001459	Email	MCH contacted CAPL requesting a meeting. CAPL confirmed it was available and requested some time windows for the meeting.	MCH requested a meeting.	**Claims have merit** As a relevant person, MCH's request for a meeting is fair and reasonable.	No change made to the EP.

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	10/04/2024	001260	Face-to-face	CAPL met with MCH to discuss progress on its EPs and negotiation protocol. MCH advised that they had not received recent emails due to technical issues. MCH requested that emails be forwarded to personal email addresses. CAPL advised MCH of their EP submission dates. CAPL and MCH discussed finalising negotiation protocol and consultation agreement. MCH advised that it would like to return to Perth within a week to execute agreements with CAPL. CAPL and MCH discussed other aspects relating to future work scopes.	MCH requested emails to be forwarded.	**Claims have merit** As a relevant person, MCH's request for information to be re-forwarded is considered fair and reasonable.	No change made to the EP. CAPL forwarded relevant emails to MCHs nominated email addresses.
		001454	Email	CAPL sent an email to MCH referring to previous information consulted on (Record ID: OC-001037).	No objection or claim raised		
		001455	Email	CAPL emailed MCH to advise a number of emails would be sent through as well as CAPL EP consultation priorities. CAPL requested MCH to provide CAPL with any responses to the information provided. CAPL included materials previously provided during consultation.	No objection or claim raised		
	11/04/2024	001262	Email	CAPL emailed MCH advising it would be submitting its Exploration Drilling EPs on 12 April 2024. CAPL provided a summary of notes and actions from the meeting held on 10 April 2024 (Record ID 001260) and requested any feedback. CAPL noted it looked forward to continued discussions on the cultural mapping proposal.	No objection or claim raised		
	11/04/2024	001263	Email	MCH confirmed receipt of email information sent by CAPL on 11 April advising that they would come back to CAPL.	No objection or claim raised		
	26/04/2024	001291	Phone	CAPL contacted MCH via phone to discuss meeting in Perth w/c 29 May 2024 with CAPL Cultural Heritage Team MCH request to sign negotiation and consultation agreements on BWI w/c 13 May	No objection or claim raised		
	01/05/2024	001294	Face-to-face	CAPL met with MCH and MCH advisor. CAPL and MCH discussed: • Negotiation and consultation protocols • Cultural Heritage Surveys and Cultural Mapping Program.	No objection or claim raised		
	06/05/2024	001310	Email	CAPL provided MCH with a summary document for this EP Revision.	No objection or claim raised		
	20/05/2024	001318	Email	CAPL emailed MCH to confirm EP summaries provided and request for feedback. CAPL also provided copies of executed negotiation and consultation protocols.	No objection or claim raised		
	29/05/2024	001628	Face to Face	CAPL met with MCH for their monthly meeting.	No objection or claim raised		
	30/05/2024	001327	Phone	A MCH representative contacted CAPL to discuss EP summaries provided (Record ID 001310), advising that they had some questions. CAPL requested that MCH provide questions through as soon as possible. A meeting was arranged.	No objection or claim raised		
		001448	Email	CAPL sent follow up email to MCH following the meeting held on 29 May 2024.	No objection or claim raised		
	04/06/2024	001488	Email	A representative from MCH contacted CAPL requesting a meeting to discuss the EPs currently under review by MCH. CAPL confirmed it would provide availability to meet with MCH. CAPL requested that MCH provide specific questions on the EPs to ensure the correct CAPL people will be available.	MCH requested a meeting.	**Claims have merit** As a relevant person, MCH's request for a meeting is fair and reasonable.	No change made to the EP. A meeting was arranged.
		001486	Email	MCH provided feedback on the consultation process. CAPL responded to MCH summarizing the history of discussions and consultations with MCH since December 2023. CAPL further noted it was coordinating an meeting with CAPL to discuss further.	Raised concern about the duration of the consultation for the EPs.	**Claims have merit:** As a relevant person, CAPL acknowledges the concerns raised.	No change made to the EP. A response to the objection and claims raised was provided.

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	12/06/2024	001530	Email	CAPL and MCH emailed to arrange a meeting to discuss feedback on CAPLs EPs. CAPL requested a copy of MCH questions on the EPs.	No objection or claim raised	-	-
	18/06/2024	001528	Email	CAPL contacted MCH to request feedback on EPs and other matters as well as requested preferred meeting times to discuss these aspects. MCH responded to CAPL agreeing to set up a meeting. MCH shared the main themes of the EP questions which related to drill cuttings and drilling muds, marine mammals, decommissioning, vertical seismic impacts, asset management, and TENORMS. CAPL thanked MCH for sharing the themes of the questions but requested further details to ensure the right CAPL focal points were able to attend the planned meeting.	No objection or claim raised		
	25/06/2024	001559	Email	MCH provided a list of comments on the CAPL EPs, including this EP revision, in preparation for the meeting on 26 June 2024. CAPL thanked MCH for the comments and queried MCH expectations for the meeting, noting that it may take time to compile the responses for all comments. CAPL proposed to address some comments in the meeting and follow up with written responses post meeting.	MCH raised the following comments: • Condition of the wellheads • Timing of the EP submissions in comparison to the drilling date • Environmental risks associated with unplanned hydrocarbon releases, invasive marine pests, waste and noise pollution.	**Claims have merit:** As a relevant person, CAPL acknowledges the queries and concerns raised.	No change made to the EP. A response to the comments received was provided by CAPL.
	26/06/2024	001551	Face to Face	CAPL and MCH met to discuss MCH comments received on 25 June 2024 (Record ID 001559). MCH provided feedback to CAPL in relation to the scope of the EP. MCH sought clarification regarding: • Condition of the wellheads • Timing of the EP submissions in comparison to the drilling date • Environmental risks associated with unplanned hydrocarbon releases, invasive marine pests, waste and noise pollution. CAPL has responded to MCHs comments during face-to-face engagements and through providing additional written information (Record ID 001621). During the face-to-face engagement, MCH expressed its preference for the wellheads to be removed	During the meeting CAPL and MCH discuss the comments provided to CAPL in relation to its EPs.	**Claims have merit:** As a relevant person, CAPL acknowledges the queries and concerns raised.	No change made to the EP. A response to the comments received was provided by CAPL. CAPL notes that Section 3.5.5 provides for wellhead removal.
	03/07/2024	001550	Virtual Meeting	CAPL met MCH for its monthly work in progress meeting and discussed a meeting for the week commencing 22 July to close consultation on its current EPs and discuss an upcoming EP for consultation.	No objection or claim raised		
	5/07/2024	001554	Email	CAPL wrote to MCH to coordinate meetings in Perth, including follow up EP consultation meetings.	No objection or claim raised		
	19/07/2024	001621	Email	CAPL provided written responses to MCH comments on the EP and provided a summary of consultation for inclusion in the EP. CAPL requested MCH to review the responses and consultation summary and provide feedback by 9 August 2024.	No objection or claim raised		
	06/08/2024	001642	Phone	MCH contacted CAPL to discuss EP feedback and upcoming consultation planning.	No objection or claim raised		
	08/08/2024	001665	Email	MCH emailed CAPL regarding the EP consultation summary (Record ID 001621), noting their preference to include a copy of full questions and responses. MCH referred CAPL to NOPSEMA consultation guidelines. CAPL confirmed that a summary of consultation is provided in the public consultation summary and full text questions and responses will be provided as part of the sensitive information record.	Raised preference for copy of full questions and responses to be presented in the EP.	**Claims have merit:** As a relevant person, MCH's request is reasonable. However, CAPL presents consultation information in accordance with. NOPSEMA consultation guidelines, which require a summary to be provided in the public consultation summary and full text questions and responses will be provided as part of the sensitive information record.	No change made to the EP.

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	14/08/2024	001679	Virtual Meeting	CAPL met with MCH via teams for their monthly meeting. Matters discussed included: • Draft summary of consultation for inclusion in the EP was due 9 August. CAPL advised if MCH wanted any changes made, then to advised CAPL by COB 14 August • The consultation conference planned in Perth for the 19-23 August focusing on upcoming CAPL EPs and other projects. • September BWI survey.	No objection or claim raised		
				Summary: • CAPL commenced consultation with MCH on 21 December 2023 via an email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has met with MCH representatives in multiple face-to-face meetings. CAPL has also maintained contact through email and telephone correspondence. • CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity. In addition to its meetings and information sheet, CAPL provided MCH with an environment plan summary for review (Record ID 001310), which summarized the activity description, EMBA, potential impacts and risks and control measures associated with the EP, including the activity description, EMBA, potential impacts and risks and control measures. • CAPL has considered feedback provided by MCH during consultation, including information on Mardathoonera people functions, interests and activities within the EMBA and all claims raised have been addressed • CAPL has provided a reasonable period and sufficient information to MCH to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Murujuga Aboriginal Corporation (MAC)	21/12/2023	CN-001067	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	12/02/2024	001509	Email	CAPL emailed MAC to arrange a meeting.	No objection or claim raised		
	26/02/2024	001506	Email	CAPL emailed MAC to advise CAPL flights had been cancelled due to planned industrial action and requested a video conference meeting.	No objection or claim raised		
	28/02/2024	001513	Email	CAPL emailed MAC regarding administrative aspects relating to upcoming engagements. CAPL expressed interest in meeting with the board and Elders in April and spending some time with MAC and perhaps board members, in advance to plan out the session. CAPL provides dates of when they would be in Karratha and requested a meeting.	No objection or claim raised		
	29/02/2024	001511	Email	CAPL and MAC emailed in relation to CAPL participation in upcoming Board/Elders meeting.	No objection or claim raised		
	01/03/2024	001499	Email	CAPL emailed MAC to confirm meeting time on 19 March 2024. CAPL mentioned to MAC about spending time out at Cozinc (3hours) ahead of the Meeting with Elders on the 23 of May 2024.	No objection or claim raised		
		001514	Email	CAPL emailed MAC to advise they would like to start to make tentative plans for travel etc. CAPL congratulated MAC on the signing and the announcement.	No objection or claim raised		
	12/03/2024	001471	Email	CAPL sent email to MAC confirming upcoming meeting.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	19/03/2024	001145	Face-to-face	CAPL met with MAC to discuss the EP Revision and preparation for meeting with the Board and Circle of Elders in May. The following topics were discussed: • Purpose of consultation • CAPL desire to understand sea country values • Interest in being consulted on activities that might impact Murujuga MAC confirmed that if there was any risk to Murujuga then it considered itself to be a Relevant Person for the purposes of consultation. MAC advised CAPL that it was important that we were engaging Relevant Persons more broadly than MAC.	No objection or claim raised		
	25/03/2024	001461	Email	CAPL emailed MAC to confirm they will work to the deadlines provided my MAC for the board papers and relevant presentation.	No objection or claim raised		
		001462	Email	CAPL emailed MAC to express their appreciation for the opportunity to engage with MAC. Next steps were discussed.	No objection or claim raised		
	09/04/2024	001457	Email	CAPL confirmed invoice from Consultation Meeting on 23 May 2024 will be processed.	No objection or claim raised		
	10/04/2024	001456	Email	CAPL emailed MAC a briefing note to support their application to the board week ending 19 April 2024.	No objection or claim raised		
	15/04/2024	001389	Email	CAPL emailed MAC to discuss the briefing note.	No objection or claim raised		
	26/04/2024	001449	Email	CAPL emailed MAC about the timing of a meeting to arrange flights. CAPL asked about the topics the board/COE want to hear, mentioning a current EP (EP Revision) and an upcoming EP to introduce. CAPL asked MAC if a discussion with the heritage team is required and visit to Cozinc Bay. CAPL advised MAC to discuss the details over the phone if it is easier	No objection or claim raised		
	02/05/2024	001302	Email	CAPL contacted MAC via email to confirm arrangements for meeting with board and circle of Elders on 23 May 2024.	No objection or claim raised		
	20/05/2024	001321	Email	CAPL wrote to MAC providing requested information ahead of meeting with CoE on 23 May 2024, including EP information sheet and briefing paper for the CoE.	No objection or claim raised		
	22/05/2024	001317	Email	CAPL wrote to MAC to provide a copy of the CAPL presentation.	No objection or claim raised		
	23/05/2024	001314	Face-to-face	CAPL met with the MAC Circle of Elders (CoE) as part of consultation on the EP Revision. The CoE shared: • It is important for MAC to be notified immediately should there be any emergency situation offshore that could potentially impact Murujuga land or sea country. • They would like the MAC rangers to be involved in training to be prepare for emergency situations occurring in the offshore environment. • There are islands of cultural significance off the coast of Murujuga and it is important that MAC can advise on how to best manage emergency response across Murujuga land and sea country The MAC CoE are keen to CAPL to support their Rangers with training and development going forward and are interested in remaining engaged.	MAC raised: • Request to be notified immediately should there be any emergency situation offshore that could potentially impact Murujuga land or sea country. Presence of islands of cultural significance off the coast of Murujuga and it is important that MAC can advise on how to best manage emergency response	**Claims have merit:** As a relevant person, the request to be notified in the case of an emergency event is considered reasonable. CAPL also note the presence of values and sensitivities raised by MAC within the region.	Claims have been addressed within the EP: Section 8.3.4.3 of the EP has been revised to describe the ongoing consultation with First Nations people and/or representative bodies. An additional section has been added (Table 8-7 Ongoing engagement with First Nations representative bodies) which further describes ongoing engagement.
	27/05/2024	001315	Email	CAPL wrote to MAC and discussed the following: • details to be included in EP • direction on future consultation.	No objection or claim raised		
	29/05/2024	001442	Email	CAPL sent an email to MAC requesting a phone discussion, regarding the feedback received during the meeting on 23 May 2024.	No objection or claim raised		
	03/06/2024	001425	Email	CAPL emailed MAC confirming closure of consultation for the EP Revision and confirmed the feedback received by MAC.	No objection or claim raised		
	04/06/2024	001428	Email	MAC contacted CAPL via email to confirm closure of consultation and provided feedback.	No objection or claim raised		
				Summary:			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL commenced consultation with MAC on 11 December 2023 via a phone call regarding upcoming consultation for CAPL activities. On 21 December 2023 CAPL sent an advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • During consultation, MAC raised values and sensitivities with cultural significance and requested to be notified immediately in the event of an offshore emergency situation that could potentially impact Murujuga land or sea country. • CAPL has provided a reasonable period and sufficient information to MAC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Nanda Aboriginal Corporation RNTBC (Nanda)	21/12/2023	CN-001067	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	17/01/2024	001408	Email	CAPL contacted Nanda representatives on behalf of Nanda requesting a meeting to discuss consultation for the EP Revision	No objection or claim raised		
	07/02/2024	OC-001097	Phone	CAPL contacted Nanda, requesting an opportunity to discuss environment plan consultations for 2024. Requested to call back next week to confirm a time for the following week in February	No objection or claim raised		
	07/03/2024	001149	Phone	CAPL contacted Nanda and left voicemail.	No objection or claim raised		
	26/03/2024	001153	Phone	CAPL contacted Nanda and left voicemail.	No objection or claim raised		
	04/04/2024	001173	Email	CAPL sent a follow up email to Nanda and noted that the EP Revision will be closing on 5 April 2024. CAPL confirmed they had not received a response to the email and phone call, regarding the opportunity to consult on these activities. CAPL welcomed the opportunity to engage with future consultation and Ranger development opportunities for Nanda.	No objection or claim raised		
	31/05/2024	001399	Email	CAPL contacted Nanda's representatives via email to confirm that the consultation period for the EP Revision had closed and requested meeting to discuss other opportunities..	No objection or claim raised		
				Summary: • On 21 December 2023 CAPL sent an advising Nanda Aboriginal Corporation they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Nanda Aboriginal Corporation has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Nanda Aboriginal Corporation to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	21/12/2023	CN-001068	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	07/02/2024	OC-001097	Phone	CAPL requested opportunity to discuss EP Revision and plan consultations for 2024. Requested to call back next week to confirm a time for the following week in February	No objection or claim raised		
	07/03/2024	001148	Phone	CAPL left voicemail for NTGAC representatives to discuss EP Revision consultation	No objection or claim raised		
	26/03/2024	001154	Phone	CAPL left voicemail for NTGAC representatives to discuss EP Revision consultation.	No objection or claim raised		
	04/04/2024	001170	Email	CAPL responded to NTGAC representatives and confirmed receipt of email regarding NTGAC's expectations for consultation.	No objection or claim raised		
		001173	Email	CAPL sent a follow up email to NTGAC representatives noting that consultation for the EP Revision will be closing on 5 April 2024. CAPL confirmed they had not received a response to the email and phone call, regarding the opportunity to consult on these activities. CAPL welcomed the opportunity to engage with future consultation and Ranger development opportunities.	No objection or claim raised		
	17/04/2024	001284	Phone	CAPL left voicemail for NTGAC representatives to discuss EP consultation.	No objection or claim raised		
		001434	Email	CAPL contacted NTGAC representatives following up on their response from a previous email regarding the closing of the consultation period for the EP Revision. CAPL requested to meet with NTGACs representatives to discuss NTGAC's expectations for consultation on environmental plans.	No objection or claim raised		
	22/04/2024	001287	Phone	CAPL contacted NTGAC representatives regarding email correspondence regarding EP Revision.	No objection or claim raised		
		001436	Email	CAPL contacted NTGAC representatives via email following up request to arrange meeting to discuss NTGAC's expectations on consultation for its environment plans and the EP Revision.	No objection or claim raised		
	24/04/2024	001289	Phone	CAPL contacted NTGAC representatives following up on NTGAC's expectations for consultation and requested meeting in following week to discuss. NTGAC representatives advised they would confirm their availability.	No objection or claim raised		
	30/04/2024	001437	Email	CAPL emailed NTGAC representatives to arrange meeting to discuss the EP Revision and advised them about its other EP that open for public comment.	No objection or claim raised		
	02/05/2024	001440	Email	CAPL contacted NTGAC via email to arrange a meeting to discuss the EP Revision. CAPL also advised that NOPSEMA had published its Exploration Drilling Environment Plans to their website for public comment.	No objection or claim raised		
	06/05/2024	001429	Email	CAPL contacted NTGAC representatives to arrange a meeting to discuss NTGAC's expectation for consultation for the EP Revision.	No objection or claim raised		
	23/05/2024	001370	Email	CAPL sent email to NTGAC to arrange meeting in June 2024.	No objection or claim raised		
	31/05/2024	001399	Email	CAPL contacted NTGAC representatives as representation for NTGAC via email to confirm that the consultation period for the EP Revision had closed and requested a meeting discuss other opportunities and upcoming EP consultations.	No objection or claim raised		
				Summary: • On 21 December 2023 CAPL sent an advising NTGAC they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • NTGAC has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to NTGAC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Ngarluma Aboriginal Corporation RNTBC (NAC)	21/12/2023	CN-001068	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
		OC-001045	Email	CAPL asked NAC meet to discuss the next consultation round. A meeting was organised.	No objection or claim raised		
	21/12/2023	001409	Email	CAPL contacted NAC via email to arrange meeting with NAC working group in March 2024 to consult the EP Revision.	No objection or claim raised		
	08/02/2024	001502	Email	CAPL emailed NAC to organise a meeting to discuss the EP Revision.	No objection or claim raised		
	08/03/2024	001472	Email	CAPL emailed NAC to confirm receipt of previous email.	No objection or claim raised		
	18/03/2024	001465	Email	CAPL emailed NAC team about the consultation on the EP Revision and planning for an upcoming meeting. CAPL advised the EP Revision is a 5-year revision of an existing EP and the team will provide an overview of the lifecycle of a well. CAPL advised NAC the operational area of the EP Revision beyond the ancient coastline and outside of NAC sea country. CAPL included a deck and an information sheet as a pre-read for the scheduled meeting.	No objection or claim raised		
	20/03/2024	001275	Face-to-face	CAPL met with the NAC Board Working group to consult on the EP revision.	During the meeting, NAC raised questions regarding: • Liability • Risks post abandonment, decisions • Method of removal of subsea infrastructure • information on the EMBA modelling • the impact of hydrocarbons on sea grass, and in turn dugongs. Dugongs were identified as culturally significant. • Oil Spill Response • Corrosion • Information about fire related incidents • UCH • Risk of seismic activity (earthquakes) impacting wells • CCUS	**Claim has merit:** As a relevant person, the questions raised by NAC are considered reasonable. CAPL also acknowledges the presence of values and sensitivities identified by NAC.	No changes made to the EP. CAPL has address NAC comments in a subsequent email (Record ID 001445), including providing draft sections from this EP Revision for their information and responses to NAC questions.
	25/03/2024	001464	Email	CAPL forwarded NAC team member a copy of previous email sent confirming CAPL do not have a CCS pipeline project. CAPL confirmed they do have an operational carbon capture project on Barrow Island and would be happy to share some of the learnings on this in future meetings if that is of interest to NAC.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
		001467	Email	CAPL thanked NAC for their time and shared a PDF file about Warmalana. CAPL provided a summary of the questions raised by NAC during the meeting the previous week, and listed CAPL actions (Record ID . 001275). CAPL noted that NAC raised concerns regarding the impact of hydrocarbons on sea grass, and in turn dugongs. Dugongs were identified as culturally significant. CAPL anticipates further consultation requirements for new environment plans and would like to confirm the next formal meeting in June 2024.	No objection or claim raised		
	26/03/2024	001460	Email	CAPL emailed NAC about research conducted on the cultural mapping.	No objection or claim raised		
	02/05/2024	001445	Email	CAPL wrote to NAC to provide: • Responses to Requests for Information following consultation on EP Revision (Record ID 001275), including draft EP sections. • CAPL request for consultation with NAC on CAPL's upcoming EP • Notice of Public Comment Period for CAPL exploration well EPs • Details on Sea Ranger and Marine Fauna Observer Opportunities	No objection or claim raised		
	06/05/2024	001385	Email	CAPL emailed NAC to determine whether CAPL could support one of their Organisations representatives to travel Karratha so they can attend meetings in person.	No objection or claim raised		
	27/05/2024	001377	Email	CAPL emailed NAC to follow up whether their organisation would like to provide anything further for CAPL to include in the environment plan submission to NOPSEMA. CAPL advised they would like to engage with NAC to ensure that the opportunity for NAC representatives to attend the oil spill training as well as share the details on the MFO traineeships.	No objection or claim raised		
				Summary: • CAPL commenced consultation with NAC on 17 November 2023 via an email regarding upcoming consultation for CAPL activities. On 21 December 2023 CAPL sent an advising NAC they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • NAC raised concerns regarding impacts to values and sensitivities of cultural significance. CAPL provided a response to queries raised, and addressed values and sensitivities raised within the EP. • CAPL has provided a reasonable period and sufficient information to NAC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	19/12/2023	OC-001041	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024. NYFL confirmed receipt of EP notification.	No objection or claim raised		
	16/02/2024	001507	Email	CAPL emailed NYFL to summarise notes from previous catch up, including continued support and consultation on EPs.	No objection or claim raised		
	05/04/2024	001179	Email	CAPL sent a follow up email requesting feedback on the EP Revision. CAPL noted that it had not received a response. CAPL advised NYFL a positive half day was held with the Ngarluma Board's working group and provided a presentation on the lifecycle of our offshore wells, including decommissioning.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL confirmed there is a meeting with the board and circle of Elders at MAC in May. CAPL welcomes NYFL the opportunity to engage with upcoming activities and provide feedback for future Environmental plans.			
	12/04/2024	001267	Email	NYFL thanked CAPL for the EP notification, and provided a response relating to the consultation approach. NYFL suggested engaging also with other relevant Prescribed Body Corporates and Approved Body Corporates, such as Ngarluma Aboriginal Corporation and Murujuga Aboriginal Corporate. CAPL responded to NFYL's email and addressed the raised points.	NYFL raised concern about the consultation process for the EPs. NYFL further raised additional potentially relevant persons for consideration.	**Claim has merit:** As a relevant person, CAPL acknowledges the concerns raised. CAPL acknowledges the relevant persons raised for consideration.	No change made to the EP. A response to the objection and claims raised was provided. CAPL has engaged with Ngarluma Aboriginal Corporation and Murujuga Aboriginal Corporate.
	18/04/2024	001285	Phone	CAPL contacted NYFL by phone and left voicemail to follow up email correspondence regarding EP Revision.	No objection or claim raised		
	31/05/2024	001403	Email	CAPL wrote to confirm NYFL response to EP Revision, economic development and training opportunities.	No objection or claim raised		
	04/06/2024	001402	Phone	CAPL left voicemail for NYFL to discuss recent conversations about the EP Revision.	No objection or claim raised		
				Summary: • CAPL commenced consultation with NYFL on 19 December 2023 via an email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • NYFL has not raised any objections or claims relating to the activity. NYFL suggested engaging also with other relevant Prescribed Body Corporates and Approved Body Corporates. The additional relevant persons identified were engaged with. • CAPL has provided a reasonable period and sufficient information to NYFL to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).	.		
Robe River Kuruma Aboriginal Corporation (RRKAC)	21/12/2023	CN-001071	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	17/01/2024	001411	Email	CAPL contacted RRKAC via email requesting to arrange meeting to discuss the EP Revision	No objection or claim raised		
	17/01/2024-31/01/2024	001414	Email	RRKAC responded to CAPL's email advising that they would forward email to new Manager of Country and Culture and confirmed availability to meet on the 6 Feb 2024 (Note: Meeting did not proceed). CAPL responded requesting if there was a specific time suitable for RRKAC to meet with CAPL.	No objection or claim raised		
	28/02/2024	001720	Virtual Meeting	CAPL met with RRKAC to discuss EP Revision and requested advice on approach to future consultations.	No objection or claim raised		
	28/02/2024	001517	Email	CAPL forwarded an email to RRKAC from previous engagement undertaken in May 2023, which outlined: • RRKAC requested to be consulted only when activities are within the Kuruma Marthudunera native title claim and if a spill event could impact the claim area. RRKAC request notification (including maps) of CAPL activities in the future.	1. RRKAC asked to be consulted only when activities were within the Kuruma Marthudunera native title claim area or if a possible environmental incident could directly impact their claim area. 2. Raised the Kuruma Marthudunera native title claim area and the Robe	**Claim has merit:** As a relevant person, the request for ongoing engagement is considered fair and reasonable. CAPL also acknowledge the values and sensitivities raised by RRKAC.	No change made to the EP. Engagement with RRKAC is ongoing. The values and sensitivities raised during engagement are already included within the EP (specifically Table 4-14).

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
					River mouth (as an important value/sensitivity. RRKAC request notification (including maps) of CAPL activities in the future		
	29/02/2024	001474	Email	CAPL emailed RRKAC regarding action items from meeting on 28 February 2024 (Record ID 001720). CAPL included correspondence from December 2023 relating to the EP Revision and advised there is no shoreline impact shown in the modelling on their country or near the mouth of Jajiwarra. CAPL requested RRKAC to advise if they needed any further information relating to the activity.	No objection or claim raised		
	15/03/2024	001470	Email	CAPL emailed RRKAC to advise its representatives will be in Karratha on 19 April 2024 and to arrange a meeting..	No objection or claim raised		
	18/03/2024	001468	Email	CAPL contacted RRKAC that its representatives would be in Karratha tomorrow and available for a discussion. CAPL also advised RRKAC it will be closing out consultation for the EP Revision in April 2024 so would appreciate the opportunity to meet RRKAC and discuss.	No objection or claim raised		
	05/04/2024	001180	Email	CAPL advised RRKAC the consultation period for the EP Revision will be closing on Friday 5 April 2024. CAPL confirmed feedback was not received during this consultation period however it would welcome the opportunity to engage in future EP's.	No objection or claim raised		
				Summary: • CAPL commenced consultation with RRKAC on 21 December 2023 via an email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • RRKAC has not raised any objections or claims relating to the activity. RRKAC clarified the circumstances that wished to be consulted under, to which CAPL acknowledged. Values and sensitivities identified during consultation were included within the EP. • CAPL has provided a reasonable period and sufficient information to RRKAC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Wirrawandi Aboriginal Corporation RNTBC (WAC)	19/12/2023- 09/01/2023	001404	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024. WAC contacted CAPL via email requesting extension on consultation period until mid-March 2024.	WAC requested an extension on consultation period.	**Claim has merit:** CAPL acknowledge WAC's request to extend the consultation period.	No change to the EP. CAPL extended the consultation period to in response to WAC's request for extension.
	21/12/2023	OC-001044	Email	CAPL sent through a proposed plan for 2024 relating to EP consultations and other opportunities.	No objection or claim raised		
	11/01/2024- 11/01/2024	001405	Email	CAPL acknowledged WAC's request for the consultation period to be extended until mid-March 2024. CAPL confirm presentation of EP at Feb board meeting during allocated time period.	No objection or claim raised		
	19/02/2024	OC-001109	Phone	CAPL contacted new WAC contact following up on email from 15 February 2024 and left a voicemail message.	No objection or claim raised		
	01/02/2024- 06/02/2024	001503	Email	CAPL emailed WAC to determine when the WAC Chief Executive Officer finishes in their position.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	15/02/2024	001508	Email	CAPL emailed WAC to request meeting to discuss: • CAPL EP Revision • 2024 planning • Meeting with the WAC Board in March • Survey schedule • Consultations for 2024 • Northern Native Seed Initiative • Barrow Island decommissioning • Ranger Coordinator position.	No objection or claim raised		
	22/02/2024	001515	Email	CAPL emailed WAC to follow up on the email sent requesting a meeting while CAPL are in Karratha.	No objection or claim raised		
	26/02/2024	001113	Phone	CAPL left voicemail for WAC to request meeting in KTA on 27 or 28 Feb to discuss EP Consultation requirements and to follow up on other outstanding matters.	No objection or claim raised		
	29/02/2024	001512	Email	CAPL emailed WAC to arrange a meeting for 15 February 2024.	No objection or claim raised		
	06/03/2024	001496	Email	CAPL requested WAC to respond to CAPL with available times to meet to discuss moving forward.	No objection or claim raised		
	13/03/2024	001139	Phone	CAPL contacted WAC and left voicemail.	No objection or claim raised		
	04/04/2024	001190	Email	WAC provided CAPL with an update on changes within the organisation, and discussed upcoming CAPL activities, the engagement plan and consultation moving forward. WAC requested figures that depict the activity EMBA in relation to Yaburara & Mardudhunera determination areas and 120 km radius of the mouth of the Fortescue River. WAC confirmed that it considers itself to be a relevant organisation for the purpose of consultation. WAC requested the consultation timeframe in relation to the EP Revision and other EPs be extended to 5 April 2024.	WAC requested: • figures that depict the activity EMBA in relation to WAC areas of interest an extension of the consultation timeframe.	**Claims have merit:** As a relevant person, it is considered fair and reasonable to request additional information and engagement.	No changes made to the EP. Information requested was shared with WAC and an extension to the consultation timeframe was provided to WAC to provide feedback on CAPLs EPs.
	05/04/2024	001181	Email	CAPL advised WAC the consultation period for the EP Revision will be closing on 5 April 2024. CAPL advised CAPL welcomes WAC the opportunity to engage with upcoming activities and provide feedback for future Environmental Plans.	No objection or claim raised		
	08/04/2024	001458	Email	CAPL emailed WAC regarding their engagement and several ongoing projects. CAPL updated WAC on the EP Revision, and offered to present to the board to increase their understanding of offshore activities. CAPL agreed to wait until WAC appoints a new CEO before refreshing the engagement plan and mentioned that the opportunity to contribute to the Northern Native Seed Initiative has been missed. CAPL requests clarification on the preferred communication method and offers to speak over the phone, teams, or in person in Karratha	No objection or claim raised		
	12/04/2024	001265	Email	CAPL provided WAC with requested details on engagements between WAC and CAPL in 2023.	No objection or claim raised		
	22/05/2024	001313	Phone	CAPL contacted WAC to discuss opportunity to meet in Karratha on 23 May 2024. WAC representative advised that they were unavailable but would try to set up a meeting with another team member	No objection or claim raised		
		001316	Email	WAC representative advised changes to the Board representation and that the Board would invite CAPL to the next board meeting however there was no meeting planned for the time being.	No objection or claim raised		
	09/07/2024	001645	Email	CAPL responded to email from WAC Advisor on their statement that the WAC Board was not previously consulted on the EP. CAPL provided evidence and detail of all consultations in 2023 with WAC including visit to Barrow Island.	Raised concern about quality of consultation.	**Claims have merit:** As a relevant person, CAPL acknowledges the concerns raised.	No change made to the EP. CAPL provided evidence and detail of all consultations in 2023 with WAC including visit to Barrow Island to address their objection and claims raised.

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
							Ongoing engagement with WAC is taking place.
				Summary: • CAPL commenced consultation with WAC on 8 December 2023 via a face-to-face meeting where WAC and CAPL relationship was discussed. On 19 December 2023 CAPL sent an email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • WAC has not raised any objections or claims relating to the activity. WAC requested an extension to the consultation timeframe, which CAPL provided. • CAPL has provided a reasonable period and sufficient information to WAC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Yamatji Southern Regional Corporation (YSRC)	19/12/2023	CN-001078	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	08/02/2024	001501	Email	CAPL emailed YSRC requesting a time to speak regarding the written notification.	No objection or claim raised		
	08/02/2024	OC-001099	Phone	CAPL contacted YSRC by phone to confirm receipt of EP information. YSCR advised to forward information to communities manager.	No objection or claim raised		
	13/02/2024	001500	Email	CAPL emailed YSRC to organise a meeting.	No objection or claim raised		
		OC-001101	Phone	CAPL met with YSRC online to discuss the consultation requirements for the EP. YSRC advised that they would review the information and would revert to CAPL in the next week.	No objection or claim raised		
	07/03/2024	001152	Phone	CAPL contacted YSRC and left voicemail.	No objection or claim raised		
	12/03/2024	001433	Email	CAPL contacted YSRC to arrange a time to catch up to discuss the EP.	No objection or claim raised		
	26/03/2024	001157	Phone	CAPL contacted YSRC and left voicemail.	No objection or claim raised		
	04/04/2024	001176	Email	CAPL sent a follow up email to YSRC to advise the EP Revision will be closing on 5 April 2024. CAPL confirmed they had not received a response to the email and phone call, regarding the opportunity to consult on these activities. CAPL welcomed the opportunity to engage with future consultation and other opportunities	No objection or claim raised		
	05/04/2024	001192	Email	CAPL left a voicemail with YSRC requesting a time to meet and discuss the EP and future opportunities.	No objection or claim raised		
	01/05/2024- 02/05/2024	001438	Email	YSRC contacted CAPL to arrange a meeting. YSRC advised they have restricted availability for community consultation and advised that they have capacity to accommodate either a working group for interested parties or particularly cultural committees consultation. CAPL responded to YSRC's email confirming interest to meet with YSRC to discuss consultation and upcoming ranger training.	No objection or claim raised		
	17/05/2024	001374	Email	CAPL emailed YSRC to discuss how to best engage with Yamatji. CAPL provided an overview of current activities, EMBA areas in relation to Yamatji and potential cost recovery approaches for consultation.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	31/05/2024	001400	Email	CAPL contacted YSRC via email to confirm that the consultation period for the EP Revision had closed and requested meeting with YSRC to discuss other opportunities. YSRC and CAPL arranged a meeting.	No objection or claim raised		
				Summary: • CAPL commenced consultation with YSRC on 19 December 2023 via an email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • YSRC has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to YSRC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			
Yinggarda Aboriginal Corporation (YAC)	21/12/2023	CN-001078	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	09/01/2024-11/01/2024	001406	Email	Email correspondence between CAPL and Gumala Aboriginal Corporation (GAC) on behalf of YAC coordinating consultation meeting with YAC board on EP Revision.	No objection or claim raised		
	31/01/2024-01/02/2024	001415	Email	GAC on behalf of YAC contacted CAPL confirming attendance at Board meeting and requested that CAPL sent any materials that are required to be circulated to the Board members prior to the meeting. CAPL responded to GAC confirming attendance at board meeting and provided GAC with the draft consultation plan, engagement plan and information on the EP.	No objection or claim raised		
	02/02/2024	001639	Face-to-Face	CAPL met YAC to discuss EP, consultation agreement and engagement plan.	No objection or claim raised		
	08/02/2024	001466	Email	CAPL emailed YAC confirming that the YAC board wishes to be consulted for activities where there is an intersection of the EMBA on Yinggarda country, including Bernier and Dorre Islands. CAPL discussed feedback provided about another EP and confirmed that given the distance from the operational area and that there is no shoreline contact to Yinggarda country, there were no objections and claims. In relation to the other CAPL EP, the YAC Board raised claims regarding oiled wildlife response and monitoring of marine fauna during drilling were discussed. The YAC board does want to be notified in the case of an emergency as well as be a part of training and any preparations for future emergency responses CAPL acknowledged the board requested more information about social investment partnerships with YAC that will benefit the YAC community.	YAC advised it wants to be consulted on activities where there is an intersection between the EMBA and Yinggarda country	**Claims have merit:** CAPL acknowledge the feedback provided by YAC and their request to be consulted with where the EMBA overlaps with their country.	No changes to the EP. Ongoing engagement with YAC is taking place.
				Summary: • CAPL commenced consultation with YAC on 7 December 2023 via a face-to-face meeting in which CAPL and YAC discussed a draft consultation agreement. On 21 December 2023 CAPL sent an email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• YAC has not raised any objections or claims relating to the activity. During consultation, YAC requested engagement from CAPL when there is an intersection of the EMBA on Yinggarda country. Concerns were regarding oiled wildlife response and marine fauna observation, to which CAPL provided a response and closed out engagement. • CAPL has provided a reasonable period and sufficient information to YAC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.3).			

1.3.2 Commercial fishery licence holders and/or representative bodies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Aquaculture Council of WA	21/12/2023	CN-001052	Email	CAPL provided a written notification advising of the proposed activity and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	27/05/2024	001759	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Aquaculture Council of WA on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Aquaculture Council of WA has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Aquaculture Council of WA to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Commonwealth Fisheries Association	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	27/05/2024	001759	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		

				Summary: • CAPL commenced consultation with Commonwealth Fisheries Association on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Commonwealth Fisheries Association has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Commonwealth Fisheries Association to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Western Australian Fishing Industry Council (WAFIC)	20/12/2023	CN-001074	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	20/12/2023-11/01/2024	OB-001088	Email	WAFIC confirmed that it would distribute the activity notification to licence holders from relevant fisheries. WAFIC requested CAPL to identify and provide WAFIC the list of relevant fisheries impacted by the operational area of the proposed activities. CAPL provided a list of relevant fisheries identified within the operational area.	WAFIC requested CAPL identify relevant fisheries.	**Claim has merit:** CAPL acknowledge the activity has the potential to impact fisheries, and the importance of notifying relevant fisheries of the activity.	No change made to the EP. CAPL responded to WAFIC and provided a list of relevant fisheries identified within the operational area.
	11/01/2024-12/01/2024	OB-001089	Email	WAFIC requested CAPL review a draft email to be delivered to fishers together with formal notification on the EP. WAFIC also requested clarification on the date of when feedback is required, noting that they advise a 30 day timeframe for consultation. CAPL thanked WAFIC, and provided feedback on the notification email.	No objection or claim raised		
	15/01/2024	OC-001090	Email	WAFIC confirmed that it had delivered the consultation notification and information sheet for the EP to licence holders in the following fisheries: • Mackerel Managed Fishery • Pilbara Line Fishery • Pilbara Trap Managed Fishery • West coast deep sea crustacean managed fishery WAFIC noted it would send through any feedback received on this activity at the end of the consultation period. CAPL thanked WAFIC for the update.	No objection or claim raised		
	14/02/2024	001106	Email	CAPL contacted WAFIC to follow up if any feedback had been received from licence holders regarding the EP revision.	No objection or claim raised		
		001107	Email	WAFIC confirmed no feedback was received from licence holders regarding the EP Revision and at this stage WAFIC had no further comments related to the proposed activities.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WAFIC on 1 November 2023 via email providing an update on CAPL EPs. This was followed up by an email on 20 December 2023 advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and			

				provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • WAFIC has not raised any objections or claims relating to the activity. WAFIC requested CAPL identify relevant fisheries, which CAPL provided, and assisted with consultation by providing relevant fishers with EP notification. • CAPL has provided a reasonable period and sufficient information to WAFIC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.3.4 Tourism and recreation operators

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Apache Fishing Charters	20/12/2023- 20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001732	Phone	CAPL attempted to contact Apache Fishing Charters. CAPL left voicemail advising it would send a follow up email.	No objection or claim raised		
	05/04/2024- 19/04/2024	001360	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	28/05/2024-	001352	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Apache Fishing Charters on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Apache Fishing Charters has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Apache Fishing Charters to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Archipelago Adventures	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		

	05/04/2024	001733	Phone	CAPL contacted Archipelago Adventures via telephone. A representative provided alternative contact information and requested CAPL to resend the information.	No objection or claim raised		
	05/04/2024	001213	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024	001361	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Archipelago Adventures on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Archipelago Adventures has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Archipelago Adventures to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Ashburton Anglers	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	5/04/2024	001734	Phone	CAPL attempted to contact Ashburton Anglers. There was no answer. CAPL left voicemail advising it would send a follow up email.	No objection or claim raised		
	05/04/2024	001216	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	10/06/2024	001544	Email	Ashburton Anglers acknowledged the receipt of the email and advised they would not provide feedback on this occasion, but would like to remain in contact. CAPL emailed Ashburton Anglers to confirm that CAPL will continue to share information on CAPL offshore petroleum activities, via the email address provided in the future.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ashburton Anglers on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Ashburton Anglers has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Ashburton Anglers to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25.			

				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Blue Horizon Charters	20/12/2023-20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001735	Phone	CAPL contacted Blue Horizon Charters via telephone. A representative advised it has reviewed the written information and did not have any feedback. CAPL requested if they could provide written response. Blue Horizon Charters confirmed it would and requested CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**: It is reasonable, as a relevant person, to request the written information to be resent	No change made to the EP. CAPL resent the written notice.
	05/04/2024	001212	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	05/04/2024	001266	Email	Blue Horizon Charters contacted CAPL by email advising that they do not wish to provide any feedback on the EP.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Blue Horizon Charters on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Blue Horizon Charters has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Blue Horizon Charters to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Blue Juice Charters	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001736	Phone	CAPL contacted Blue Juice Charters via telephone. A representative provided alternative contact information and requested CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**: It is reasonable, as a relevant person, to request the written information to be resent	No change made to the EP. CAPL resent the written notice.
	05/04/2024	001211	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	05/09/2024	001768	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Blue Juice Charters on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures.			

				• Blue Juice Charters has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Blue Juice Charters to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Blue Lightning Fishing Charters	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001737	Phone	CAPL attempted to contact Blue Lightning Fishing Charters. CAPL left voicemail advising it would send a follow up email.	No objection or claim raised		
	05/04/2024	001210	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	28/05/2024	001350	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Blue Lightning Fishing Charters on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Blue Lightning Fishing Charters has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Blue Lightning Fishing Charters to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Bluesun2 Boat Charters	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001738	Phone	CAPL attempted to contact Bluesun2 Boat Charters via phone. CAPL left voicemail advising that it would send an email summary.	No objection or claim raised		
	05/04/2024	001209	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024	001363	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Bluesun2 Boat Charters on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity			

				• CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Bluesun2 Boat Charters has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Bluesun2 Boat Charters to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Cape Immersion Tours	20/12/2023	CN-001087	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001739	Phone	CAPL attempted to contact Cape Immersion Tours. A representative provided new contact information. There was no answer.	No objection or claim raised		
	05/09/2024	001769	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Cape Immersion Tours on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Cape Immersion Tours has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Cape Immersion Tours to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Evolution Fishing Charters	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001740	Phone	CAPL attempted to contact Evolution Fishing Charters via phone. CAPL left voicemail advising that it would send an email summary.	No objection or claim raised		
	05/04/2024	001215	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	28/05/2024	001353	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Evolution Fishing Charters on 21 December 2023 via email advising they had been identified as a			

				relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Evolution Fishing Charters has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Evolution Fishing Charters to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Exmouth Dive & Whalesharks Ningaloo	20/12/2023-20/12/2023	CN-001087	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001741	Phone	CAPL contacted Exmouth Dive & Whalesharks Ningaloo via telephone. A representative advised CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**: It is reasonable, as a relevant person, to request the written information to be resent	No change made to the EP. CAPL resent the written notice.
	05/04/2024	001208	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024-19/04/2024	001521	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Exmouth Dive & Whalesharks Ningaloo on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Exmouth Dive & Whalesharks Ningaloo has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Exmouth Dive & Whalesharks Ningaloo to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Image Dive and Charters	20/12/2023-20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001742	Phone	CAPL contacted Image Dive and Charters via telephone. A representative advised that they had no comments or concerns as the organisation is not currently operating in that area but would be happy to be kept informed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Image Dive and Charters on 20 December 2023 via email advising they had been identified as a			

				relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Image Dive and Charters has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Image Dive and Charters to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Live Ningaloo	20/12/2023	CN-001087	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001743	Phone	CAPL attempted to contact Live Ningaloo. There was no answer.	No objection or claim raised		
	05/04/2024	001207	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	28/05/2024	001760	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Live Ningaloo on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Live Ningaloo has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Live Ningaloo to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Mackerel Islands & Onslow Beach Resort	20/12/2023	CN-001087	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001744	Phone	CAPL attempted to contact Mackerel Islands & Onslow Beach Resort. There was no answer.	No objection or claim raised		
	05/04/2024	001206	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	11/04/2024	001268	Email	Mackerel Islands thanked CAPL for contacting them and advised that they don't require any further consultation unless the project impacts Mackerel Islands tourism leases on Thevenard and Direction Islands.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Mackerel Islands & Onslow Beach Resort on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities			

				that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Mackerel Islands & Onslow Beach Resort has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Mackerel Islands & Onslow Beach Resort to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Mahi Mahi Charters	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001745	Phone	CAPL contacted Mahi Mahi Charters via telephone. A representative advised CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**: It is reasonable, as a relevant person, to request the written information to be resent	No change made to the EP. CAPL resent the written notice.
	05/04/2024	001199	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024	001364	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Mahi Mahi Charters on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Mahi Mahi Charters has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Mahi Mahi Charters to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Marine Tourism Association of Western Australia	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	08/04/2024	001278	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	27/05/2024	001763	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		

				Summary: • CAPL commenced consultation with Marine Tourism Association of Western Australia on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Marine Tourism Association of Western Australia has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Marine Tourism Association of Western Australia to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Montebello Island Safaris	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001746	Phone	CAPL attempted to contact Montebello Island Safaris. There was no answer.	No objection or claim raised		
	05/04/2024	001196	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024	001365	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Montebello Island Safaris on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Montebello Island Safaris has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Montebello Island Safaris to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Ningaloo Blue Dive	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001747	Phone	CAPL contacted Ningaloo Blue Dive via telephone. A representative advised they were not interested in providing comments on the EP.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Blue Dive on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be			

				affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Ningaloo Blue Dive has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Ningaloo Blue Dive to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Ningaloo Glass Bottom Boat	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001748	Phone	CAPL contacted Ningaloo Glass Bottom Boats via telephone. A representative advised CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**: It is reasonable, as a relevant person, to request the written information to be resent	No change made to the EP. CAPL resent the written notice.
	05/04/2024	001522	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024	001520	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Glass Bottom Boat on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Ningaloo Glass Bottom Boat has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Ningaloo Glass Bottom Boat to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Ningaloo Whaleshark n Dive	20/12/2023	CN-001087	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001749	Phone	CAPL attempted to contact Montebello Island Safaris. There was no answer.	No objection or claim raised		
	05/04/2024	001197	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024	001366	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans.	No objection or claim raised		

				No response received.			
				Summary: • CAPL commenced consultation with Ningaloo Whaleshark n Dive on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Ningaloo Whaleshark n Dive has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Ningaloo Whaleshark n Dive to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Ningaloo Whaleshark Swim	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001750	Phone	CAPL attempted to contact Ningaloo Whaleshark Swim. There was no answer. CAPL left voicemail advising it would send a follow up email.	No objection or claim raised		
	05/04/2024	001198	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	28/05/2024	001333	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Whaleshark Swim on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Ningaloo Whaleshark Swim has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Ningaloo Whaleshark Swim to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Perfect Nature Cruises	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/04/2024	001751	Phone	CAPL contacted Perfect Nature Cruises via telephone. A representative advised CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**: It is reasonable, as a relevant person, to request the written information to be resent	No change made to the EP. CAPL resent the written notice.

	05/04/2024	001282	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received. CAPL provided activity information and advised the opportunity to provide feedback on the EP will be closing soon.	No objection or claim raised		
	19/04/2024	001359	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Perfect Nature Cruises on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Perfect Nature Cruises has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Perfect Nature Cruises to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Recfishwest (WA)	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	08/01/2024-10/01/2024	OC-001082	Email	Recfishwest thanked CAPL for the email regarding the EP. Recfishwest confirmed that it had no concerns given operations are located more than 65 km northwest of Barrow Island and recreational fishing is likely to be infrequent in the area. CAPL thanked Recfishwest for their response.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Recfishwest on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Recfishwest has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Recfishwest to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Sail Ningaloo	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001752	Phone	CAPL contacted Sail Ningaloo via telephone. A representative advised CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**:	No change made to the EP. CAPL resent the written notice.

						It is reasonable, as a relevant person, to request the written information to be resent	
	05/04/2024	001200	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024	001367	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Sail Ningaloo on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Sail Ningaloo has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Sail Ningaloo to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Shark Bay Coastal Tours	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	08/04/2024	001277	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	27/05/2024	001763	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Shark Bay Coastal Tours on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Shark Bay Coastal Tours has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Shark Bay Coastal Tours to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

Shark Bay Discovery Centre	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	27/05/2024	001763	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Shark Bay Discovery Centre on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Shark Bay Discovery Centre has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Shark Bay Discovery Centre to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Top Gun Charters	20/12/2023	CN-001087	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001753	Phone	CAPL contacted Top Gun Charter via telephone. A representative advised CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**: It is reasonable, as a relevant person, to request the written information to be resent	No change made to the EP. CAPL resent the written notice.
	05/04/2024	001201	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	08/04/2024	001269	Email	Top Gun Charters contacted CAPL and advised they had no feedback on the EP.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Top Gun Charters on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Top Gun Charters has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Top Gun Charters to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

View Ningaloo	20/12/2023-20/12/2023	CN-001087	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001754	Phone	CAPL contacted View Ningaloo via telephone. A representative advised CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**: It is reasonable, as a relevant person, to request the written information to be resent	No change made to the EP. CAPL resent the written notice.
	05/04/2024	001202	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	28/05/2024	001329	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with View Ningaloo on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • View Ningaloo has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to View Ningaloo to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Wilderness Island	20/12/2023-20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/04/2024	001755	Phone	CAPL contacted Wilderness Island via telephone. A representative advised CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**: It is reasonable, as a relevant person, to request the written information to be resent	No change made to the EP. CAPL resent the written notice.
	05/04/2024	001203	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024	001368	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Wilderness Island on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures.			

				• Wilderness Island has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Wilderness Island to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Wula Gura Nyinda Eco Cultural Adventures	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/04/2024	001756	Phone	CAPL contacted Wula Gura Nyinda Eco Cultural Adventures via telephone. A representative advised CAPL to resend the information.	Requested the consultation materials be resent.	**Claim has merit**: It is reasonable, as a relevant person, to request the written information to be resent	No change made to the EP. CAPL resent the written notice.
	04/04/2024	001492	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024	001358	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Wula Gura Nyinda Eco Cultural Adventures on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Wula Gura Nyinda Eco Cultural Adventures has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Wula Gura Nyinda Eco Cultural Adventures to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.3.5 Local Government Departments or Agencies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Exmouth Chamber of Commerce and Industry (ECCI)	21/12/2023	CN-001064	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/06/2024	001481	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ECCI on 21 December 2023 via email advising they had been identified as a relevant person with			

				functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • ECCI has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to ECCI to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Onslow Chamber of Commerce and Industry (OCCI)	21/12/2023	CN-001069	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/06/2024	001489	Email	CAPL sent an email advising OCCI that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with OCCI on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • OCCI has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to OCCI to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Shire of Ashburton (Pilbara)	21/12/2023	CN-001073	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/06/2024	001490	Email	CAPL sent an email advising the Shire of Ashburton that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Shire of Ashburton on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures.			

				• Shire of Ashburton has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Shire of Ashburton to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Shire of Exmouth (Gascoyne)	21/12/2023	CN-001073	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/09/2024	001767	Email	CAPL sent an email advising the Shire of Shark Bay that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Shire of Exmouth on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Shire of Exmouth has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Shire of Exmouth to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Shire of Shark Bay	21/12/2023	CN-001073	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/06/2024	001483	Email	CAPL sent an email advising the Shire of Shark Bay that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Shire of Shark Bay on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Shire of Shark Bay has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Shire of Shark Bay to make an informed assessment of the possible			

				consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.3.7 eNGOs

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Australian Marine Conservation Society (AMCS)	21/12/2023	CN-001054	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	03/06/2024	001421	Email	CAPL sent an email advising the AMCS that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AMCS on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • AMCS has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to AMCS to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Cape Conservation Group (CCG)	21/12/2023	CN-001058	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	27/05/2024	001381	Email	CAPL sent an email advising the CCG that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CCG on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has contacted CCG via email correspondence over a 5 month period. • CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • CCG has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to CCG to make an informed assessment of the possible consequences			

				of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Protect Ningaloo	21/12/2023	CN-001070	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	03/06/2024	001421	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Protect Ningaloo on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Protect Ningaloo has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Protect Ningaloo to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.3.9 Other Petroleum Titleholders

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Carnarvon Energy	21/12/2023	CN-001060	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	28/02/2024	001128	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	03/06/2024	001424	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Carnarvon Energy on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Carnarvon Energy has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Carnarvon Energy to make an informed assessment of the possible			

				consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Eni Australia	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	28/02/2024	001133	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	19/04/2024	001497	Email	Eni Australia emailed CAPL to advise they had no concerns with the activity regarding the activity.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Eni Australia on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Eni Australia has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Eni Australia to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Exxon Mobil	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	28/02/2024	001131	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	05/03/2024	001172	Email	Exxon thanked CAPL for sharing the information sheet and noted they did not have any feedback.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Exxon on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Exxon has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Exxon to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Kato Energy / Kato NWS Pty Ltd	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	28/02/2024	001130	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		

	03/06/2024	001421	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Kato Energy on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Kato Energy has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Kato Energy to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Santos	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
		OC-001051	Email	Santos acknowledged CAPLs email and confirmed they had no comments or objections to the proposed activities.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Santos on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Santos has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Santos to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Western Gas	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	28/02/2024	001132	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
		001134	Email	Western Gas advised that they did not need to be consulted or provide any feedback regarding the Environment Plan.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Western Gas on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the			

				EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Western Gas has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Western Gas to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Woodside	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	28/02/2024	001129	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	03/06/2024	001421	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Woodside on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Woodside has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Woodside to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.3.10 WA World Heritage Advisory Committees

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Ningaloo Coast World Heritage Advisory Committee (NCWHAC)	21/12/2023-22/04/2024	001435	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024. CAPL followed up on 5 April 2024 to enquire if NCWHAC would like to be consulted in regards to the EP. NCWHAC contacted CAPL via email advising CAPL of role changes and provided CAPL with new contact for engagement. CAPL responded to NCWHAC's email thanking them for updating CAPL and the provision of new NCWHAC contact.	No objection or claim raised		
	17/05/2024	001371	Email	CAPL sent an email to new contact for NCWHAC noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with NCWHAC on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • NCWHAC has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to NCWHAC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Shark Bay World Heritage Committee (SBWHC)	21/12/2023	CN-001072	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	05/04/2024	001762	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	04/06/2024	001477	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with SBWHC on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • SBWHC has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to SBWHC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.3.11 Other

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Care For Hedland (CFH) Environmental Association	21/12/2023	CN-001061	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	03/06/2024	001418	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CFH on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity.			

				CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • CFH has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to CFH to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.4 Regulation 25(1)(e) - Any other person or organisation that the titleholder considers relevant

1.4.1 Commercial fishery licence holders and/or representative bodies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Pearl Producers Association (PPA)	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	27/05/2024	001759	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with PPA on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • PPA has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to PPA to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Western Rock Lobster Council	21/12/2023	OC-001076	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	27/05/2024	001759	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Western Rock Lobster Council on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Western Rock Lobster Council has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Western Rock Lobster Council to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.4.2 Local government departments or agencies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Carnarvon Chamber of Commerce Inc. (CCCI)	11/01/2024	CN-001084	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/06/2024	001479	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CCCI on 11 January 2024 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • CCCI has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to CCCI to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
City of Karratha (Pilbara)	21/12/2023	CN-001062	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	03/06/2024	001426	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary:			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL commenced consultation with City of Karratha on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • City of Karratha has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to City of Karratha to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Karratha & Districts Chamber of Commerce and Industry (KDCCI)	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	06/06/2024	001476	Email	CAPL sent an email advising KDCCI that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with KDCCI on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • KDCCI has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to KDCCI to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Shire of Carnarvon (Gascoyne)	21/12/2023	CN-001073	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/06/2024	001482	Email	CAPL sent an email advising the Shire of Carnarvon that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Shire of Carnarvon on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Shire of Carnarvon has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Shire of Carnarvon to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			

1.4.3 Other

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Australian Conservation Foundation (ACF)	21/12/2023	CN-001053	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	27/05/2024	001380	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ACF on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • ACF has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to ACF to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Conservation Council of WA (CCWA)	21/12/2023	CN-001059	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	27/05/2024	001372	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans.	No objection or claim raised		
	31/05/2024	001357	Email	CCWA responded to CAPL noting they had not received any further requests for consultation since 20 December 2023 and that a response to questions (raised in relation to a different EP) had not been responded to. CAPL advised CCWA they had contacted them on 27 November 2023 but did not receive a reply. CAPL suggested a meeting to discuss.	Requested further engagement.	**Claims have merit:** As a relevant person, the request for further information and engagement is considered fair and reasonable.	No change made to the EP. Engagement with CCWA is ongoing.
	31/05/2024-03/06/2024	001441	Email	CCWA acknowledged CAPLs email and confirmed it would contact them. CAPL acknowledged CCWAs email.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CCWA on 21 December 2023 via email advising they had been identified as a relevant person with			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • CCWA has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to CCWA to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Coral Bay Progress Association	21/12/2023	CN-001057	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	27/05/2024	001763	Email	CAPL sent an email advising that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Coral Bay Progress Association on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Coral Bay Progress Association has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Coral Bay Progress Association to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Exmouth Gulf Task Force - DWER	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	03/06/2024	001423	Email	CAPL sent a follow up email requesting feedback on the EP. CAPL noted that it had not received a response. No response was received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Exmouth Gulf Task Force on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Exmouth Gulf Task Force has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Exmouth Gulf Task Force to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Greenpeace	23/11/2023	OB-000943	Email	Greenpeace requested further engagement to discuss CAPL activities, including the EP Revision.	Requested further engagement.	**Claims have merit:** As a relevant person, the request for further information and engagement is considered fair and reasonable.	No change made to the EP. Further engagement with Greenpeace has taken place, and information was provided on all points raised. Engagement with Greenpeace is ongoing
	04/12/2023	OC-000964	Email	CAPL confirmed that Greenpeace remains a 'relevant person', and provided further information on all points raised by Greenpeace. Greenpeace thanked CAPL for its email and discussed reaching out in early 2024 to set up meeting between Greenpeace and CAPL senior management.	No objection or claim raised		
	21/12/2023	CN-001065	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	27/02/2024	001475	Email	CAPL sent a follow up email requesting the opportunity to consult. CAPL noted a response to its email in December 2023 had not been received.	No objection or claim raised		
	05/03/2024	001136	Email	Greenpeace advised CAPL that it wouldn't be providing comment on the EP but reserved their right to provide comment in the future.	No objection or claim raised		
	04/06/2024	001427	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL confirmed that it would continue to consult with Greenpeace via email as directed. CAPL queried whether Greenpeace was still interested in a face to face meeting between CAPL and Greenpeace senior management.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Greenpeace on 23 November 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Greenpeace has not raised any objections or claims relating to the activity. Greenpeace requested further consultation with CAPL, which was provided and closed out. • CAPL has provided a reasonable period and sufficient information to Greenpeace to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
International Fund for Animal Welfare (IFAW) - Oceania	21/12/2023	CN-001066	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	03/06/2024	001422	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with IFAW on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • IFAW has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to IFAW to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Pilbara Development Commission (PDC)	21/12/2023	CN-001083	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	04/06/2024	001480	Email	CAPL sent an email advising PDC that the EP consultation period has now closed. CAPL advised it would welcome the opportunity to engage for upcoming activities and receive feedback for consideration in any future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with PDC on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • PDC has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to PDC to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Western Australian Coastal and Marine Community Network	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	03/06/2024	001421	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Western Australian Coastal and Marine Community Network on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Western Australian Coastal and Marine Community Network has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Western Australian Coastal and Marine Community Network to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Western Australian Museum	20/12/2023	CN-001086	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	03/06/2024	001421	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Western Australian Museum on 20 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Western Australian Museum has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Western Australian Museum to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Whale and Dolphin Conservation Society	21/12/2023	CN-001075	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	03/06/2024	001421	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Whale and Dolphin Conservation Society on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Whale and Dolphin Conservation Society has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Whale and Dolphin Conservation Society to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			
Wilderness Society	21/12/2023	CN-001077	Email	CAPL provided a written notification advising of the EP revision and provided an information sheet and a link to CAPLs consultation webpage. CAPL requested comments or feedback before 31 January 2024.	No objection or claim raised		
	03/06/2024	001419	Email	CAPL sent a follow up email noting that the consultation period for the EP has closed. CAPL advised that it welcomes engagement for upcoming activities and feedback for future environmental plans. No response received.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Wilderness Society on 21 December 2023 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity • CAPL has provided the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 6.2.2 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures. • Wilderness Society has not raised any objections or claims relating to the activity. • CAPL has provided a reasonable period and sufficient information to Wilderness Society to make an informed assessment of the possible consequences of the activity on its functions, interests and activities, CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 8.3.4.1).			