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wheatstone project wheatstone well intervention and infill drilling environment plan

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Document information

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Rev No.	Description	Date	Prepared By	Approved By
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1.1	Internal update to amend dispersant list, per NOPSEMA inspection recommendation 1682-8	12 September 2019	D Smith	J Sanderson
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Approvals

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1 environment plan summary

The *Wheatstone Project Wheatstone Well Intervention and Infill Drilling Environment Plan Summary* (Table 1-1) has been prepared from material provided in this Environment Plan, and as required by regulation 11(4) of the Commonwealth Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009:

Table 1-1: Environment Plan summary

Regulation	EP summary material requirement	Relevant Section of the EP
11(4)(a)(i)	the location of the activity	Section 2.2, Section 3.1.1
11(4)(a)(ii)	a description of the receiving environment	Section 4, Ref. 1^
11(4)(a)(iii)	a description of the activity	Section 3
11(4)(a)(iv)	details of environmental impacts and risks	Section 7
11(4)(a)(v)	a summary of control measures for the activity	Section 7
11(4)(a)(vi)	a summary of the arrangements for ongoing monitoring of the titleholder's environmental performance	Section 8
11(4)(a)(vii)	a summary of the response arrangements in the oil pollution emergency plan	Section 7.17, Ref. 2*
11(4)(a)(viii)	details of consultation already undertaken, and plans for ongoing consultation	Section 6
11(4)(a)(ix)	details of the titleholder's nominated liaison person for the activity	Section 2.4

^Available at: Appendix A
**Available publicly at: https://docs.nopsema.gov.au/A748691*

2 introduction

2.1 Overview

Chevron Australia Pty Ltd (CAPL) Wheatstone Liquefied Natural Gas (LNG) assets (Wheatstone Project) produce hydrocarbon fluids from offshore fields, transports these fluids through flowlines to the Wheatstone platform (the platform) for initial processing, and then transport gas and condensate through the trunkline to the onshore gas plant for further processing. Resultant LNG and condensate are exported by vessels to the international market, and gas is available to the domestic market via a tie-in with the existing Dampier to Bunbury Natural Gas Pipeline.

Development of the Wheatstone Project is to be phased over time. To date, nine wells (seven Wheatstone, two Iago) have been drilled and completed within the Wheatstone and Iago fields located in licences WA-46-L, WA-47-L, and WA-48-L (Figure 2-1). Additional production wells will be drilled within the same production licences (either WA 46-L, WA-47-L, or WA-48-L), with the number of subsequent wells subject to reservoir performance.

CAPL has developed this Environment Plan (EP) to manage the environmental impacts and risks for well intervention and maintenance of the operational Wheatstone and Iago production wells, as well as infill drilling and completion activities for the next production well drilling campaign (up to seven 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 2009 (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 Wheatstone and Iago production wells and the additional planned production wells) are located within production licences WA-46-L, WA-47-L, and WA-48-L; all are located off the Pilbara coast of Western Australia (WA) (Figure 2-1). The closest production licence to land (WA-48-L) is ~165 km off the north-west coast of WA, ~75 km north of Barrow Island and ~40 km north-west of Montebello Islands. Existing and indicative well locations range in depth from ~115 m to ~240 m.

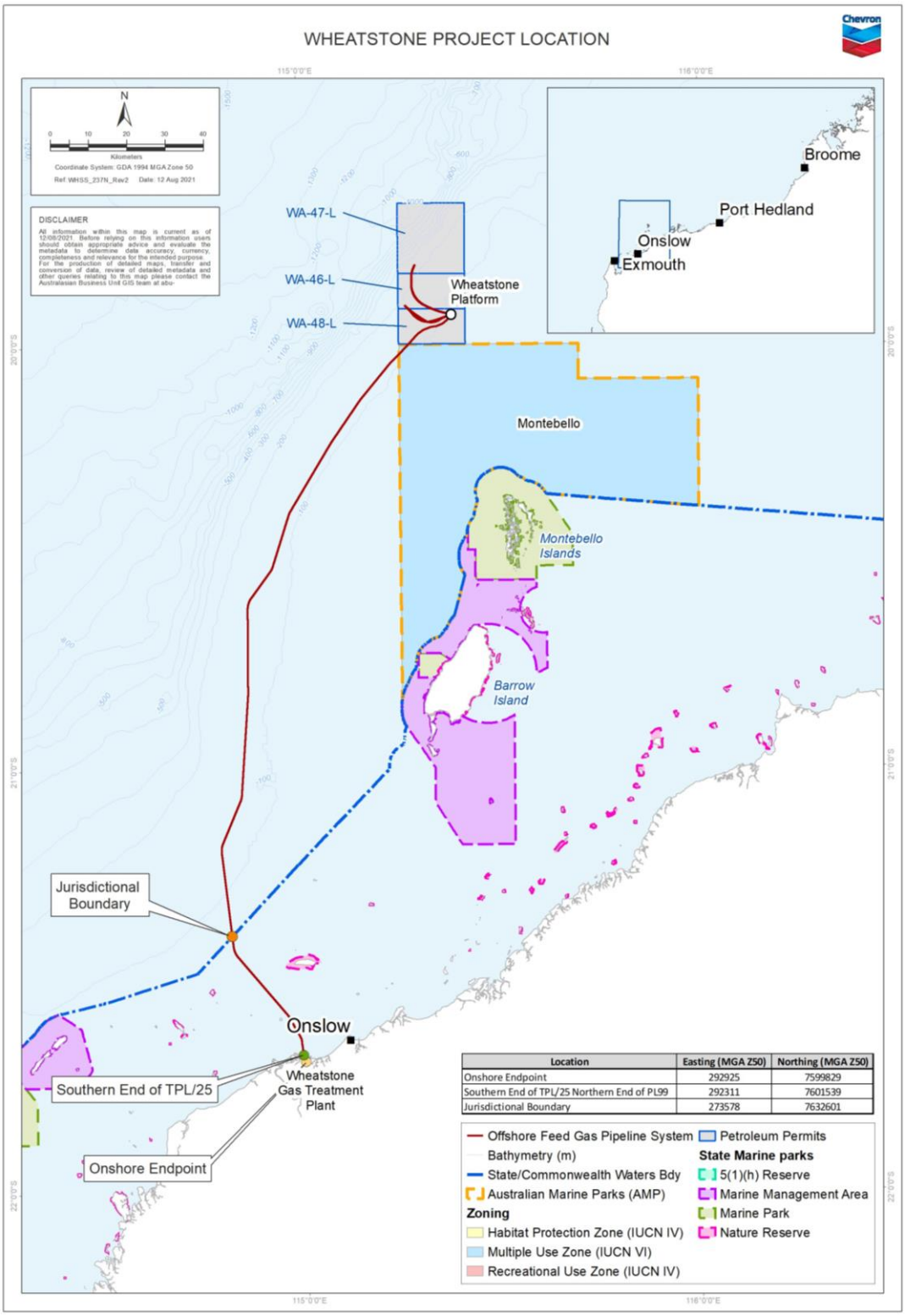


Figure 2-1: Overview of Wheatstone Infrastructure

2.3 Scope

2.3.1 In scope

This EP relates to petroleum activities to be undertaken by CAPL consisting of operations and works required for the proposed Drilling Campaign 2 Wheatstone infill wells (hereafter referred to as DC2) 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 production wells in both the Wheatstone and Iago fields; these are managed under the (NOPSEMA) accepted *Wheatstone Project: Start-up and Operations Environment Plan* (Ref. 6) (referred to in this Plan as the Wheatstone Operations EP)
- inspection, maintenance, and repairs of the Wheatstone/Iago hydrocarbon system; also managed under the NOPSEMA-accepted Wheatstone Operations EP (Ref. 6)
- manifold and tie back installations associated with any new wells
- vessels (including emergency response vessels) transiting to or from the Operational Area (OA) (i.e., outside of 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 of 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 production licences WA-46-L, WA-47-L and WA-48-L 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 15(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-46-L WA-47-L	Production Licence	Chevron Australia Pty Ltd PE Wheatstone Pty Ltd Kyushu Electric Wheatstone Pty Ltd	Chevron Australia Pty Ltd (ACN: 086 197 757)	1 The Esplanade Perth WA, 6000
WA-48-L	Production Licence	Chevron Australia Pty Ltd PE Wheatstone Pty Ltd Kufpec Australia (Wheatstone Iago) Pty Ltd Kyushu Electric Wheatstone 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	ABUEnvPlanInfo@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 13(4) of the OPGGS(E)R, the legislative requirements and other requirements that apply to the petroleum activity and are relevant to the environmental management of the activity are provided in Table 2-3 and Table 2-4.

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	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 the involvement of 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. 2)
Biosecurity Act 2015 Biosecurity Regulations 2016	This Act is about managing diseases and pests that may cause 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.	Pre-arrival reporting (PAR) before arrival in Australian territory	Section 7.8
		Ballast water management plans and certificates, and reporting of ballast water discharges	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) EPBC Regulations 2000	Provides for the protection and management of 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	Section 4, and Section 6
		EPBC Regulations 2000 – Part 8 Division 8.1 Interacting with cetaceans	Section 7.2, and Section 7.6
		Injury or fatality caused to EPBC listed fauna shall be reported	Section 8.4.2
		The Wheatstone Project was approved under EPBC Act and is subject to approval conditions. The conditions are intended for the management of the Wheatstone Project as a whole, including activities which are	Where relevant, control measures and reporting requirements are consistent with requirements of EPBC 2008/4469 Section 6, and Section 8

Legislation	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met
		beyond the scope of this EP.	
Navigation Act 2012	Provides for vessel and seafarer safety, and marine pollution prevention	Notice to Mariners	Section 7.1, and Section 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	Section 7.9, Section 7.14, and Section 7.15
		Marine order 95—Marine pollution prevention—garbage	Section 7.9, and Section 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—antifouling systems	Section 7.7
Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGS Act) OPGGS Environment Regulations 2009 (OPGGS(E)R	The OPGGS(E)R under the OPGGS Act requires a titleholder to have an accepted EP in place prior to commencement of 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. 2) and Operational and Scientific Monitoring Plan (OSMP) (Ref. 3)
OPGGS (Resource Management and Administration) Regulations 2011	These regulations require a titleholder to have an accepted Well Operations Management Plan (WOMP) in place. The purpose of a WOMP is to ensure 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 infill 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 infill drilling. The Chevron Wheatstone Producing

Legislation	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met
			Phase WOMP (Ref. 7) 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	Identification of the presence of protected cultural heritage sites and assessment of any impacts and risks to these sites	Section 4, and Section 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. 8)	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
Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Ref. 9)	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. 10)	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	Article 9 of the Convention concerns controlling, and where feasible, reducing releases of mercury or mercury compounds to land and water.	Section 7.10

Standard/guideline	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met
	emissions and releases of mercury and mercury compounds. Australia ratified the Convention in December 2021.	Article 11 of the Convention concerns disposal of mercury contaminated waste.	

3 description of the petroleum activity

3.1 Overview

This section provides a description of the petroleum activity as required under regulation 13(1) of the OPGGS(E)R. The description of the petroleum activity is presented in the following sections:

- Drilling and completions — includes drilling, completions and contingency activities (Section 3.2)
- Mobile Offshore Drilling Unit (MODU) operations—includes positioning, and general (non-drilling) operational activities (Section 3.2.1)
- Formation evaluation (Section 3.3)
- Well intervention (Section 3.4)
- Well abandonment (Section 3.5)
- Summary of planned and contingency discharge volumes (Section 3.6)
- Field support—includes use of support vessels, helicopters, and remotely operated vehicles (ROVs) (Section 3.7).

3.1.1 Location and Operational area

Currently, nine production wells are operational within production licences WA-46-L, WA-47-L, and WA-48-L (with coordinates and approximate water depth shown in Table 3-1). Up to seven additional production wells associated with the next drilling campaign (DC2) will occur within the same production licences (either WA 46-L, WA-47-L, or WA-48-L). The well locations proposed for DC2 are not yet known; however, the wells will be drilled within ~2.5 km of a centrally located manifold. Although the final manifold locations are yet to be finalised, the locations of all potential future manifolds are listed in Table 3-2 and shown in Figure 3-1.

The Operational Area (OA) for the petroleum activity described in this EP is defined as a 7.5 km buffer around the six planned manifold locations and a 5 km buffer around the nine existing wells (Figure 3-1).

The OA is located wholly within Commonwealth waters. There are no islands or other emergent features within or adjacent to the OA. The petroleum activity described within Section 3 of this EP will be undertaken wholly within the OA.

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

Table 3-1: Existing Production Well Locations

Well Name	Eastings	Northings	Approx. Water Depth (m)
WST-1A	318720	7798043	183.7
WST-1C	318766	7798036	183.3
WST-1D	318784	7798020	183
WST-3A-ST1	321487	7808552	228.6

WST-3C	321495	7808506	228
WST-3D	321485	7808484	227.8
WST-3F	321445	7808458	228
IAG-1B-ST1	324664	7793733	118.5
IAG-1E	324727	7793723	118.2

Table 3-2: Indicative DC2 Manifold Locations

Manifold Name	Eastings	Northings	Water Depth (m)
WST North	326000	7815000	237
WST Central-North	321455	7808510	228
WST Central-South	320590	7804255	204
WST South	318750	7798000	183
IA North	326716	7796877	116
IA South	324692	7793706	118

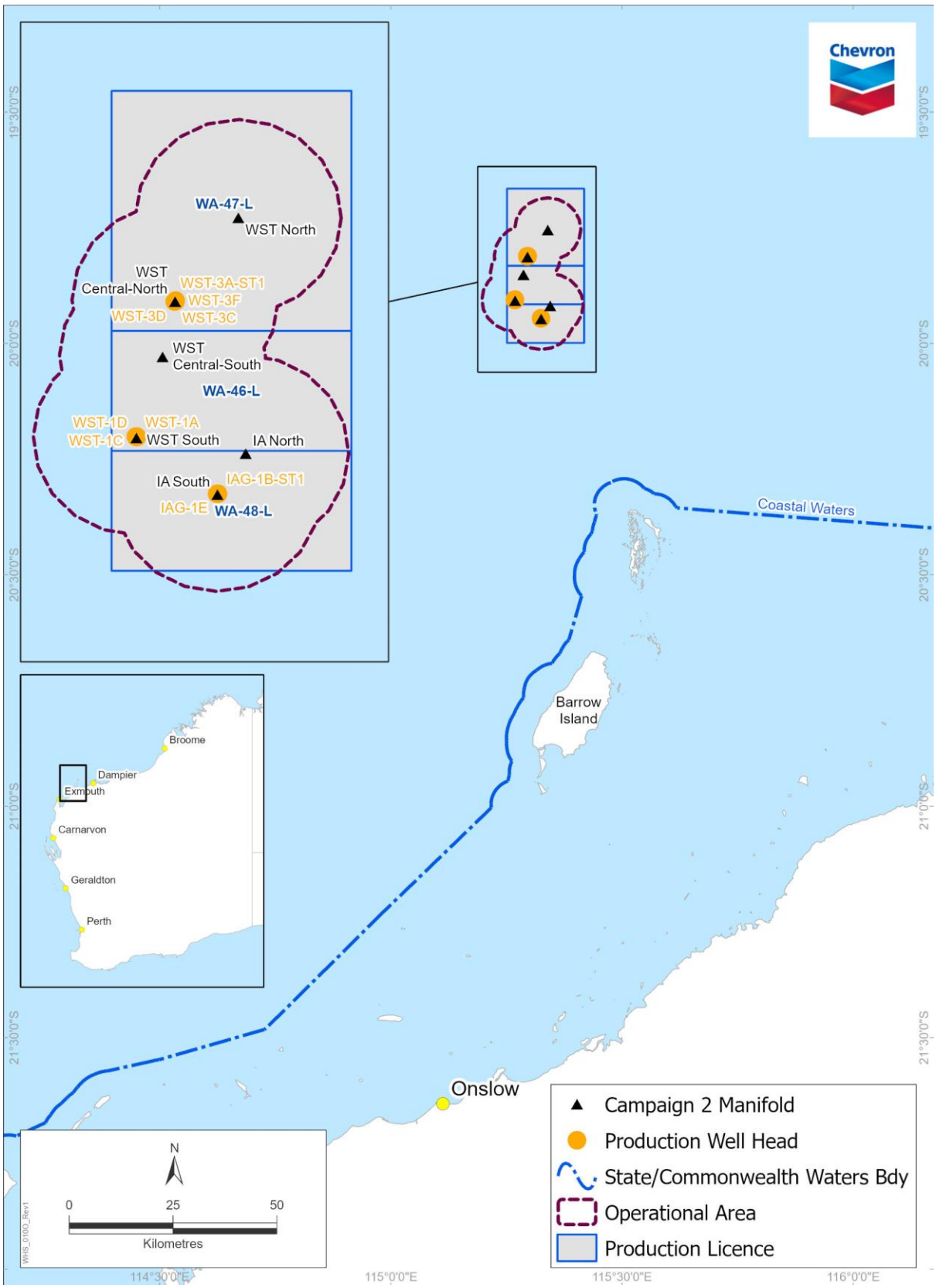


Figure 3-1: Wheatstone Project production licences, production wells, DC2 manifold locations and OA

3.1.2 Timing

Drilling is planned to occur between 2024 and 2028, subject to approvals and drill rig availability. It is expected that each infill well drilled will take approximately 65 days. This includes drilling, completing and suspending each infill well, 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).

Well intervention activities may be undertaken at any time of year during the operation of the facilities (nominally 30 years), and may commence any time after acceptance of this EP.

During the life of a well, an intervention may be required for a variety of 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 intervention activities, it is not feasible to provide an estimated schedule. Therefore, for the purposes of assessing impact and risk in this EP, Chevron will assume that any activity carried out under this EP will take approximately 65 days.

Activities covered within this EP will be conducted 24 hours/day and 7 days/week.

3.1.3 Reservoir properties

The properties of the Wheatstone and Iago fields are summarised in Table 3-3.

3.1.3.1 Hydrocarbon composition

Table 3-3 summarises the compositional analyses undertaken by Intertek (Ref. 198 and Ref. 199) in 2008, during the well appraisal for the Wheatstone and Iago reservoirs.

Table 3-3: Production Reservoir Properties

Property	Iago	Wheatstone
Density (kg/m^3)	783	756
American Petroleum Institute (API)	49.1	55.4
Dynamic viscosity (centipoises; cP)	0.741	0.728
Pour Point (°C)	-24	-36
Condensate to Gas Ratio (bbl/MMscf)	25.4	6.9
Oil Property Category	Group I	Group I
Oil Persistence Classification	Non-persistent	Non-persistent

Three bottom-hole samples taken over the Wheatstone and Iago fields during production drilling activities indicated that the hydrocarbon compositions are consistent with those from the appraisal wells.

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

3.1.3.2 Flow rate

All Wheatstone and Iago wells have a steady-state design gas rate of 250 MMscfd with initial transient rates up to 350 MMscfd. Reservoir inflow performance determined from flowbacks during production drilling confirmed that flow rates were within the expected ranges.

3.1.3.3 Drilling Campaign 2 wells

The DC2 wells are targeting the same ‘pool’ as those associated with Drilling Campaign 1 (the previous production drilling program). 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 to those identified for the existing production wells, as described in Section 3.1.3.

3.2 Drilling and Completions

3.2.1 MODU

The rig chosen to complete activities under this EP may comprise a MODU, or intervention vessel (collectively termed MODU). The MODU selected to complete the activities within this EP will either be anchored or use 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 two or three 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 semi-submersible 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. 12).

3.2.2 Well design and drilling method

An indicative overview of the base-case drilling design and method is provided in Table 3-4. This process is subject to change, depending on individual well design requirements and location of the well. Any changes to well design is required to be reflected in the Well Operations Management Plan (WOMP) (Ref. 7) and any changes would be subjected to an evaluation against the activity as described in this Plan (see Section 8.3.2.2). An indicative casing schematic is provided for the DC2 wells (Figure 3-2).

The drilling methodology proposes using a combination of seawater with high-viscosity gel sweeps, water-based fluids (WBF), and Non-Aqueous Drilling Fluids (NADFs) as outlined in Table 3-4.

Note: Well engineering uses imperial measurements and thus measurements in this and subsequent Sections are provided in inches.

Table 3-4: Summary of 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)	Seawater with high-viscosity sweeps
26	660	20	508	Seabed (riserless)	Seawater with high-viscosity sweeps
17½	444	13⅝	340	Sea surface	WBF (contingency NADF)
12¼	311	9⅝	244	Sea surface	NADF
8½	216			Sea surface	WBRDIF

MD = measured depth

A 42” hole is to be 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 to be drilled riserless to a depth of ~400 m below the seabed and a 20” casing string run and cemented to the 36” casing shoe.

After completing the 36” hole section and installing the blow-out preventer (BOP) and riser, a 17½” hole is to be drilled to ~1,800 m below the seabed using primarily a WBF; however, an NADF may be selected based on engineering considerations. A 13⅜” casing string is then cemented in position.

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 to 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 prior to drilling the 8 ½” 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 side-track will be performed and a 12¼” hole will be drilled to ~3,000 m to 3,600 m depth with NADF. The 8 ½” x 9 7/8” production hole will be drilled with a Water Based Reservoir Drill-In Fluid (WBRDIF). This drill in fluid is reused but is discharge at the end of the drilling program.

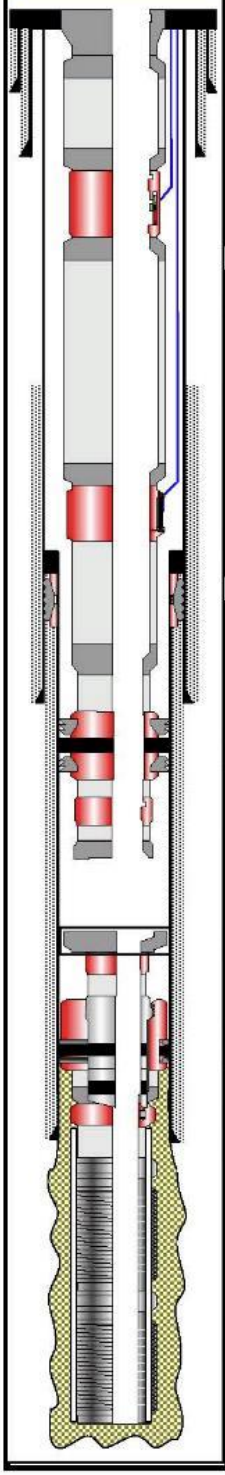
Schematic	Description	Depth m MDBRT	Depth m TVDBRT	Deviation Deg
	7" FMC Tubing Hanger,Alloy 718, /w 6.125" SRP Profile	114.6	114.6	0
	7" 32 #, TN Blue, L80 13 Cr Tubing Hanger Pups			
	36" Conductor	217	217	0
	9-5/8" 47 #, TN Blue, L80 13Cr Tubing			
	20" Casing	547	547	1.5
	7" ONYX-7.5SS TRSV /w 7-5/8" 35.8# ,TN Blue , (BOT)	800	800	3.5
	(Alloy 718 -Non-Equalising /w 5.813" RPT profile)			
	9-5/8" 47 #, TN Blue, L80 13Cr Tubing			
	TTOC 500m below 20" shoe.			
	7-5/8" 35.8#, TN Blue, L80 13Cr PDHG Mandrel	2183	2046	45
	(BOT - Dual SureSens 175)			
	13-5/8"x 9-5/8" 13Cr Flexlock III Liner Hanger /w ZXP Packer	2213	2066	47
	7-5/8" 35.8 #, TN Blue, L80 13 Cr Tubing (85% Coupling)			
	13-5/8" 88.2 #, TN Blue,TN95HS Casing	2263	2100	47
	7" 32 #, TN Blue, L80 13Cr Tubing (2 joints)			
	9-5/8" x 7" Premier(BOT) Removable Packer	2463	2232	48
	(Hydrostatic/ hydraulic set - Alloy 718 mandrel)			
	7" x 5.75" RPT Landing Nipple, Top No-Go	2493	2252	48
	Wireline Re-entry Guide (self aligning) L80 13Cr			
	9 5/8" Rentry Guide (SLB)			
	7" 32# Tubing			
	9-5/8" X 6" QUANTUM Max Packer c/w PBR, Circ. Sleeve	3676	3027	49
	(circ sleeve straddled post GP) (SLB)			
	9 5/8" X 6" QUANTUM Anti-Swab Extension (SLB)	3677	3028	49
	FS2 -Reservoir Isolation Valve (HAL)	3687	3028	49
	9 5/8" Quick Connect (SLB)	3692	3037	49
	9-5/8" 47 # L80 13Cr Liner	3775	3092	50
	OHGP			
	5-1/2" 20 # L80 13Cr screen with 2 eccentric shunt tubes			
	(Shroud OD=7.730",Screen OD=6.05",Centralizers=8.25") (SLB)			
	Bottom Sand Screen	3914	3181	50
	8 1/2" x 9 7/8" Open Hole	3914	3181	50

Figure 3-2: Schematic of a Typical Wheatstone Production Well

3.2.3 Drilling fluids and cuttings handling and disposal

Both the 42” and 26” hole sections are to be drilled with seawater 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, 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 shall 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 ~606 m^3 (based on the volume of the existing production wells) is expected to be generated per well, but actual volumes will depend on the final depth and drilling of each 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 is required to 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.

Information collated for the nine wells associated with the Wheatstone production drilling program was interrogated to provide an indicative (average) volume of drilling fluids and cuttings discharged per well, as listed in Table 3-6.

Table 3-5 Indicative Volume of Fluids and Cuttings per Production Well

Discharge Type	Average Volumes (m^3)
WBF	2269
Suspension and completion fluids (Brine)	1163
Wellbore Clean-Up Fluid discharge (NADF Brine Interface)	76
NADF Tank Washing	90
Cuttings (WBF Sections)	463
Cuttings (NADF Sections)	143

3.2.4 Cementing operations

On completion of the top-hole sections, a casing is to be 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 in the order of ~10 m^3.

In the rare event that the cement products become contaminated, the entire volume may need to be discharged. In this instance, volumes in the order of ~48 m^3 may be discharged to sea.

Indicative volumes of discharges from cementing operations are provided in Table 3-6.

3.2.5 Blowout preventer installation and testing

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

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 the wellbore fluid is exceeded by the 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 hydrostatic overbalance. The annular and ram preventers are used to shut in around various tubulars in the well, while the blind shear rams are designed to 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 aboard 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, the activities are not considered to be any different.

3.2.6 Well suspension following drilling

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

For a horizonal tree, following installation of the suspension plug, 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 either injected 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.

Following the installation of a suspension packer in a well with a vertical tree, a debris cap will be installed on the tubing head spool.

3.2.7 Completions and tree installation

Section 3.2.7.1 below 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 completions and vertical tree installation

Completions

The completion will be run following well suspension in the scenario of a vertical tree installation.

A tubing hanger spool is installed over the last casing string. Installation of the tubing hanger spool enables the internal profile, landing shoulder, and orientation helix guide for the tubing hanger.

The previously installed retrievable suspension packer is then removed from wellbore, and the fluid within the wellbore is replaced with filtered brine. The displaced fluid is collected on board 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 T 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 8 ½" x 9 7/8" reservoir section is drilled. Gravel packing will be undertaken for the open-hole completion to keep the produced fluid clear of sand.

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 (monoethylene glycol [MEG]).

Once the well is successfully completed, two suspension plugs are set and tested in the upper completion prior to releasing the landing string, displacing the riser, and removing the BOP.

Vertical tree installation

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

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 the 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, in order to provide support for 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

Once the horizontal tree is 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 retrievable suspension packer is then removed from wellbore, and the fluid within the wellbore is replaced with filtered brine. The displaced fluid is collected on board and filtered via a 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 8 ½” x 9 7/8” 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 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 3.4.3.

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.

Indicative volumes of discharges from contingency operations are provided in Table 3-6.

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 the application of suitable barriers, the removal of 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. The process of a planned disconnection of the riser would result in the riser being displaced with seawater prior to disconnection and therefore no planned discharge of drilling fluids and cuttings.

3.2.9.4 Emergency disconnect sequence

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

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 will be undertaken to determine rock and fluid properties of the targets. A suite of standard wireline logs will be run, including gamma ray, neutron-density, resistivity, sonic, acquisition of pressures and samples, vertical seismic profiling (VSP), and side-wall coring.

Typically, between three and six 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 a variety of methods: zero-offset, walk-above, or walk-away, as shown in Figure 3-3. Any of these VSP methods may be used during the 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. 349).

Figure 3-3: Representation of VSP Methodology

3.4 Well intervention activities

The well intervention strategy for the Wheatsone/Iago development wells is described in the Wheatstone Well Intervention Strategy & Equipment Sparing Philosophy (Ref. 219). 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 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. The use of MEG 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 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 SCM).

The well intervention strategy assumes that all subsea tree repairs will be conducted using a Multi-Service Vessel (MSV) and light weight interventions will be conducted using a rig or MSV.Subsea Tree Replacement Strategy

Current installed Wheatstone subsea trees have been designed as vertical configuration (VXT). The VXT can be removed without pulling the completion assuming suitable barriers to flow have been installed. Once barriers have been put in place then it is possible to recover and replace a damaged tree using a MODU.

3.4.1 Slickline / wireline / Coil-Tubing operations

In slickline / wireline operations, a wire (slickline) or braided cable (wireline) or a long metal pipe (coil 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 calibrated and 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 if required. Although equipment may be located outside the well (resulting in fugitive releases associated with greasing the slickline and wireline), all slickline / wireline / coil-tubing operations occur within the contained environment of the wellbore.

Slickline / wireline operations will be conducted from a MODU. 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)

- 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).

3.4.2 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, 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 rig.

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
- well reinstatement (return to operations).

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

The MODU BOP on Tubing Head Spool (THS) with either a Simplified Landing String (SLS) or Tubing Hanger Emergency Recovery Tool (THERT) is used in the completion recovery. A Subsea Test Tree (SSTT) could be a contingency option for live well situations.

The Current version of the Chevron Wells Global Technical Standard, ABU Standard Operating Procedures (SOP) for Well Barrier Design (Ref. 17), shall be adhered to during any well workover planning and execution activities. This Standard contains Chevron minimum requirements for the prevention and/or mitigation of 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, 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 in the production tubing string.

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

3.4.3 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 then vented or flared. As the gas produced from the Wheatstone and Iago 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. 7). Cessation of production or permanent well abandonment is not planned during the validity 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 EUR)
- abandoning a parent wellbore in the event of a re-spud during infill drilling.

Plug and abandonment procedures are designed to 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* (Ref. 14). This standard ensures consistent abandonment designs to:

- Isolate hydrocarbon, hot water, or steam zones
- Protect freshwater aquifers (potable ground water)

- 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 programme. The well abandonment programme 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

Prior to 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 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, once it is breached, 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 Section 3.2.7and Section 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 3.4.3.

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. Prior to disconnecting the BOP stack from the wellhead, the system will be flushed with seawater. A small discharge of cement contaminated seawater may be required upon completion of 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

A summary of indicative discharges associated with the activities is provided in Table 3-6.

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	2,269	Seabed / Surface
Suspension and completions fluids (Brine)	1163	Surface
Wellbore clean-up fluid discharge (NADF Brine interface)	76	Surface
NADF residual tank washings	90	Surface
Cuttings (WBF sections)	463	Seabed / Surface
Cuttings (NADF sections)	143	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

Discharge Type	Indicative volume (m^3)	Fluid discharge location
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	1,163	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 to:

- install MODU anchors (if required)
- supply and transfer goods and materials (e.g., food, fuel, bulk products, drilling fluids, etc.) to the MODU
- transfer of waste or other material from the MODU
- assist in monitoring the 500 m radius safety exclusion zone around the MODU.

Given the different support functions (e.g., use of cranes, or bunkering equipment), vessels of different sizes and specifications will be used. Up to three 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 utilise 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 a variety of 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 ~3 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 of the OA, however should 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

Once the DC2 production wells are drilled and completed (under this EP), they are handed over to the Wheatstone Operations work group. Under custodianship of the Wheatstone Operations work group, the wells will be operated and managed in accordance with the Wheatstone Operations EP (Ref. 6).

If well intervention is required, intervention handovers will occur between the Wheatstone Operations and CAPL Australian Business Unit (ABU) Wells work groups, with activities to be completed in accordance with this EP. Figure 3-4

shows the handover points when internal custodianship of the Wheatstone production wells is exchanged.

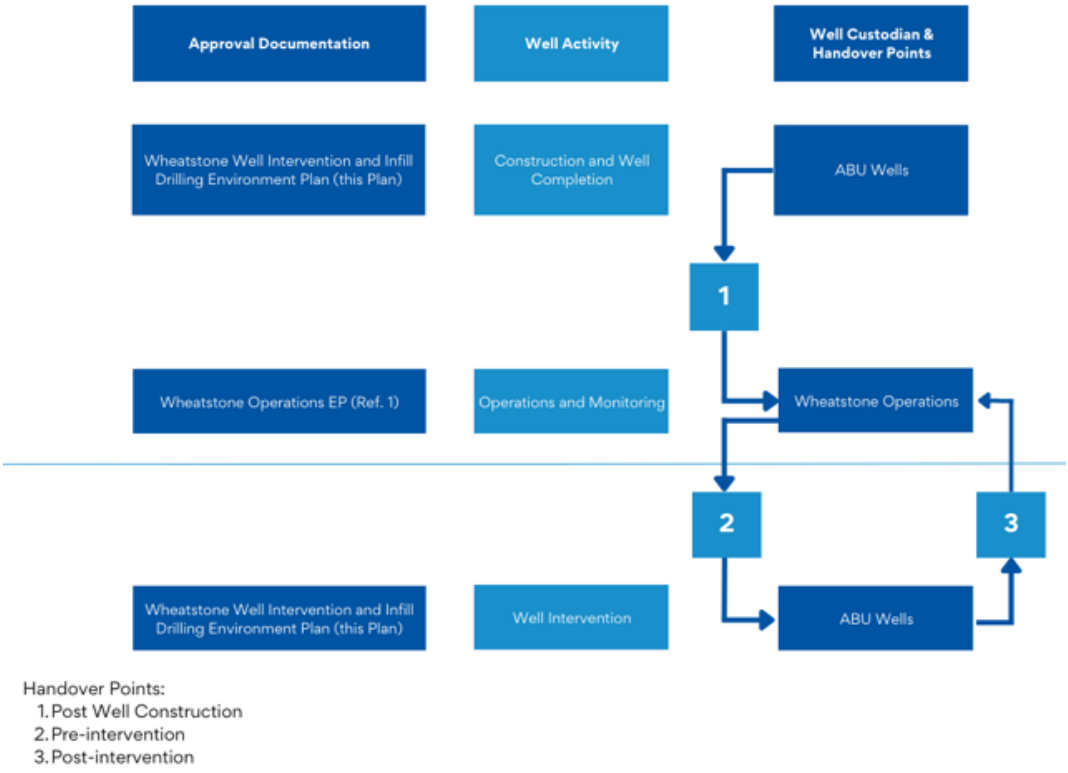


Figure 3-4: Well Custody Arrangements for Wheatstone Production Wells

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 (Ref. 29). 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 Wheatstone Project: Well Handover process, Data Package and Certificates document (Ref. 43) outlines the process for handing over Wheatstone and Iago 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 the 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 purpose of each of the specific sub-areas) are described in the following sections.

For the following sections, the document refers to the EMBA when it is applicable to all the sub-areas identified in Table 4-1

Table 4-1: Description of EMBA sub-areas for Wheatstone Well Intervention and Infill Drilling

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). 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 OA.
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 of acoustic exposure (Table 7-4) at relevant thresholds (Table 7-3).
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.

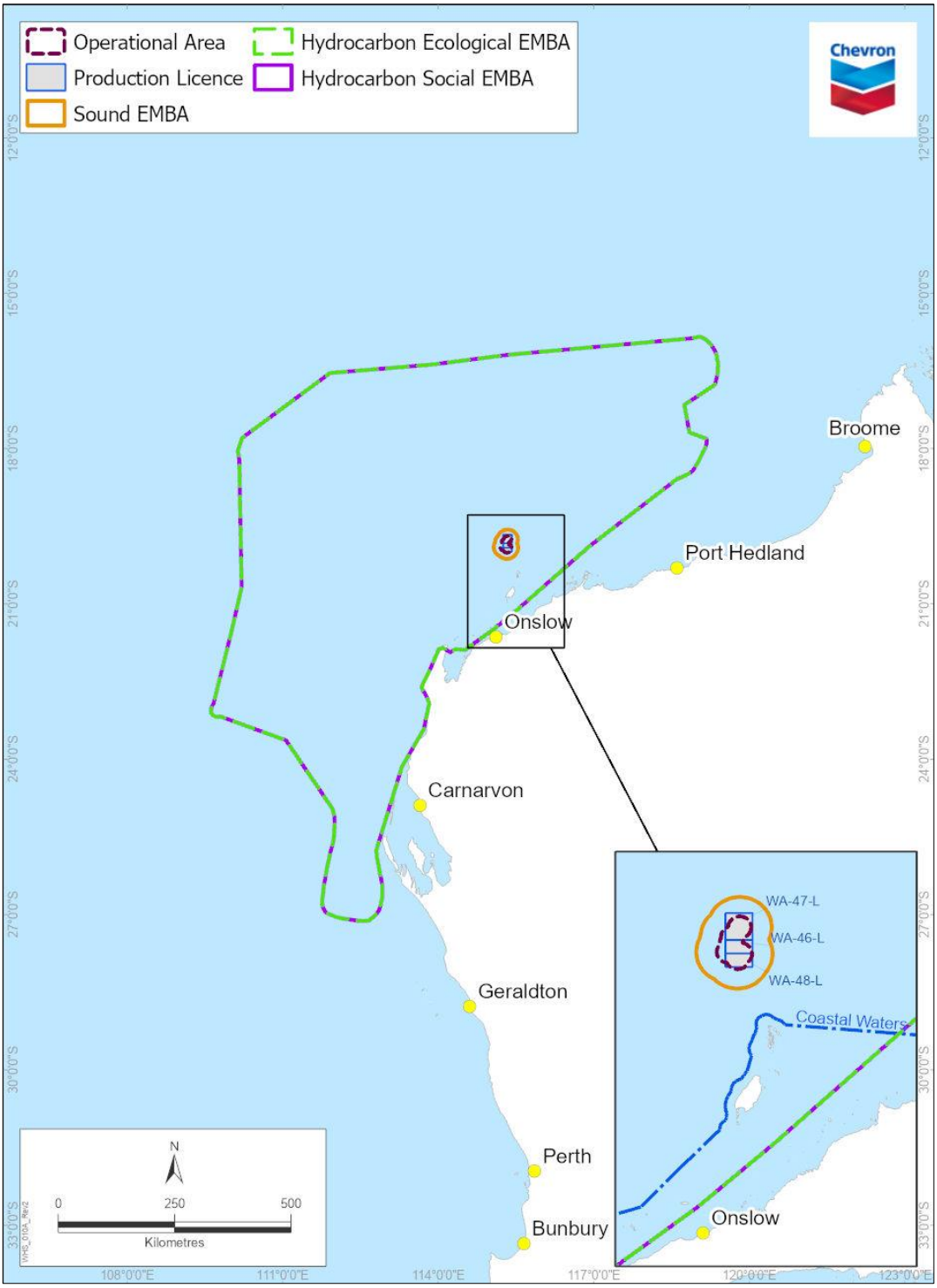


Figure 4-1: EMBA for Wheatstone Well Intervention and Infill Drilling

4.2 Matter of national environmental significance

Matters of national environmental significance (MNES) are protected under the EPBC Act (Cth). The presence of MNES within the EMBA has been determined from the Australian Government's online Protected Matters Search Tool (PMST) (Ref.16). 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 EMBA

MNES	OA	Sound EMBA	Hydrocarbon Ecological and Social EMBA
World Heritage properties^	×	×	✓
National Heritage places^	×	×	✓
Wetlands of international importance (Ramsar wetlands)^	×	×	×
Nationally listed threatened species and communities^	✓ species × communities	✓ species × communities	✓ species × 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 the maintenance of biological diversity as they provide structurally complex and diverse habitat, refuge for vulnerable life stages and a varied and increased food supply (Ref. 221).

[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.

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. 62; Ref. 223). The high species richness is thought to be associated with the diversity of habitats available, such as limestone pavement, coral reefs, and pinnacles (Ref. 62). The broader benthic communities and habitats that may be present within the EMBA are summarised below, with additional data specific to the OA 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. 224), the geomorphic feature present within the EMBA are shown in Table 4-3. is the continental slope. Within the broader Hydrocarbon Ecological EMBA, the following geomorphic features have been identified: canyon, deep/hole/valley, pinnacle, plateau, shelf, slope, terrace, and trench/trough. One of the key features identified within this dataset is Rankin Bank, a known bathymetric feature of regional significance, which occurs within the Hydrocarbon Ecological EMBA (see Section 4.3.1.2).

Table 4-3: Geomorphic features

Feature	OA	Sound EMBA	Hydrocarbon Ecological and Social EMBAs
Abyssal-plain/deep ocean floor			✓
Apron/fan			✓
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. The north-west WA comprises bio-clastic, calcareous, and organogenic sediments deposited from relatively slow and uniform sedimentation

rates (Ref. 261). 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. 225).

Based on CSIRO's marine benthic substrate database (Ref. 226), the predominant seafloor sediment type within the OA and Sound EMBA is "calcareous gravel, sand and silt". Within the Hydrocarbon Ecological EMBA three seafloor sediment types were identified: "calcareous gravel, sand and silt", "calcareous ooze", and "mud and calcareous clay".

While not identified as a specific feature in either geomorphic or sediment type databases, the Wheatstone ridgeline, an area of hard substratum known to occur within the Hydrocarbon Ecological EMBA, is described further in Section 4.3.1.3.

The Integrated Marine and Coastal Regionalisation of Australia (IMCRA) is a biogeographic regionalisation of oceanic waters within Australia's EEZ (Ref. 227). The OA and Sound EMBA occur within the Northwest Province and Northwest Shelf Province provincial bioregion, while the Sound EMBA also intersects the Northwest Transition provincial bioregion. In addition to the three provincial bioregions already identified, the Hydrocarbon Ecological EMBA also intersects with the Central Western Province, Central Western Shelf Province, the Central Western Shelf Transition and the Central Western Transition provincial bioregion. 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 the EMBA.

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 the Hydrocarbon Ecological EMBA.

Table 4-4: Features of provincial bioregions

IMCRA Provincial Bioregion^	OA	Sound EMBA	Hydrocarbon Ecological EMBA
Northwest Province	✓	✓	✓
Characteristics of the geomorphology and biological communities of the Northwest Province are described below: • 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			

IMCRA Provincial Bioregion^	OA	Sound EMBA	Hydrocarbon Ecological EMBA
• 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 OA, Sound EMBA, and Hydrocarbon Ecological EMBA. The Exmouth Plateau and canyons on the slope also occur within the Hydrocarbon Ecological EMBA. 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 are described below: • bioregion occurs almost entirely on the continental shelf, except for a small area to the 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 seafloor 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 two shelf plateaux within the NWMR – significant areas of tidal sandwaves or sandbanks (ranging in height ~5–10 m) occur on the inner-most reaches of Exmouth Gulf, and are one of only three 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 discernable 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 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:			

IMCRA Provincial Bioregion^	OA	Sound EMBA	Hydrocarbon Ecological EMBA
• 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—Murion Islands and surrounding waters • ancient coastline at 125 m depth contour • Glomar Shoals. Of these features and areas within the Northwest Shelf Province, the ancient coastline at 125 m depth contour occurs within the Hydrocarbon Ecological EMBA, with none present within the OA or Sound EMBA. Refer to Section 4.3.7.1 for further descriptions of this features.			
Northwest Transition		✓	✓
Characteristics of the geomorphology and biological communities of the Northwest Transition are described below: • around half (52%) of the bioregion occurs on the continental slope, with smaller areas in the north-west of the bioregion located 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, ispods), 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 seafloor, 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 • 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 Sound EMBA and Hydrocarbon EMBA. 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 are described below: • bioregion that is characterized by a narrow continental slope incised by many submarine canyons, including Perth Canyon, and the most extensive area of continental rise in any of Australia's bioregions			

IMCRA Provincial Bioregion^	OA	Sound EMBA	Hydrocarbon Ecological EMBA
• 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 Perth Canyon, a significant geomorphic feature located on the southern margin of the province Features and areas of ecological importance within the Central Western Shelf Province have been identified as: • several eddies form off the Leeuwin Current at predictable locations, including the Perth Canyon • unique seafloor features give rise to ecologically important events of localised productivity and aggregations of marine life • the Perth Canyon is significant as it includes habitats, species and ecological communities associated with four 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 small portion of the Commonwealth waters offshore from Shark Bay, at the northern extent or the region, occur within the Hydrocarbon Ecological EMBA. The OA and Sound EMBA are both located ~675 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 are described below: • a bioregion that consists of the continental shelf between Kalbarri and Coral bay and is comprised of 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 approximately 10,000 individuals. • Dirk Hartog Island, situated within Shark Bay, provides critical nesting and inter-nesting habitat for loggerhead turtles. Of these features and areas within the Central Western Shelf Province the Commonwealth waters adjacent to Shark Bay and the Shark Bay world heritage area both occur within the Hydrocarbon Ecological EMBA. The OA and Sound EMBA are both located 485 km north east of the Central Western Shelf Province.			
Central Western Shelf Transition			✓
Characteristics of the geomorphology and biological communities of the Central Western Shelf Transition include:			

IMCRA Provincial Bioregion^	OA	Sound EMBA	Hydrocarbon Ecological EMBA
• bioregion is located entirely on the continental shelf and is comprised mainly of sandy sedimentsthis 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, 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 Of these features and areas within the Central Western Shelf Transition, the Ningaloo Marine Park – North West Cape 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 greater than 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 • 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			

[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^	OA	Sound EMBA	Hydrocarbon Ecological EMBA
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). Features and areas of ecological importance within the Central Western Transition have been identified as: • 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 EMBAs. Refer to Section 4.3.7.1 for further descriptions of these features.			

^ *Source: Ref. 223*

4.3.1.1 Operational Area

CAPL has conducted extensive surveys within Wheatstone LNG 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.

The benthic habitat within the production licences predominantly comprises soft substrate (Ref. 17). For example, imagery from these surveys indicate that the seabed around the Wheatstone LNG Project subsea infrastructure (e.g. flowlines, drill centres), mostly comprises unvegetated, soft, and unconsolidated sediments with a low but varying degree of benthic invertebrate habitation (Figure 4-2) (Ref. 17).

The shelf of the North-west Marine Region contains several terraces and steps. The most prominent of these features occurs as an escarpment along the 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. 217).

Seagrasses and macroalgae, which are typically characteristic of sand habitats and reefs (Ref. 15), are unlikely to occur within the Commonwealth waters of the OA. This is most likely due to low benthic light levels characteristic of deeper waters.

The OA encompasses intersects the Wheatstone ridgeline (Section 4.3.1.3), which is an area (~11 km long) of hard substratum upon which the Wheatstone

Platform sits. The closest DC2 manifold locations (IA-North and IA-South) are ~ 4 km from the ridgeline.

Figure 4-2: Seabed survey image showing typical seabed habitat at WST-3 drill centre (within WA-47-L) for the Wheatstone LNG Project

4.3.1.2 Rankin Bank

Rankin Bank is located ~19 km east of the OA. While Rankin Bank is not protected and is not a key ecological feature (KEF), it is the only large, complex bathymetrical feature on the outer western shelf of the West Pilbara region and represents habitats that are likely to play an important role in the productivity of the Pilbara region (Ref. 228). Rankin Bank consists of three submerged shoals delineated by the 50 m depth contour with water depths of ~18–30.5 m (Ref. 228). In 2013, AIMS and Woodside co-invested in a project to better understand the habitats and complexity of the submerged shoal ecosystems. Rankin Bank represents a diverse marine environment, predominantly composed of consolidated reef and algae habitat (~55% cover), followed by hard corals (~25% cover), unconsolidated sand/silt habitat (~16% cover), and benthic communities composed of macroalgae, soft corals, sponges, and other invertebrates (~3% cover) (Ref. 228). The proportion of cover at Rankin Bank was highest for macroalgae and hard corals, particularly at depths less than 40 m, and decreased with increasing depth (Ref. 229). Encrusting corals (reaching cover of ~12.5%) at depths less than 40 m and solitary corals (~10% cover), primarily at depths between 40–60 m, were also present (Ref. 229). Other benthic taxa including soft corals and sponges were present in lower proportions at all depths (Ref. 229). The high cover of macroalgae and hard corals in shallower water depths are likely due to greater light penetration and lower sand cover (Ref. 229).

Hard corals are a significant component of the benthic community of some parts of the bank, with abundance in the upper end of the range observed elsewhere on the submerged shoals and banks of northwest Australia (Ref. 230).

4.3.1.3 Wheatstone Ridgeline

The Wheatstone ridgeline (Figure 4-3) crosses the southern extent of the OA. Based on studies undertaken for the Wheatstone LNG Project, the benthic habitats and associated communities are described in more detail below.

The Wheatstone ridgeline is not considered to be an isolated area of hard substratum, and no ecologically isolated or regionally significant benthic habitats are known to occur (Ref. 17; Ref. 231). Regionally, hard substratum occur episodically as an escarpment through the Northwest Shelf Province and Northwest Shelf Transition (Ref. 62; Ref. 232) at the 125 m depth mark.

Benthic or seafloor habitats were characterised during a 2010 survey as being represented by 2–10% cover of sessile benthic invertebrates (Ref. 17). The dominant sessile benthic invertebrates on the ridgeline were soft corals, sea fans, and sponges (Ref. 17). Soft corals and sea fans belong to the order Alcyonacea, but are hereafter collectively referred to as ‘gorgonians’. The term ‘sea fan’ is reserved exclusively for gorgonians with a fan-shaped morphology, which appear to be the dominant growth-form on the ridgeline (Ref. 17). The absence of biogenic hard corals within the ridgeline is due to the lack of sufficient benthic light at these depths (>70 m).

A 2016 survey (Ref. 220) found the dominant benthic organisms on the ridgeline belonged to the phylum Cnidaria, and included gorgonians, antipatharians (or black coral) and hydrozoans. Overall, the cover (percentage cover) and density (counts/unit area) of benthic organisms were low and spatially variable in the study area. Densities were positively correlated with increasing levels of hard substrate and negatively correlated with increasing water depth.

The findings reported in 2010 (Ref. 17) and 2016 (Ref. 220) are similar to those of other surveys conducted on the North West Shelf (NWS), which found hard substratum to be characterised by epifauna assemblages dominated by gorgonians and sponges (Ref. 216).

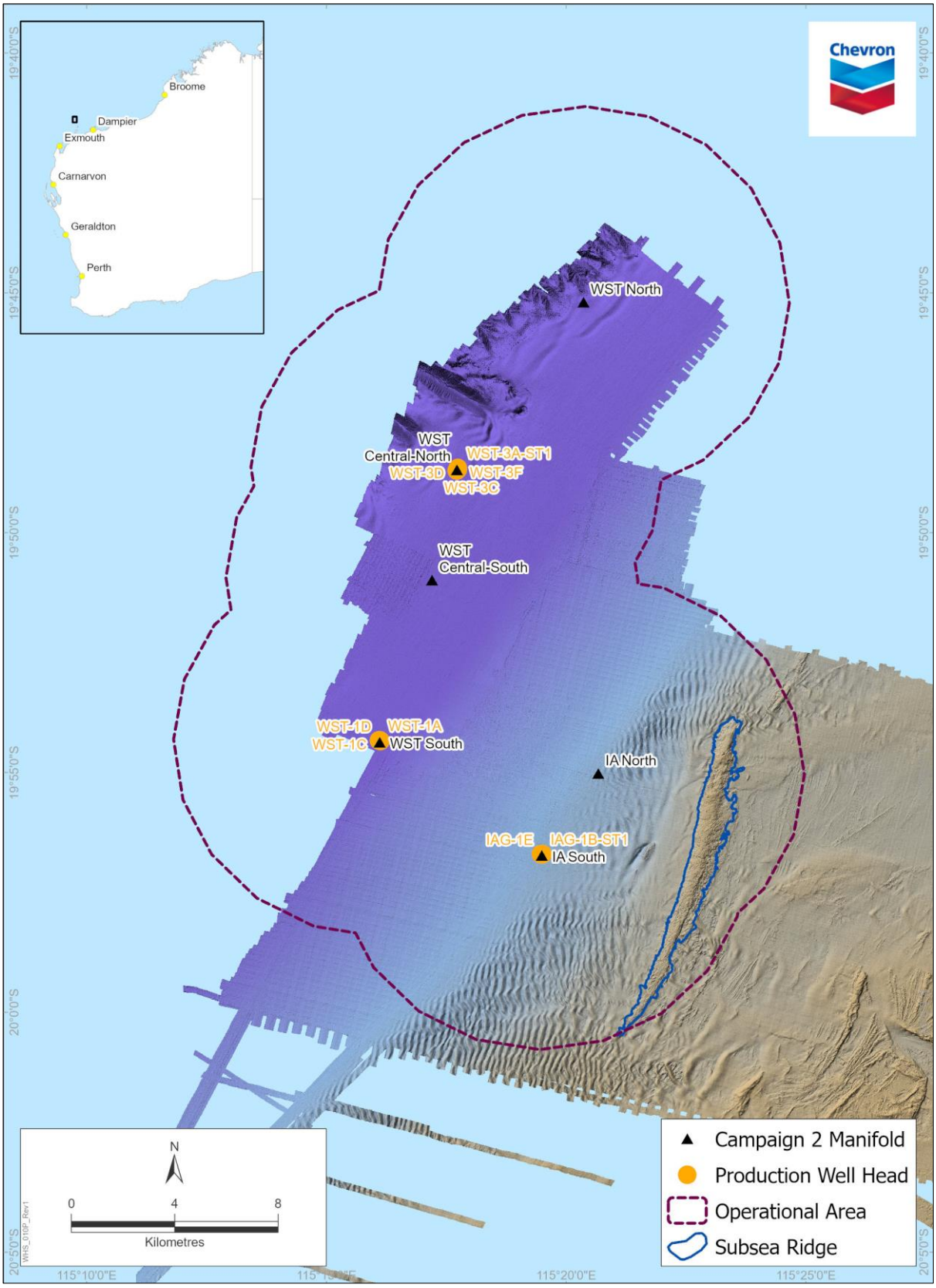


Figure 4-3: Operational area and proximity to the ridgeline

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.

The OA and Sound EMBA, 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 and Social EMBA includes 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 coastal communities and habitats that may be present within the Hydrocarbon Social EMBA are summarised below.

Based on Smartline (Ref. 233), a spatial database containing geomorphic classifications for Australia's coasts, the types of shoreline present within the Hydrocarbon Ecological EMBA and the Hydrocarbon Social EMBA include rocky coasts, sandy beaches and dunes. Within the Hydrocarbon Social EMBA, an additional shoreline type was identified; mudflats associated with some areas of the North West Cape peninsula.

The Seamap Australia spatial database collates and classifies marine and coastal habitats on the Australian continental shelf (Ref. 235). Based on this dataset, areas of saltmarsh may be present on southwestern Barrow Island; and isolated areas of mangroves may be present on the Montebello 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. 234). Coastal and marine baseline studies undertaken by CAPL (Ref. 236) identified that there are no mangrove stands on the west coast of Barrow Island, where the Hydrocarbon Ecological EMBA intersects with the coast. One species of mangrove, Avicennia marina, is known to occur in sparse stands on the north-east and southern coasts of Barrow Island (Ref. 236, Ref. 237). 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 Hydrocarbon Social 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 (Ref. 16; 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 OA or Sound EMBA (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 OA and Sound EMBA are predominantly low-frequency cetaceans[3] (Blue Whale, Bryde's Whale, Fin Whale, Humpback Whale, Sei Whale) and mid-frequency cetaceans[4] (Sperm Whale, Australian Humpback Dolphin, Australian Snubfin Dolphin, Killer Whale, Spotted Bottlenose Dolphin). High-frequency cetaceans[5] (e.g. Dwarf Sperm Whale, Pygmy Sperm Whale) were also identified within the PMST (Ref. 16; Appendix C) as species or species habitat that may occur within the OA and Sound EMBA, these species are not listed as threatened and/or migratory under the EPBC Act. As shown in Table 4-5, except for Humpback Whales, there are no other known BIAs or aggregation areas for other cetacean species that intersect with the OA or Sound EMBA; as such, it is expected that any presence of other cetacean species within the OA and Sound EMBA would be of a transitory nature.

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

Common name (EPBC protected status)	OA	Sound EMBA	Hydrocarbon Ecological EMBA
Cetaceans (whales)			
Antarctic Minke 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)*			✓

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

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

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

Common name (EPBC protected status)	OA	Sound EMBA	Hydrocarbon Ecological EMBA
Sperm Whale *(Migratory)*	✓	✓	✓
Cetaceans (dolphins)			
Australian Humpback Dolphin *(Migratory)*		✓	✓
Australian Snubfin Dolphin *(Migratory)*		✓	✓
Killer Whale *(Migratory)*	✓	✓	✓
Spotted Bottlenose Dolphin *(Migratory)*	✓	✓	✓

Table 4-6: Presence of BIAs for marine mammals

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

4.3.3.1.1 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. 57). 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 Perth Canyon (Ref. 222; Ref. 179; Ref. 180). 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. 181; Ref. 182).

Acoustic monitoring conducted by McCauley and Jenner (Ref. 183) 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. 183) that between seven and fifteen hundred 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 Perth 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. 62; Ref. 52). However, more recent studies (e.g. Ref. 222; Ref. 57) 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. 222). 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. 173). Gavrilov et al. (Ref. 47) conducted a study using an array of ocean bottom seismographs to detect Pygmy Blue Whales traversing the area to the northwest 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. 57). Pygmy Blue Whales have demonstrated extensive use of continental slope habitat off WA and only limited use of shelf waters (Ref. 173). This contrasts with southern Australia, where use of the shelf and shelf break by Pygmy Blue Whales is more common.

McCauley and Jenner (Ref. 183) 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. 173), 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[6] 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. 173). The OA and Sound EMBA do intersect with the eastern extent of this most important area for migration (Figure 4 3).

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. 173). Monthly spatial predictions indicated higher densities around the Montebello Island region during May and June (northern migration) and November and December (southern migration) (Ref. 173)). 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 Perth Canyon, Great Southern Australian Coastal Upwelling System, and the sub-tropical convergence zone (Ref. 173). The areas around the Perth Canyon and Australian Coastal Upwelling System correspond to 'Foraging Areas' and 'Known Foraging Areas' within the *Conservation Management Plan for the Blue Whale* (Ref. 52). The *Conservation Management Plan for the Blue Whale* (Ref. 52) also identifies 'Possible Foraging Areas'[7], including two in WA, one off the Ningaloo coast, and another around Scott Reef. These 'Possible Foraging Areas' have been characterised as foraging BIAs and occur ~245 km southwest and ~830 km northeast of the OA respectively.

Thums et al (Ref. 173) determined that Pygmy Blue Whale movement off northwest WA was predominantly relatively fast, directed travel (high move persistence) interspersed with relatively short (median 28 h) periods of low move persistence (Ref. 173). This high move persistence is indicative of migration, while the low move persistence is generally indicative of foraging (Ref. 173). Data collected from both passive acoustic monitoring and satellite telemetry data, was analysed and determined the 'most important areas' for foraging[8] along the WA coast included the Perth Canyon and vicinity, the shelf edge off Geraldton, and discontinuous use of the shelf edge from Ningaloo Reef to Rowley Shoals (Ref. 173). Although foraging areas are described as static, they are likely to be dynamic given their dependence on presence of prey (Ref. 173; Ref. 184). The OA and Sound EMBA do not intersect with this most important area for foraging (Figure 4-5).

The OA is located in water depths of ~115 to 240 m, and is ~125 km from the mainland coast. The defined migratory BIA for Pygmy Blue Whales overlaps with part of the OA and Sound EMBA; however, it is expected based on satellite

[6] 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. 179).

[7] "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. 53).

[8] 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. 174).

tracking and acoustic detection studies that Pygmy Blue Whales are likely to travel predominantly to the northwest of the OA in deeper waters, particularly on their southern migration (November to December), but also during the northern migration (April to August). 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. 173). However, the OA and Sound EMBA do not intersect with areas identified as important for foraging.

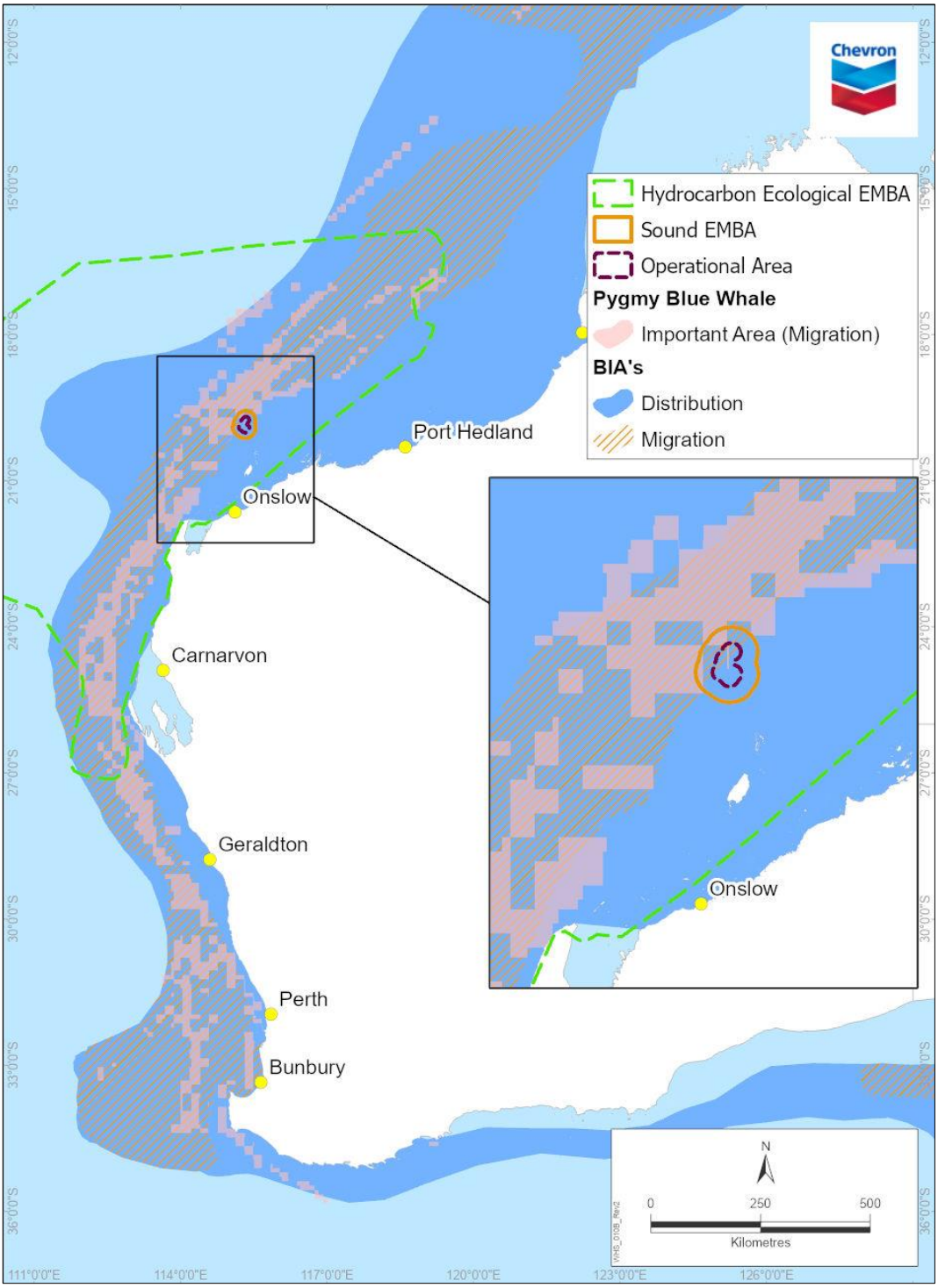


Figure 4-4: Most important areas for migration along WA coast as determined by Thums et al (Ref. 173)

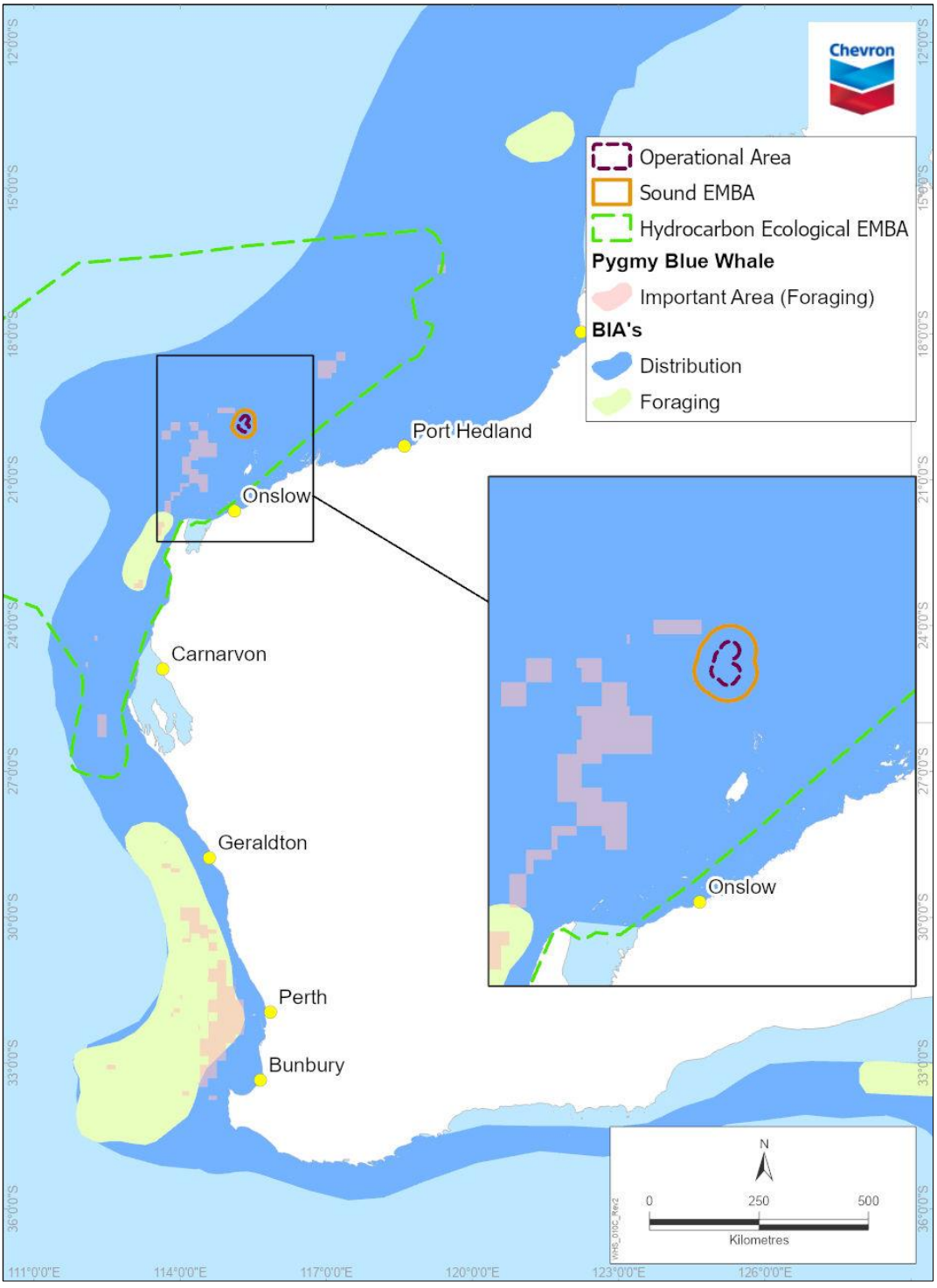


Figure 4-5: Most important areas for foraging along WA coast as determined by Thums et al (Ref. 173)

4.3.3.2 Reptiles

Based on searches of the online PMST (Ref. 16; 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

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 OA or Sound EMBA (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)	OA	Sound EMBA	Hydrocarbon Ecological 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^	OA	Sound EMBA	Hydrocarbon Ecological EMBA
Flatback Turtle	Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island	60 km	October to March	✓	✓	✓
Green Turtle	Barrow Island, Montebello Islands, Serrurier Island, and Thevenard Island	20 km	November to March			✓
Hawksbill Turtle	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands	20 km	October to February			✓

Table 4-9: Presence of BIAs for reptiles

Name	BIA behaviour	Seasonal presence^	OA	Sound EMBA	Hydrocarbon Ecological EMBA
Flatback Turtle	Aggregation	(Not defined in database)			✓
	Foraging	Year-round, early-summer, summer			✓
	Internesting	Summer			✓
	Internesting buffer	Early summer, summer	✓	✓	✓
	Mating	Early summer, summer			✓
	Migration corridor	Year-round, summer			✓
	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			✓
	Migration corridor	Year-round, summer			✓
	Nesting	Summer			✓
Hawksbill Turtle	Foraging	Year-round, spring, early-summer, summer			✓
	Internesting	Spring, early-summer, summer			✓
	Internesting buffer	Year-round, spring, early-summer, summer			✓
	Mating	Year-round, spring, early-summer, summer			✓
	Migration corridor	Summer			✓
	Nesting	Year-round, spring, early-summer, summer			✓
Loggerhead Turtle	Internesting buffer	Summer, (not defined in database)			✓
	Nesting	(not defined in database)			✓

^ Ref: 238

4.3.3.2.1 Flatback turtle

The Montebello Islands 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. 48). The OA intersects the nesting habitat critical to the survival of the species for Flatback Turtles and the internesting BIA for Flatback Turtles (Figure 4-6).

During internesting, turtles remain close to the nesting beach or rookery (Ref. 48). The 60 km internesting buffer defined within the Recovery Plan for Marine Turtles in Australia (Ref. 48) is based primarily on the movements of tagged internesting Flatback Turtles in WA (Ref. 70). The study tracked 56 turtles from four different rookeries, which demonstrated varying internesting movements, with distances ranging from 3–62 km, with some turtles at all four 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. 70). 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. 185) 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 five important rookeries in the NWS study area, including Barrow Island, located ~55 km from the 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. 185). 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. 185; Figure 4-7). The OA and Sound EMBA 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. 186) 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. 187; Ref. 188; Ref. 189) have also presented findings that internesting behaviour was only observed in water depths of <40 m. One of these studies (Ref. 189) 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.

The OA is located in water depths of greater than 50 m, and is >43 km from the Montebello Islands, which is in deeper waters and further offshore than internesting behaviours were observed in any of the previous studies (Ref. 70; Ref. 185; Ref. 186; Ref. 187; Ref. 188; Ref. 189); therefore, it is considered highly unlikely that internesting Flatback Turtles will occur within the OA or Sound EMBA.

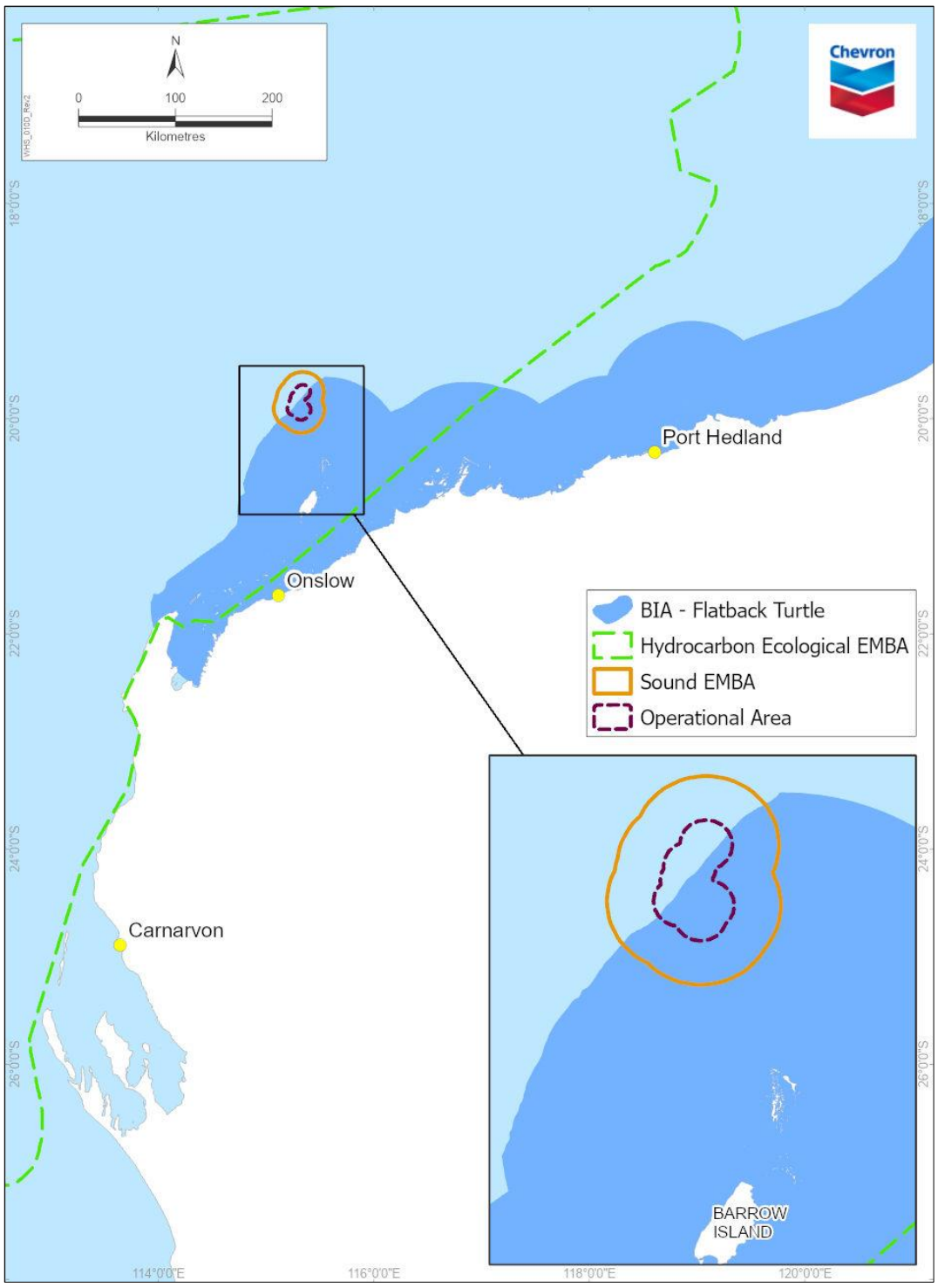


Figure 4-6: Flatback Turtle BIA within the vicinity of the OA, Sound EMBA and Hydrocarbon Ecological EMBA

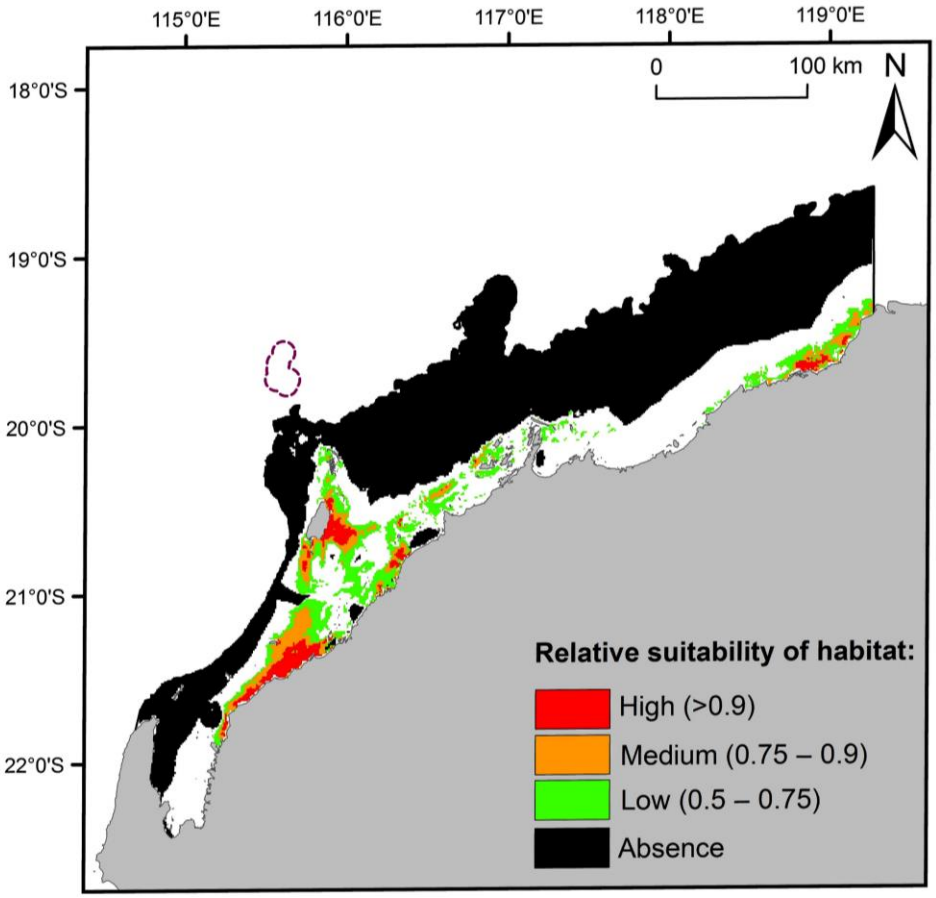


Figure 4-7: Relative suitability of habitat for internesting Flatback Turtles (Source: Ref. 185)

4.3.3.3 Fishes, including sharks and rays

Based on searches of the online PMST (Ref. 16; 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 OA or Sound EMBA (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, including sharks and rays

Common name (EPBC protected status)	OA	Sound EMBA	Hydrocarbon Ecological EMBA
Fish			
Southern Bluefin Tuna *(Conservation dependent)*	✓	✓	✓
Sharks			
Dwarf Sawfish *(Vulnerable, migratory)*		✓	✓
Freshwater Sawfish (*Vulnerable, migratory)*	✓	✓	✓
Green Sawfish *(Vulnerable, migratory)*	✓	✓	✓
Grey Nurse Shark (*Vulnerable*)	✓	✓	✓
Longfin Mako (*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^	OA	Sound EMBA	Hydrocarbon Ecological 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 OA and Sound EMBA (Figure 4-8). 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. 49).

Whale Sharks have a global distribution in tropical and warm temperate waters, including within Australian waters (mainly Northern Territory, Queensland and northern WA) (Ref. 190; Ref. 49). 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. 49). 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. 191). Their presence off Ningaloo Reef has been linked to coral mass spawning timing (Ref. 190). The Whale Shark is a suction filter feeder, with a diet consisting of planktonic and nektonic prey, and feeds at or close to the water's surface by swimming forward with mouth agape, sucking in prey (Ref. 190). 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 three migration routes from Ningaloo reef have been identified through various surveys (Ref. 192):

- 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.

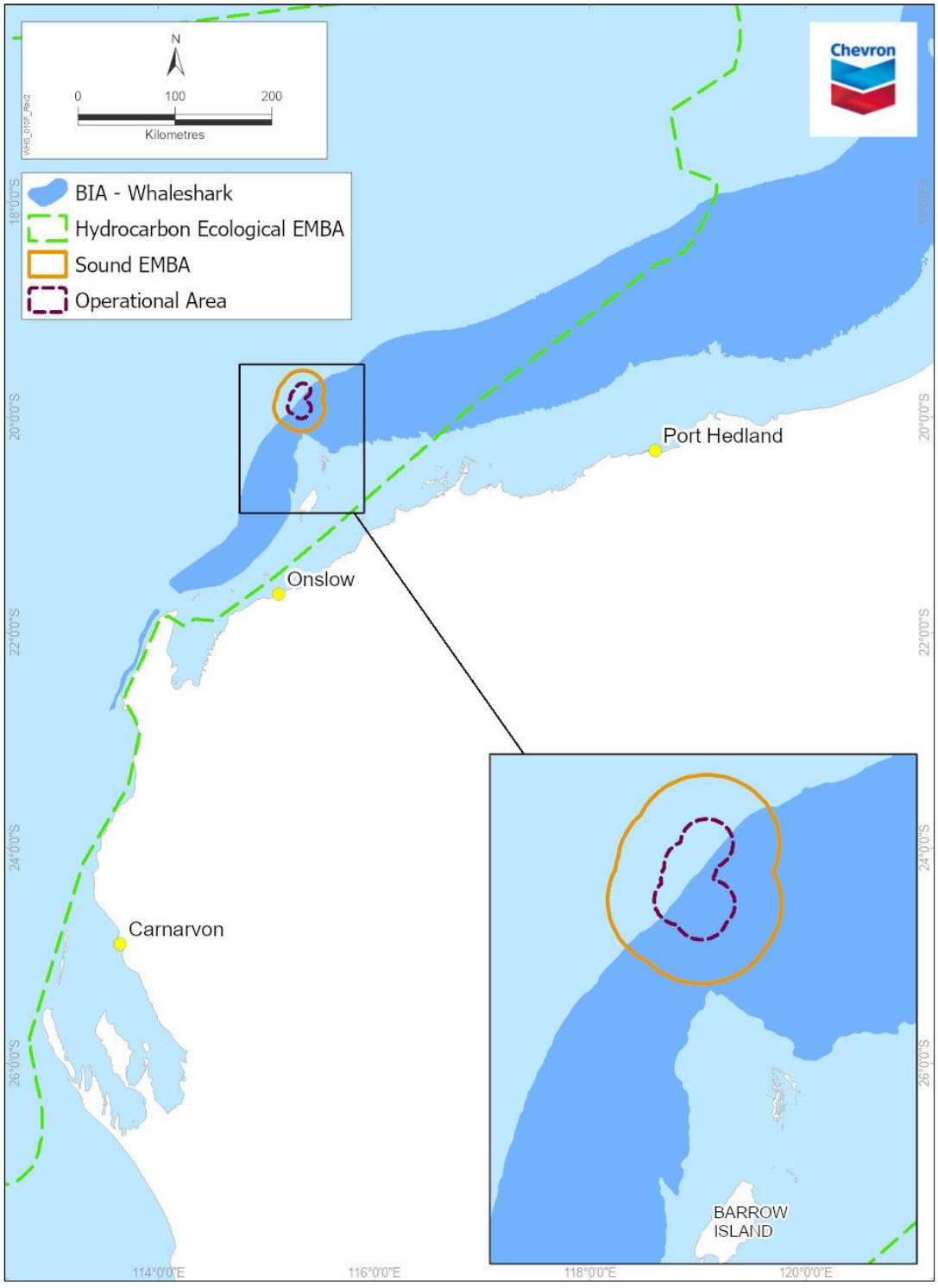


Figure 4-8: Whaleshark BIA within the vicinity of the OA, Sound EMBA and Hydrocarbon Ecological EMBA

The OA overlaps with small areas of the Continental Slope Demersal Fish Communities KEF (Section 4.3.7.1). The KEF supports two 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. 265). 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. 265). 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. 265).

4.3.4 Seabirds and shorebirds

Based on searches of the online PMST (Ref. 16; 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)	OA	Hydrocarbon Ecological 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)*		✓
Black-tailed Godwit *(Migratory)*		
Bridled Tern *(Migratory)*		✓
Brown Booby *(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)*	✓	✓

Common name (EPBC protected status)	OA	Hydrocarbon Ecological EMBA
Eastern Curlew *(Critically endangered, migratory)*	✓	✓
Flesh-footed Shearwater *(Migratory)*		✓
Fork-tailed Swift *(Migratory)*		✓
Great Frigatebird *(Migratory)*	✓	✓
Great Knot		
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)*		
Red-tailed Tropicbird *(Migratory)*		✓
Roseate Tern *(Migratory)*		✓
Ruddy Turnstone *(Migratory)*		
Sanderling *(Migratory)*		
Sharp-tailed Sandpiper *(Migratory)*	✓	✓
Shy Albatross *(Endangered, migratory)*		✓
Soft-plumaged Petrel *(Vulnerable)*		✓
Sooty Albatross *(Vulnerable, migratory)*		
Southern Giant-Petrel *(Endangered, migratory)*	✓	✓
Southern Royal Albatross *(Vulnerable, migratory)*		
Streaked Shearwater *(Migratory)*	✓	✓

Common name (EPBC protected status)	OA	Hydrocarbon Ecological EMBA
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)*		✓
White-winged Fairy-wren (Dirk Hartog Island) *(Vulnerable)*		✓

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

Common name	BIA Behaviour	Seasonal Presence^	OA	Hydrocarbon Ecological EMBA
Bridled Tern	Foraging (in high numbers)	Late-September to early-May		✓
Fairy Tern	Breeding	July to late-September		✓
	Foraging (in high numbers)	Year-round		
Lesser Crested Tern	Breeding	March to June		✓
Little Tern	Resting	June, July and October		✓
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-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. 193). The Wedge-tailed Shearwater has a 'breeding with a foraging buffer' BIA that intersects with the OA (Table 4-13; Figure 4-9). 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 (>700 km from the 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. 194); out of an estimated global population of five million (Ref. 195). 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. 196; Ref. 197). 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. 195).

One of the closest colonies to the OA 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. 198; Ref. 201). CAPL (Ref. 199; Ref. 201) 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 consists of squid, fish, and crustaceans (Ref. 195). 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. 197). 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. 197). 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. 197; Ref. 200). The use of a bimodal foraging strategy suggests that prey availability close to the colony (i.e. areas that would be

utilised on short trips) are inadequate for the large numbers of breeding shearwaters (Ref. 197).

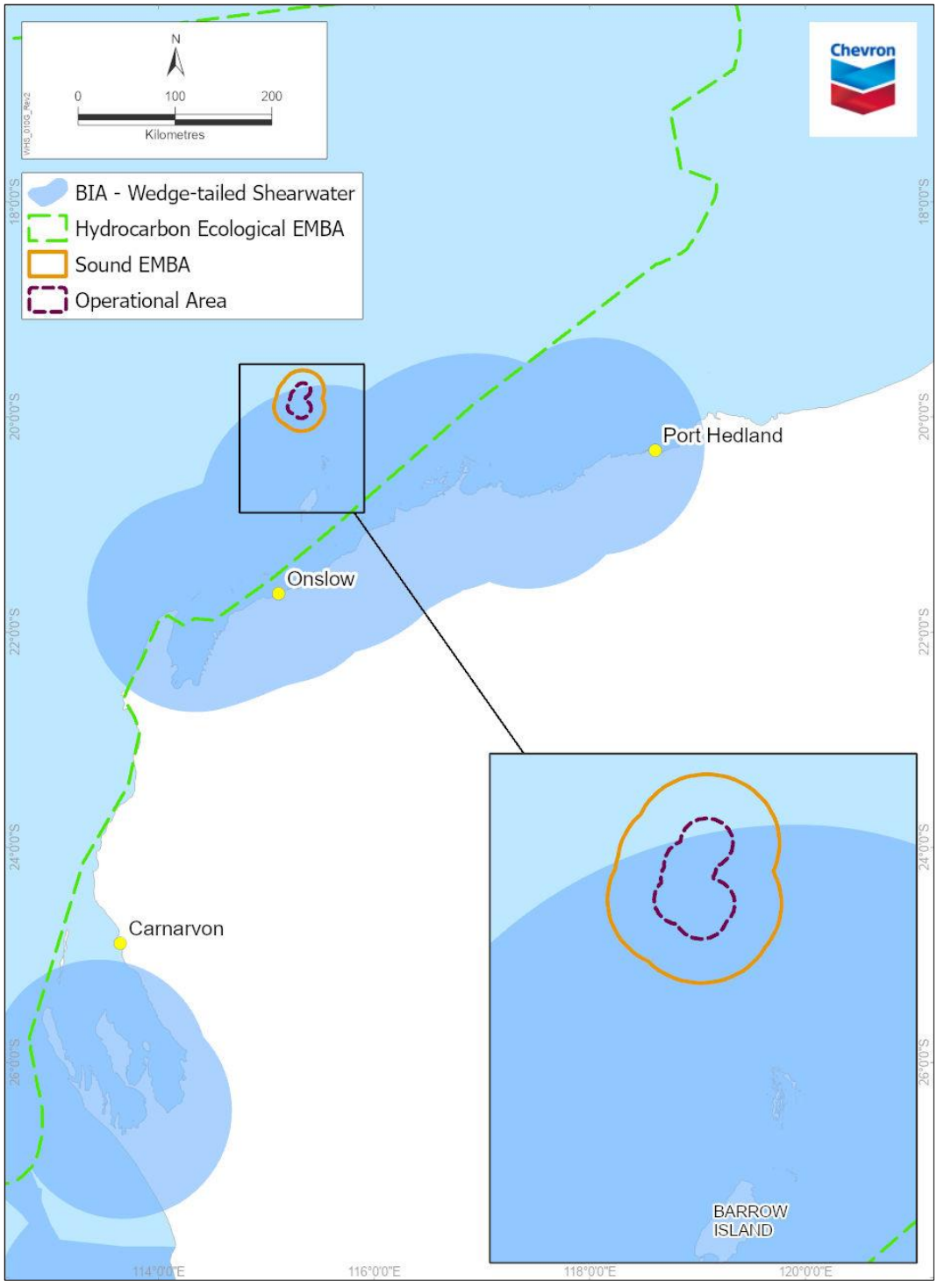


Figure 4-9: Wedge-tailed Shearwater BIA within the vicinity of the OA and Sound EMBA

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. 239)

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 characterized 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. 240).

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. 241) The Wenziker et al (Ref. 241) study found no detectable levels of the sampled organic chemicals, and metals were below ANZG guidelines in the waters of the Dampier Archipelago. However, natural oil seeps are known to occur on the NWS (Ref. 240). 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 typically pristine air quality found in offshore areas, away from industrialization of point sources. Previous sediment quality data for Pilbara coastal waters (Ref. 242) indicated no detectable hydrocarbons, and with metal concentrations typically below the relevant ISQG-low guidelines. 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).

4.3.5.3 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. 243; Ref. 240). 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).

4.3.6 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. 62). These uses of the NWMR make an important economic and social contribution to settlements along the coast (Ref. 62). Industry activities present with the EMBA are identified and described in Section 4.4.6.

4.3.6.1 Land use

The OA and Sound EMBA occur offshore and do not have any interface with the coast. The Hydrocarbon Ecological EMBA and the Hydrocarbon Social EMBA 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). Noting that the Hydrocarbon EMBAs typically only extends landward to the high water mark (HWM).

The land uses that may be present within the Hydrocarbon Social 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. 244). Camping is permitted on some of the islands (with some restrictions during turtle nesting season) (Ref. 244; Ref. 245).

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 4.5.2). 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 man-made hazards, including the operation of an oilfield and the Gorgon Gas Project Ref. 244). Camping is not permitted on any of these islands (Ref. 244).

The Pilbara Islands are a group of over 170 islands, islets, rocks and cays that lie between the bottom of Exmouth Gulf and the Regnard Islands near Cape Preston (Ref. 236). Five islands that interact with the Hydrocarbon EMBAs are classified as nature reserves (IUCN Ia) (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. 236). Fishing, beach walks and wildlife viewing are types of activities that may occur in the Pilbara Inshore Islands Nature Reserve (Ref. 236). Camping is only permitted on certain islands and may require a permit (Ref. 236).

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. 246; Ref. 247).

Two Native Title determinations (WCD2019/016 and WCD2018/006) extend over the Hydrocarbon Social EMBA (Section 4.6.2). The determination area contains places of special significance, such as mythological and ceremonial sites and natural resources (Section 4.6.2). It is unknown if any of these areas of special significance 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. 248).

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. 62).

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. 249). 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. There are several coastal language groups or clans in northwest WA, including Thalanyji (associated with the Ashburton coastal plain, Exmouth Gulf, and surrounding areas). Based on engagement with First Nations groups, CAPL understands that Thalanyji (represented by the Buurabalayji Thalanyjii Aboriginal Corporation RNTBC for native title rights and interests) and Mardudhunera and Yaburara people (represented by the Wirrawandi Aboriginal Corporation RNTBC for native title rights and interests) have connections to Barrow and/or Montebello Islands.

First Nations people in northwest 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. 249). 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 northwest WA (Ref. 249).

First Nations peoples of northwest 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. 249).

Consultation with First Nations groups in the Pilbara has identified that 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. The Thalanyji people have also identified a cultural obligation to protect Ashburton Island (located immediately outside the Hydrocarbon EMBA).

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. 62). 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. 62). The pearling industry began in the late-1800s, and remains a significant contributor to the economy of northwest WA (Ref. 62). Similarly, small fishing fleets were common from the 1860s onwards, and the commercial fishing industry also remains a significant economic input for northwest WA, particularly from prawn and demersal finfish fisheries (Ref. 62). Petroleum discovery and development commenced from the 1950s, with both onshore and offshore discoveries (Ref. 62).

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. 62). 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. 62).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. 224). 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. 62).

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. 250):

- 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. 250).

The presence of KEFs within the EMBA, and a description of the KEFs values, are shown in Table 4-14, Figure 4-10.

Table 4-14: Presence of KEFs

Key ecological feature	OA	Sound EMBA	Hydrocarbon Ecological 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. 62).			

Key ecological feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA
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. 62). **Values:** Unique sea floor feature with ecological properties of regional significance.			
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. 62). 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. 62). 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. 225) **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. 62). Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish and seabirds are known to occur in this area (Ref. 62). **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. 218). The demersal fish species occupy two 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. 62). **Values:** High levels of endemism.			

Key ecological feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA
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. 62). The topography of the plateau (with valleys and channels), in addition to potentially constituting a range of benthic environments, may provide conduits for the movement of 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. 62). Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton (Ref. 225). **Values:** Unique sea floor feature with ecological properties of regional significance			
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 approximately 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. 62). 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. 62). 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. 62). **Values:** High productivity and aggregations of marine life			
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals			✓
The Rowley Shoals are a collection of three atoll reefs, Clerke, Impereuse and Mermaid, which are located about 300 km north-west of Broome. The reefs are recognized as areas of enhanced productivity and high species richness, thought to be facilitated by the breaking of internal waves in the waters surrounding the reefs, causing mixing and re-suspension of nutrients from water depths of 500-700 m into the photic zone (Ref. 62). The reefs provide a distinctive biophysical environment in the region as there are few offshore reefs in the north-west. They have steep and distinct reef slopes and associated fish communities. A rage of migratory pelagic species such as dolphins, tuna, billfish and sharks are attracted to the steep changes in slope around the reef. In evolutionary terms, the reefs may play a role in supplying coral and fish larvae to reefs further south via the southward flowing Indonesian Throughflow (Ref. 62). **Values:** High productivity and aggregations of marine life			
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			

Key ecological feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA
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 characterized 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. 264). **Values:** Species groups that are nationally or regionally important to biodiversity. High level of endemism.			

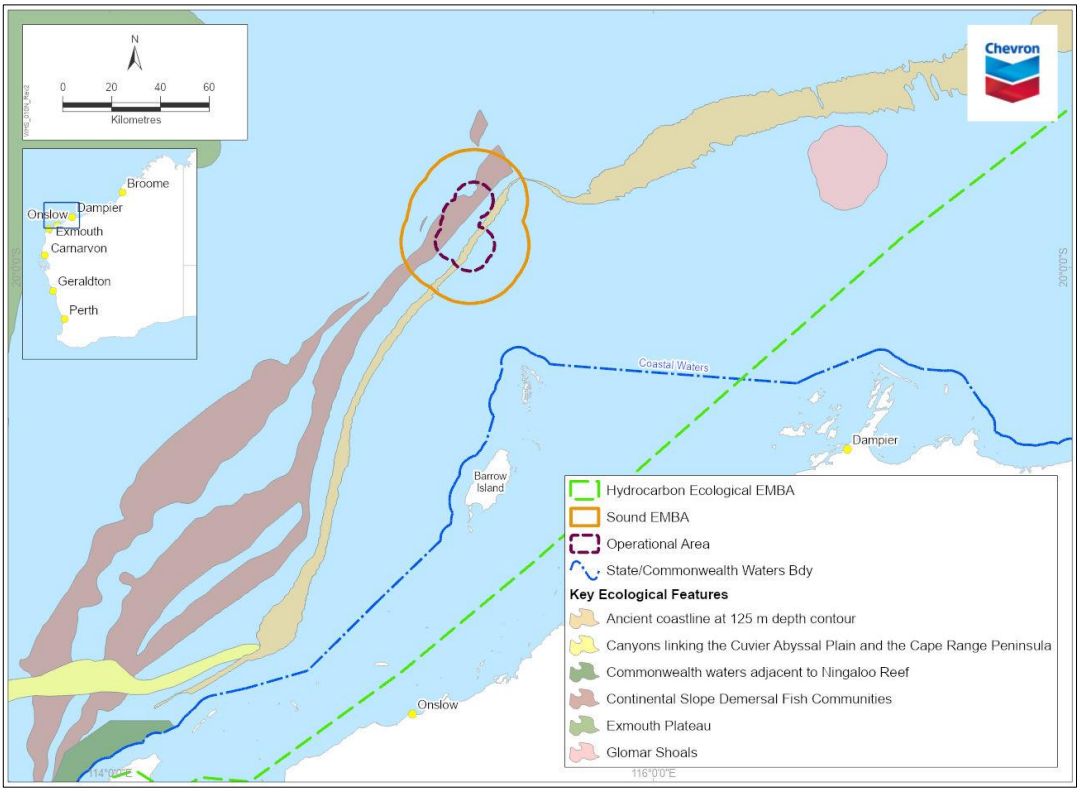


Figure 4-10: Key ecological features within the vicinity of the EMBA

4.3.8 Commonwealth land area

Commonwealth land[9] is a particular value and sensitivity under the OPGGS(E)R. Based on spatial review and searches of the online PMST (Ref. 16; Appendix C)

[9] 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.

there is Commonwealth land associated with Defence facilities that intersects with the Hydrocarbon EMBAs. 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 which 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

The Commonwealth-managed commercial fisheries with fishery management areas that intersect the EMBA, and that have fishing effort recorded during 2015–2020 (Ref. 21) are listed in Table 4-15.

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

Table 4-15: Presence of recent (2015–2020) fishing effort recorded within Commonwealth-managed commercial fisheries

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

Commonwealth fisheries with fishing effort recorded within the OA are limited to the North West Slope Trawl Fishery (NWSTF), as shown in Figure 4-11. Relative fishing intensity data is not available for the NWSTF due to low vessel numbers and confidentiality.

The NWSTF use bottom (or demersal) trawl methods to target deep-water prawn and scampi that live on or near the seafloor (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 (*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 decreased from 306 days, 5,903 trawl-hours and seven fishing permits in the 2019–20 fishing season to 233 days, 4,420 trawl-hours and six fishing permits in 2020–21 season. Four vessels operated in the 2020–21 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 OA during 2010, 2015 and 2020 (Ref. 266).

The Southern Bluefin Tuna Fishery is active within waters in the Great Australian Bight and south-eastern Australia (i.e. not within the OA and EMBA); however, the spawning grounds for Southern Bluefin Tuna are located in the north-east Indian Ocean south of Java (Ref. 266). This indicative spawning area does not overlap with the OA or Sound EMBA, but partially overlaps the Hydrocarbon Ecological EMBA and the Hydrocarbon Social EMBA.

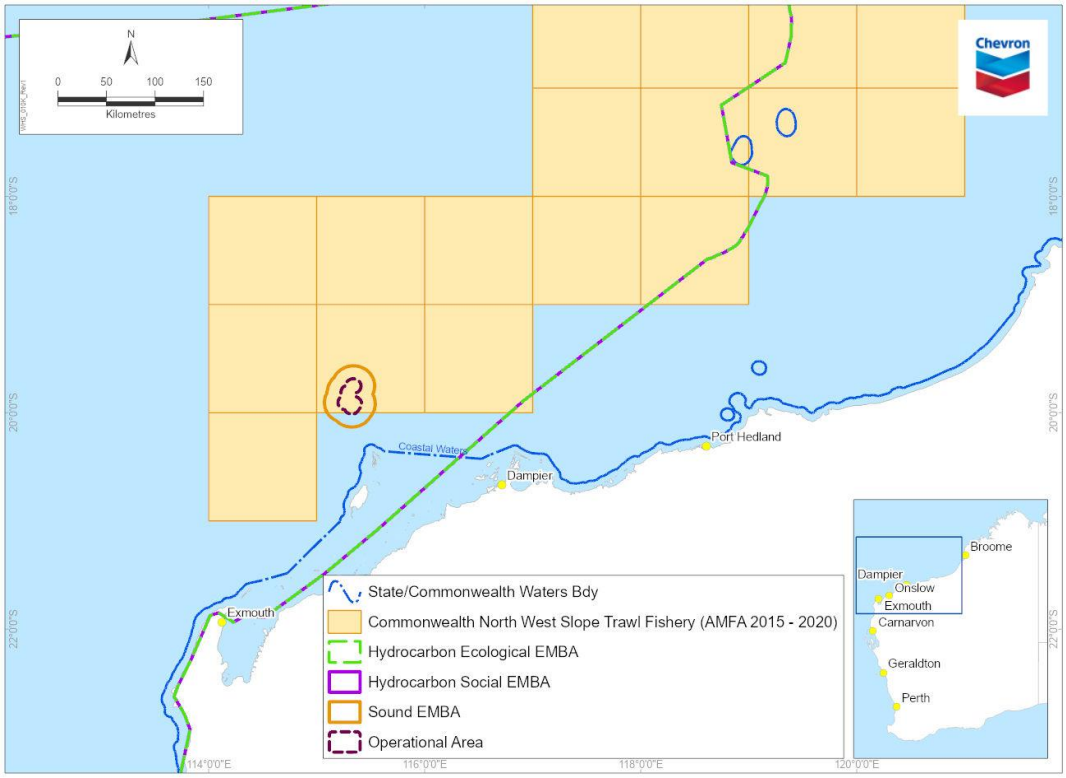


Figure 4-11: Presence of fishing activity (2015-2020) for the North West Slope Trawl Fishery within the vicinity of the EMBA

4.4.1.2 State-managed fisheries

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. 18) are listed in Table 4-16.

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

Table 4-16: Presence of fishing effort recorded over the 2012–2021 period within State-managed commercial fisheries

Fishery	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon 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 OA (Table 4-16).

The Mackerel Managed Fishery utilises near-surface trolling or jig fishing methods, with vessels primarily active during May to November (Ref. 19), and with the bulk of the catch typically taken north of the OA within Kimberley waters (Ref. 19). 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/NT border. There are three 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. 19). The total catch of the Fishery in 2020/2021 was 246–430 t. Fishing effort reported during 2012-2021 is shown in Figure 4-12.

The Pilbara Crab Managed Fishery utilises trap fishing methods, and primarily operated within inshore waters around Nickol Bay. This fishery primarily targets blue swimmer crab (*Portunus armatus*) and mud crabs (*Scylla spp*.). The 2020 fishing season reported a commercial catch of 0.6 t (Blue Swimmer Crab) (Ref. 19). The areas west of 115°06.50' E within the fishery management area are currently closed to fishing (this closed area includes the offshore extent of the OA and Sound EMBA). During the ten-year period, active fishing effort was only recorded once (2016) within the 60 nm graticular block that intersects with the OA and Sound EMBA.Fishing effort reported during 2012-2021 is shown in Figure 4-13.

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 2020/2021 was 167 t, increasing in ~6% of the total catch during the last years. Fishing effort reported during 2012-2021 is shown in Figure 4-14.

The Pilbara Trap Fishery (trap methods) is managed through area closures and effort allocations (Ref. 19). 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 2020/2021 was 584 t, increasing in ~20% of the total catch by the Pilbara Demersal Scale Fishery (Ref. 20). Fishing effort reported during 2012-2021 is shown in Figure 4-15.

The Pilbara Line Fishery and the Pilbara Trap Fishery are part of the Pilbara Demersal Scalefish Fishery. For the 2021 fishing year, the bulk of the catch within the Pilbara Demersal Scalefish Fishery was landed by the trawl sector (which does not occur within the OA); with smaller contributions from the trap (20%) and line (6%) sectors (Ref. 20).

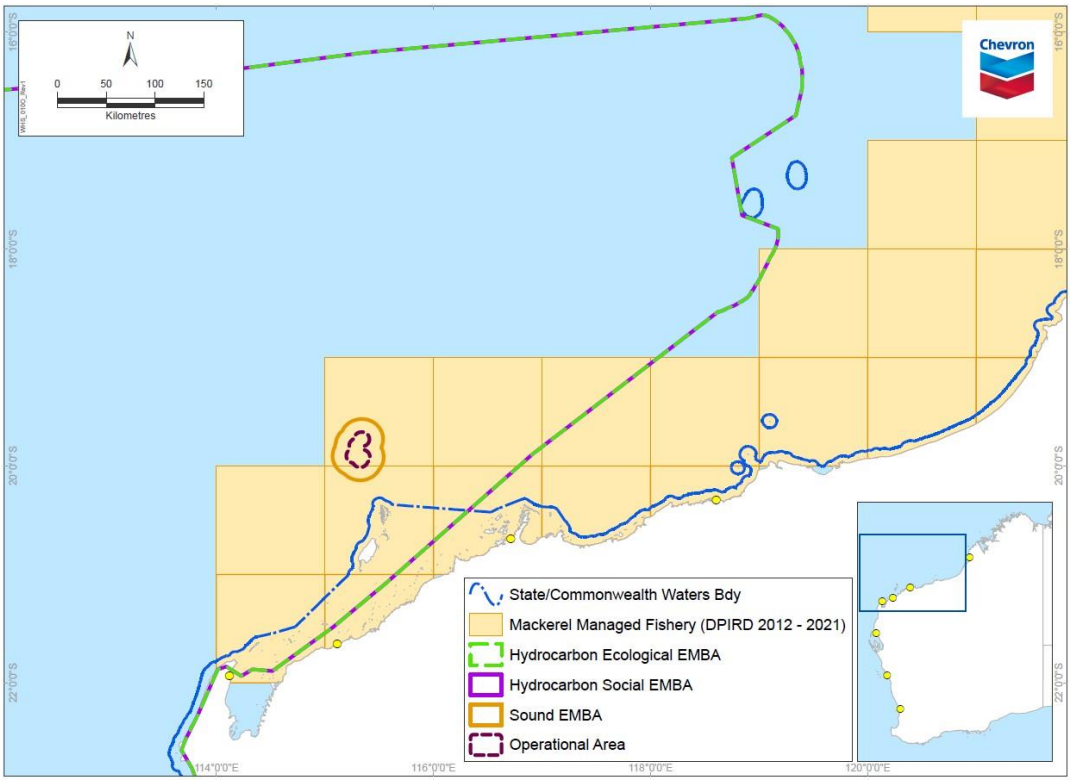


Figure 4-12: Recorded fishing effort (2012-2021) for the Mackerel Managed Fishery within the vicinity of the EMBA

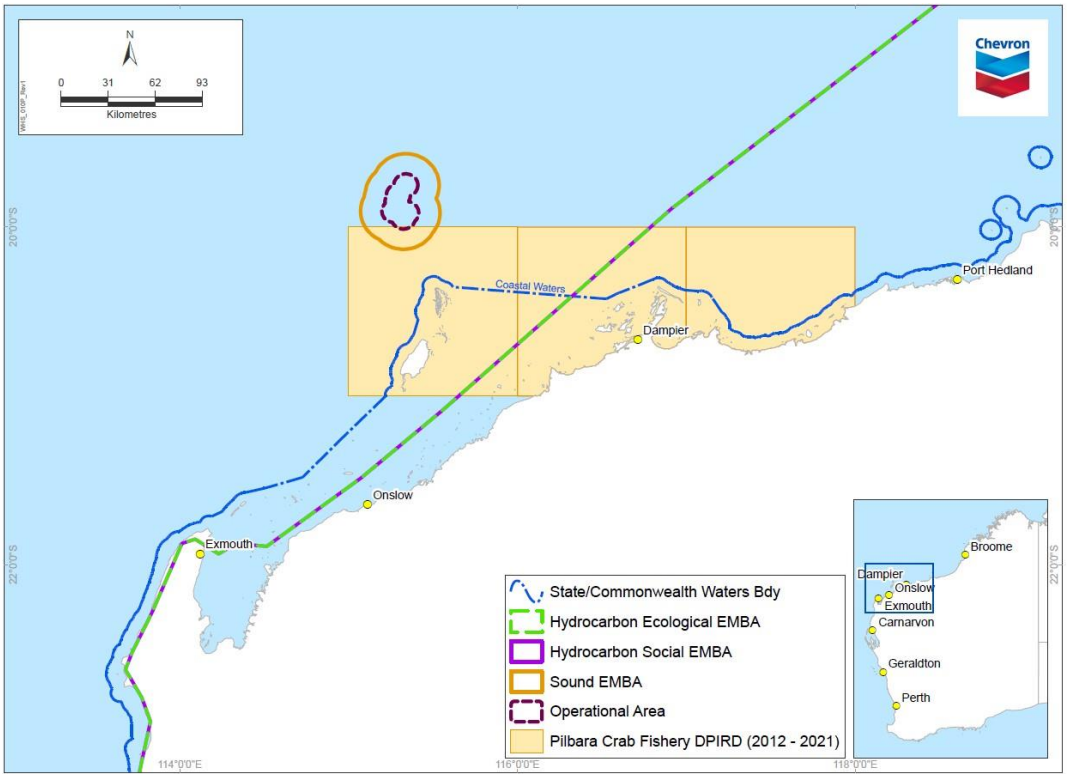


Figure 4-13: Recorded fishing effort (2012-2021) for the Pilbara Crab Fishery within the vicinity of the EMBA

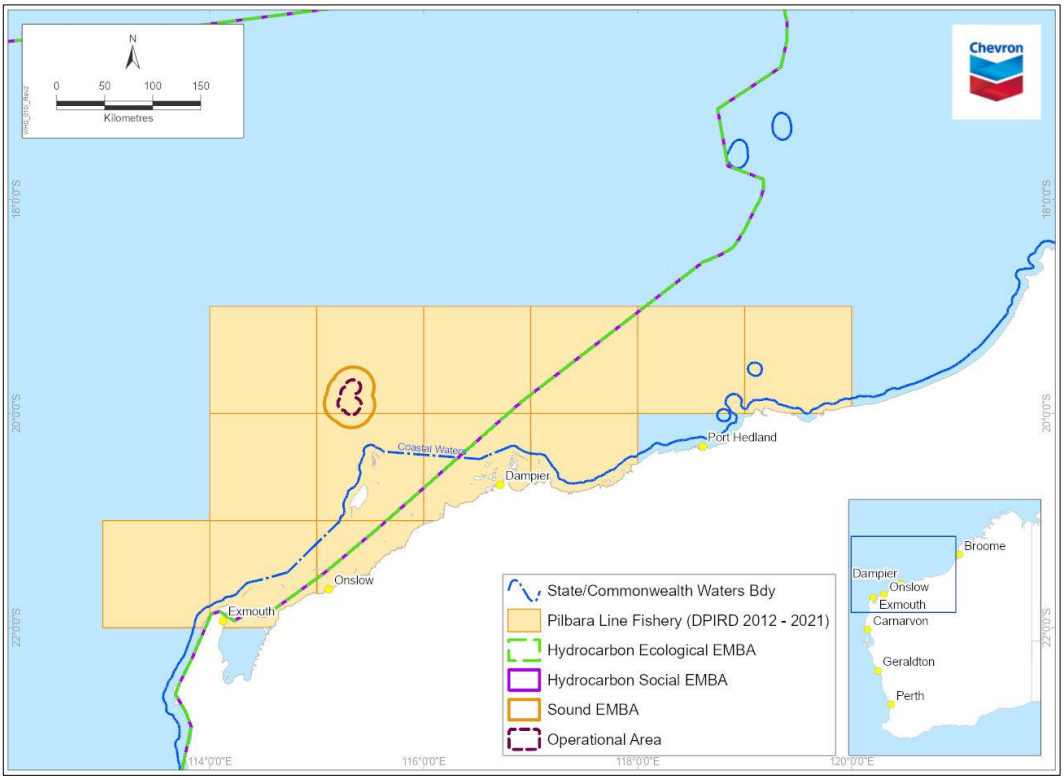


Figure 4-14: Recorded fishing effort (2012-2021) for the Pilbara Line Fishery within the vicinity of the EMBA

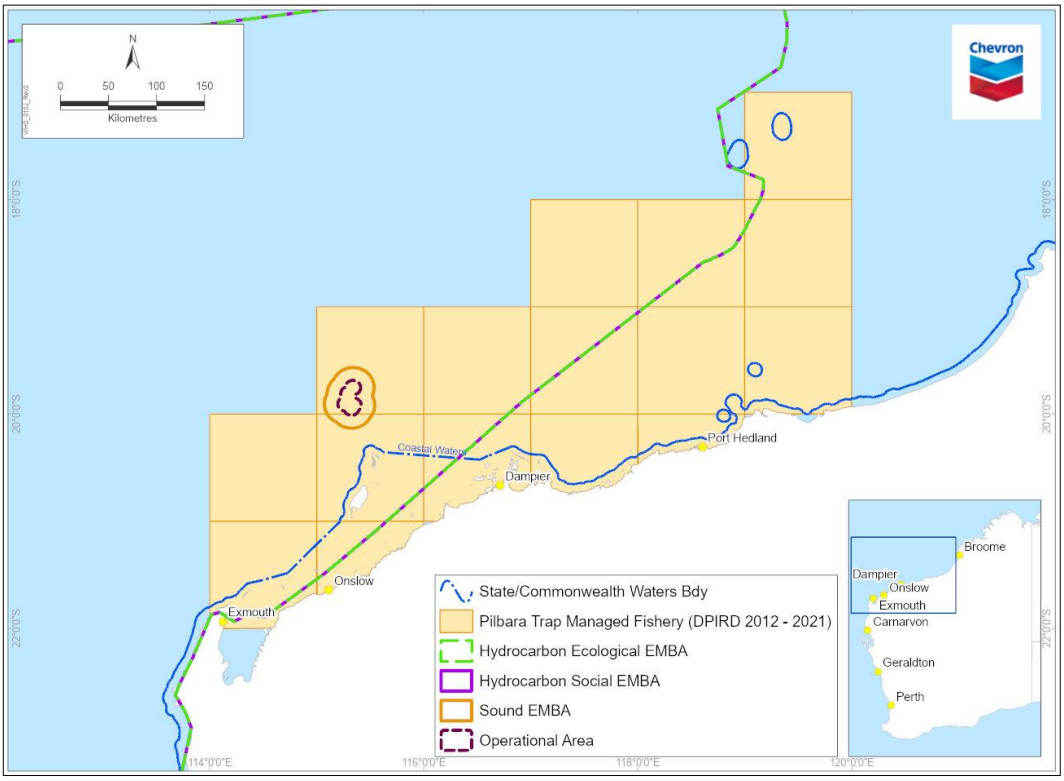


Figure 4-15: Recorded fishing effort (2012-2022) for the Pilbara Trap Managed Fishery within the vicinity of the EMBA

4.4.1.3 Pearling and aquaculture

Pearling and aquaculture operations in the northwest are typically restricted to inland and shallow coastal waters.

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

The Hydrocarbon Ecological EMBA and the Hydrocarbon Social EMBA 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 northeast of Thevenard Island which intersect with the Hydrocarbon Ecological EMBA and the Hydrocarbon Social EMBA.

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. 251). The WA Department of Primary Industries and Regional Development (DPIRD) conducts state-wide recreational fishing surveys every two 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. 252) 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. 267) identified no operations within the OA. There were less than three 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 Ecological EMBA and the Hydrocarbon Social EMBA (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. 253). 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 OA, Sound EMBA, or Hydrocarbon Ecological EMBA. Where shore-based fishing is undertaken, this may intersect with the Hydrocarbon Social EMBA.

The EMBA does not 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 a variety of sources, including satellite shipborne automated identification system (AIS) data, across Australia's Search and Rescue region. This data has been used to develop Figure 4-16, which shows recent vessel traffic (February 2023) within the vicinity of the OA.

The OA is located to the southeast and west of the nearest North West Shelf shipping fairways (Figure 4-16). Commercial vessels transiting the North West Shelf are expected to remain within the fairways and therefore will not typically coincide with the OA. Vessel traffic within and around the OA is most likely to comprise offshore support vessels for the petroleum activity.

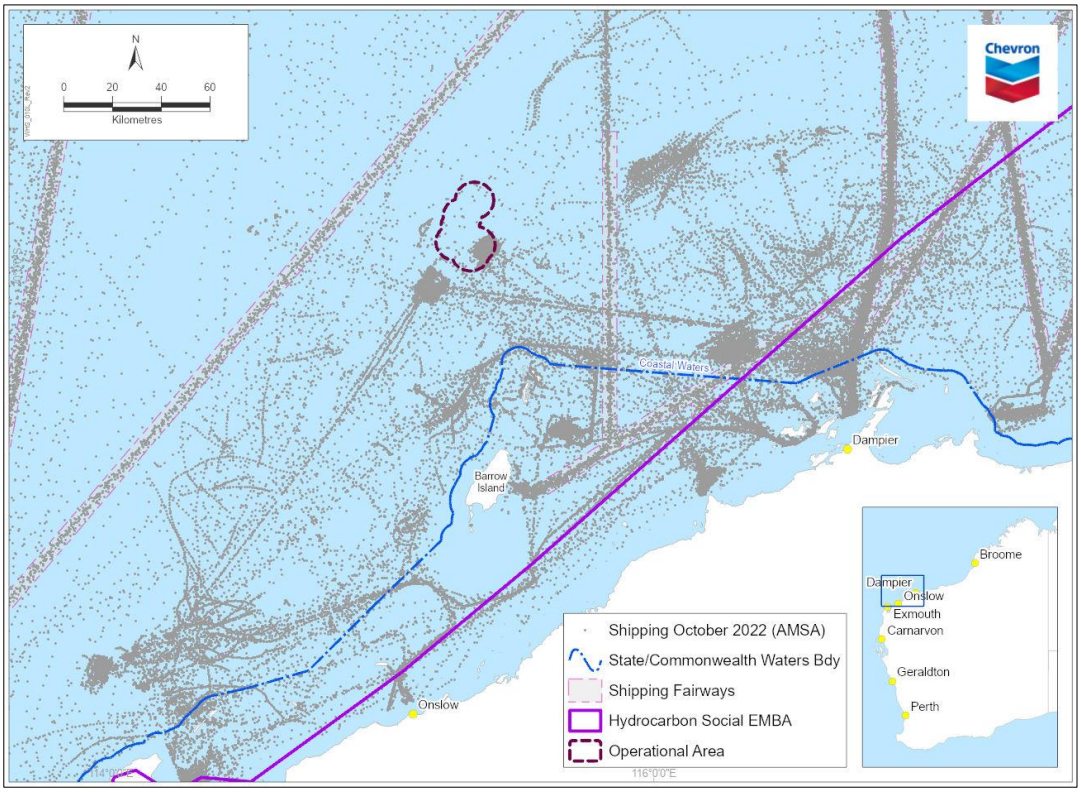


Figure 4-16: Vessel traffic within the vicinity of the EMBA

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. 2). Charter fishing, diving, snorkelling, wildlife watching, and cruising are some of the commercial tourism activities in and adjacent to the NWMR (Ref. 62). With the exception of offshore fishing (Section 4.4.2), most marine tourism and recreational activities occur in the shallower State waters (Ref. 62).

The OA occurs offshore and does 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 OA. The Hydrocarbon Social EMBA does 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). 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 the Cape Range National Park coast 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 (~200 km southwest of the 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. 254), 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. 234).

4.4.6 Other marine and coastal industries

Several other marine and coastal industries may be present within the EMBA (Table 4-17). There were no offshore renewable energy facilities, ports, salt mines, or onshore processing facilities identified within the EMBA.

Table 4-17: Presence of industries

Industry	OA	Sound EMBA	Hydrocarbon Social EMBA
Petroleum exploration and production	✓	✓	✓
Ports (Ashburton Area and Varanus Island Port)			✓
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. 223). 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. 223).

The drilling, well intervention and / or well abandonment activities will be within WA-46-L, WA-47-L, and WA-48-L petroleum titles, that also include ongoing operational activities associated with the Wheatstone LNG Project. Infrastructure from the Wheatstone LNG Project located in this 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 OA.

The Royal Australian Air Force (RAAF) have a base located at Learmonth, and there is a designated maritime firing practices and exercise area associated with this base (Ref. 255). There are no known sites of unexploded ordnance within the OA (Ref. 256). The Navy has three communication stations located on the North West Cape peninsula. The Harold E Hold Area A is located at the tip of the North West Cape, and includes a very low frequency radio, towers and associated infrastructure. Harold E Hold Area A also includes the Point Murat Navy Pier, and the waters extending 400 m around the pier (Ref. 275).

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 15), with

landing port in Port Headland. The submarine cable is expected to be completed by mid-2023.

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. 257).

The North-west Marine Parks Network Management Plan (Ref. 257) 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. 257) 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 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 4-18. The OA overlaps with ~0.5% of the Montebello Marine Park, as shown in Figure 4-17.

Table 4-18: Presence of AMPs

Australian Marine Park^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon 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 located approximately 270 km north-west of Broome, Western Australia, 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 to 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 the majority 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 two 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 located approximately 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 and
- benthic slope communities comprising tropical and temperate species
- deep-water 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.

Australian Marine Park^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon 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. 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 Western Australian state waters boundary, and is adjacent to the Western Australian Barrow Island and Montebello Islands Marine Parks. The Marine Park covers an area of 3,413 km² and water depths from <15 m to 150 m.				

Australian Marine Park^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon 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 listings apply to the Marine Park, however the Marine Park is adjacent to the Western Australia 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 (Recreational Use Zone [IUCN IV], National Park Zone [IUCN II])			✓	✓
The Ningaloo Marine Park stretches approximately 300 km along the west coast of the Cape Range Peninsula, and is adjacent to the Western Australian 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 more than 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				

Australian Marine Park^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
• 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. **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 Western Australian Ningaloo Marine Park, the Muiron Islands, the Western Australian 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 located approximately 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 Western Australian 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; and				

Australian Marine Park^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
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, Western Australia World Heritage Property and Shark Bay, Western Australia National Heritage Place. *Historic shipwrecks* The Marine Park contains approximately 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. 257.*

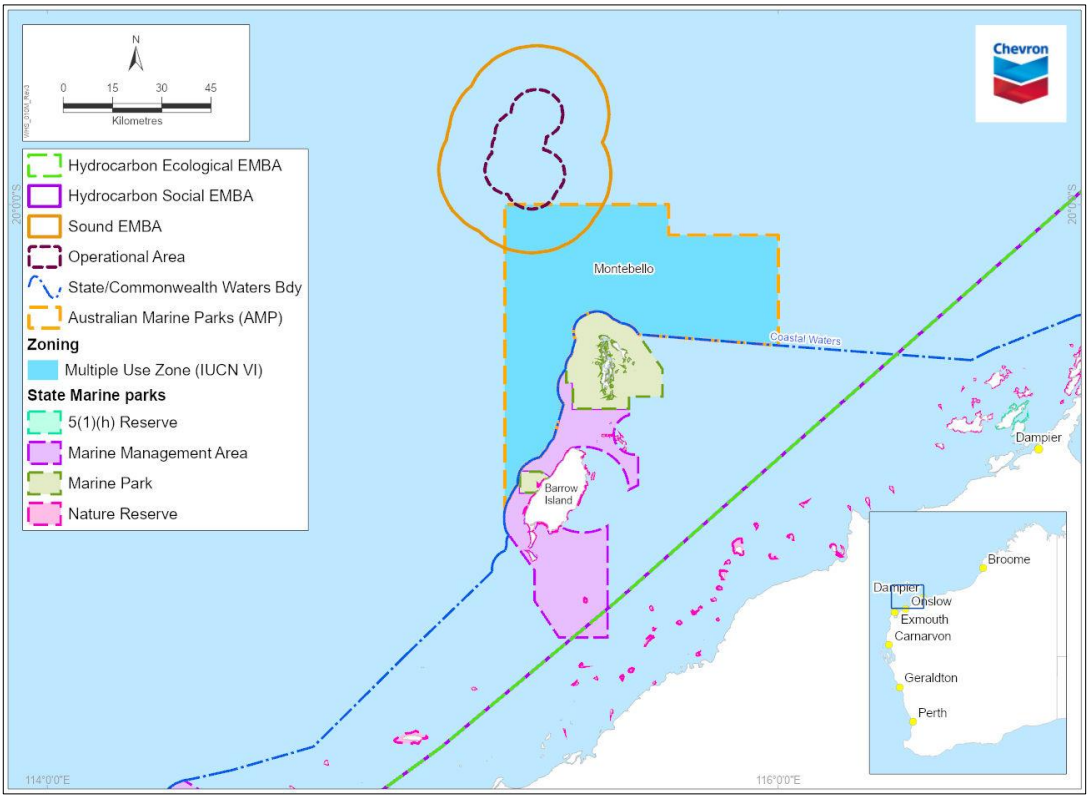


Figure 4-17: Location of Montebello Marine Park within the vicinity of the EMBA

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 and reserves within the OA. The presence of marine parks, management areas and reserves within the EMBA is presented in Table 4-19.

Table 4-19: Presence of state marine parks, management areas and reserves

State marine protected areas	Zone Type (IUCN category)	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon 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)			✓	✓

State marine protected areas	Zone Type (IUCN category)	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
	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)			✓	✓
	MMA (Unclassified) (IUCN VI)			✓	✓
Ningaloo – Marine Park	Sanctuary Zone (IUCN IA)			✓	✓
	General Use (IUCN II)			✓	✓
	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)			✓	✓

4.5.3 State terrestrial protected areas

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

The OA occurs offshore and does 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 OA. The Hydrocarbon Social EMBA does 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 Ecological and Social EMBA are shown in Table 4-20.

Table 4-20: Presence of state terrestrial protected areas

Lands protected areas	Zone Type (IUCN category)	OA	Hydrocarbon Ecological EMBA	Hydrocarbon 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[10]*^	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 4-21 identifies the presence of these, and other marine or coastal heritage protected places, within the EMBA.

Table 4-21: Presence of heritage value

Feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
World Heritage property				
Ningaloo Coast			✓	✓
National Heritage place				
Ningaloo Coast			✓	✓
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)			✓	✓

[10] Specifically, the Hydrocarbon EMBAs interact with Lowendal and Serrurier Islands. The Hydrocarbon Social EMBA also interacts with Bessieres, Muiron and Round Islands.

Feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
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)11				
28 Mile Creek North 1 (Artefacts / Scatter, Midden / Scatter)				✓
5 Mile Well (Cape Range) (Artefacts / Scatter, Engraving, Painting, Quarry, Arch Deposit)				✓
Baler Bluff (Artefacts / Scatter, Midden / Scatter, Shell)				✓
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)				✓
Bloodwood Creek Shoreline (Artefacts / Scatter, Midden / Scatter)				✓
Camp 17 Creek East (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)				✓
Chugori Rockhole (Ceremonial, Grinding Patches / Grooves, Man-Made Structure, Mythological, Water Source)				✓
Coral Bay Access 2 (Artefacts / Scatter, Midden / Scatter)				✓
Coral Bay Skeleton (Skeletal Material / Burial)				✓
Lake Side View (Artefacts / Scatter, Midden / Scatter)				✓

[11] Aboriginal Heritage places within the Department of Planning, Lands and Heritage spatial dataset (Ref. 262) are listed. Heritage sites within the Department of Planning, Lands and Heritage spatial dataset (Ref. 262) include a buffer around sites to protect privacy regarding the location. As such, the identified heritage sites may not be present within the EMBA. There may be other Aboriginal cultural heritage within the meaning of the *Aboriginal Cultural Heritage Act 2021* (WA) present in the EMBA even if not within the Department of Planning, Lands and Heritage spatial dataset (Ref. 262).

Feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
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)				✓
Mandu Mandu Creek South Rockshelter 5 (MMCSR5) (Artefacts / Scatter, Grinding Patches / Grooves, Rockshelter)				✓
Mandu Mandu Creek South Rockshelter 8 (MMCSR8) (Artefacts / Scatter, Rockshelter)				✓
Mandu Mandu Rockshelters. (Artefacts / Scatter, Midden / Scatter, Rockshelter, Arch Deposit, Other: ?)				✓
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)				✓
Montebello Is: Haynes Cave. (Artefacts / Scatter, Midden / Scatter, Rockshelter, Arch Deposit)				✓
Montebello Is: Noala Cave. (Artefacts / Scatter, Midden / Scatter, Rockshelter, BP Dating: 27,220 +/- 640)				✓
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 (Artefacts / Scatter)				✓
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)				✓
Osprey Bay 4 (Artefacts / Scatter, Midden / Scatter)				✓
Osprey Bay 5 (Artefacts / Scatter, Midden / Scatter)				✓
Osprey Bay 6 (Artefacts / Scatter, Midden / Scatter)				✓

Feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
Osprey Bay Interdunal 1 (Artefacts / Scatter, Midden / Scatter)				✓
Osprey Bay Interdunal 2 (Midden / Scatter)				✓
Oyster Stacks Midden (Artefacts / Scatter, Midden / Scatter)				✓
Padjari Manu Cave (Formerly Bunbury Cave) (Artefacts / Scatter, Ceremonial, Engraving, Painting, Arch Deposit, Water Source)				✓
Pap Hill Ochre (Ceremonial, Grinding Patches / Grooves, Rockshelter, Ochre)				✓
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 04 (Artefacts / Scatter)				✓
Point Murat. (Artefacts / Scatter, Midden / Scatter, Skeletal Material / Burial, Camp, Other: ?)				✓
Point Murat/White Opal (Artefacts / Scatter, Midden / Scatter)				✓
Road Alignment 1 (Artefacts / Scatter, Midden / Scatter)				✓
Road Alignment 2 (Artefacts / Scatter, Midden / Scatter)				✓
Road Alignment 3 (Midden / Scatter)				✓
Sandy Bay North (Artefacts / Scatter, Midden / Scatter)				✓
Tulki Well Midden (Artefacts / Scatter, Midden / Scatter)				✓
Twin Hill Fishing Place. (Hunting Place)				✓
Vlaming Head (Ceremonial, Mythological)				✓
Wealjugoo Midden. (Artefacts / Scatter, Midden / Scatter, Camp, Hunting Place)				✓
Yardie Beach Midden (Artefacts / Scatter, Midden / Scatter)				✓
Yardie Creek (Artefacts / Scatter, Midden / Scatter)				✓
Yardie Creek Rockshelters (Artefacts / Scatter)				✓
Yardie Creek South 1 (Artefacts / Scatter, Midden / Scatter)				✓
Yardie Interdunal Swale (Artefacts / Scatter, Midden / Scatter)				✓
Determined areas under the Native Title Act 1993 (Cth)				

Feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
Native Title determination WCD2019/016				✓
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. 258). 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. 259).

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. 258). Intertidal systems such as rocky shores, sandy beaches, estuaries, and mangroves are also present (Ref. 258). The most dominant marine habitat is Ningaloo Reef, which sustains both tropical and temperate marine fauna and flora, including marine reptiles and mammals (Ref. 258).

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. 258). 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. 258).

In addition to the natural values of the Ningaloo Coast, Indigenous values are identified under the National Heritage listing (Ref. 259). 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. 259).

4.6.2 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[12].

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. 301).

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. 22) for known underwater cultural heritage
- consultation with First Nations people and/or representative bodies (relevant persons) 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 4-21). No sunken aircraft, or other types or artefacts, were identified within the EMBA from the database searches.

The consultation undertaken during the preparation of this EP is summarised in Section 6. During this consultation, no specific First Nations underwater cultural heritage has been identified within the EMBA

4.6.3 Aboriginal cultural heritage

The *Aboriginal Cultural Heritage Act 2021* (WA) recognises Aboriginal cultural heritage in the State of Western Australia including State waters. A desktop analysis was undertaken to determine the presence of Aboriginal cultural heritage within the EMBA to the extent that it covers State waters and land. This analysis included:

- searches of heritage sites within the Department of Planning, Lands and Heritage spatial dataset (Ref. 262)
- consultation with First Nations people and/or representative bodies (relevant persons) to identify the presence of Aboriginal cultural heritage in the context of the activities covered by the EP.

Aboriginal Heritage places within the Department of Planning, Lands and Heritage spatial dataset (Ref. 262) that were identified in the EMBA are listed in Table 4-21. Heritage sites within the Department of Planning, Lands and Heritage spatial dataset (Ref. 262) include a buffer around sites to protect privacy regarding the location. As such, the identified heritage sites may not be present within the EMBA. There may be other Aboriginal cultural heritage within the meaning of the *Aboriginal Cultural Heritage Act 2021* (WA) present in the EMBA even if not within the Department of Planning, Lands and Heritage spatial dataset (Ref. 262).

[12] 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 consultation undertaken during the preparation of this EP is summarised in Section 6.

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. 260). 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. 260). The determination area contains places of special significance, such as mythological and ceremonial sites and natural resources (Ref. 260)

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 WCD2018/006

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. 263). 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 provides a description of 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. 23) 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. 24) and the HB 203:2012 *Managing environment-related risk* (Ref. 25).

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, with these values and sensitivities further described in CAPL's *Description of the Environment: CAPL Planning Area* (Ref. 1; Appendix D). In accordance with regulation 13(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 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 that have 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 as a basis for managing environmental impacts and risk.

5.5.2.1 ALARP decision context

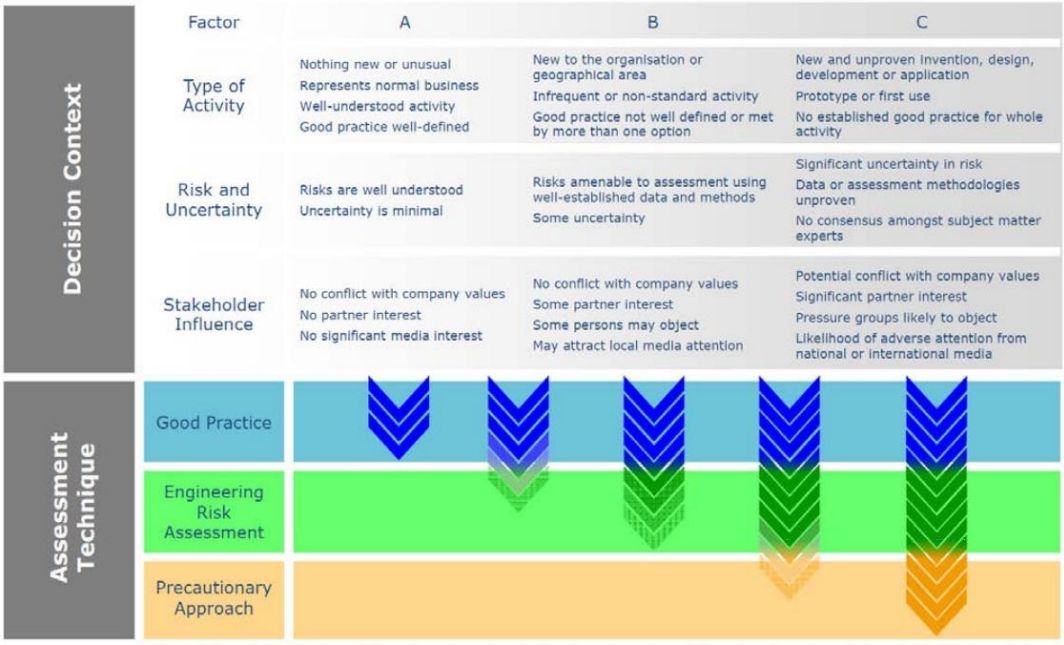
In alignment with NOPSEMA's ALARP guidance note (Ref. 26), CAPL has adapted the approach developed by Oil and Gas UK (OGUK) (Ref. 27) for use in an environmental context to determine the assessment technique required to demonstrate that impacts and risks are ALARP. Specifically, the framework considers the magnitude of impacts and risks along with 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. 27)

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. 27) 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. 27), 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. 27) 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 six 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. 11). 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 or not to approve the taking of an action. The precautionary principle (section 391(2) of the EPBC Act) is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there 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.
(c) the principle of inter-generational equity – that the present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations	The risk assessment methodology ensures that 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	Evaluate if there is the potential to affect biological diversity and ecological integrity.

Principles of ESD	How they have been applied
should be a fundamental consideration in decision-making	
(e) 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. 26), 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. 11) 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-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 the management of the identified environmental risks as:

- **Environmental performance outcomes**—a measurable level of performance required for the management of environmental aspects of an activity to ensure that environmental impacts and risks will be of an acceptable level
- **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. 11), 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 provides a description of the methods used, and outcomes of, consultation with relevant authorities, persons, or organisations (*a relevant person*) undertaken during the preparation of this EP, as required under regulation 11A of the OPGGS(E)R.

Ongoing consultation, as required under regulation 14(9) of the OPGGS(E)R, is described in Section 8.3.4.2.

6.1 Purpose

Regulation 11A 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 11A assists in understanding the purpose of the consultation required under the provision:

> *"Regulation 11A, 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."*[13]

The consultation process should also inform the titleholder's understanding of the environment, including (amongst 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. 288). 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

[13] Paragraph 89 of *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Ref. 290).

- to inform NOPSEMA of relevant persons' identities, the nature of the consultation, and the control measures adopted (Ref. 290 at paragraphs 55–57).

Regulation 11A establishes a duty an obligation on titleholders to carry out consultation with relevant persons during preparation of in the course of preparing an EP, and this obligation must be discharged prior to submitting an EP to NOPSEMA (Ref. 288).

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. 37) and was further guided by:

- NOPSEMA's *Environment plan decision making guideline* (Ref.11)
- NOPSEMA's *Environment plan content requirements guidance note* (Ref. 289)
- NOPSEMA's *Consultation in the course of preparing an environment plan guideline* (Ref. 288)
- NOPSEMA's *Consultation with Commonwealth agencies with responsibilities in the marine area guideline* (Ref. 291)
- NOPSEMA's *Petroleum activities and Australian Marine Parks guidance note* (Ref. 292)
- Full Court of the Federal Court of Australia's decision in *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Ref. 290)
- 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. 293)
- Government of Western Australia's *Aboriginal Cultural Heritage Act 2021-Consultation Guidelines* (Ref. 294)
- 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 Australia* (Ref. 295)
- Australian Fisheries Management Authority's (AFMA) Petroleum industry consultation with the commercial fishing industry (Ref. 296)
- Western Australian Fishing Industry Council's (WAFIC) *Oil & Gas Consultation Approach for Unplanned Events* (Ref. 297)
- DPIRD's *Guidance statement for oil and gas industry consultation with the Department of Fisheries* (Ref. 298)

- WA Department of Transport's (DoT) *Offshore Petroleum Industry Guidance Note - Marine Oil Pollution: Response and Consultation Arrangements* (Ref. 299).

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 11A(1) of the OPGGS(E)R, a relevant person is defined as:

- regulation 11A(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 11A(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 11A(1)(c)-the department of the responsible State Minister, or the responsible Northern Territory Minister;
- regulation 11A(1)(d)-a person or organisation whose functions, interests, or activities may be affected by the activities to be carried out under the EP, or the revision of the EP;
- regulation 11A(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. 290), and subsequent NOPSEMA guidance (Ref. 289), it is clear that the phrase “functions, interests or activities” stated in regulation 11A(1)(d) should be broadly construed[14] 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 11A(1)(d) as follows:

- **functions**—a power or duty to do something[15]
- **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"[16]

[14] Paragraph 51 of Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 (Ref. 290).

[15] Paragraph 60 of Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 (Ref. 290).

[16] Paragraphs 63 and 65 of Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 (Ref. 290).

- **activities**—to be read broadly and is broader than the definition of 'activity' in regulation 4 of the OPGGS(E)R and is likely directed to what the relevant person is already doing[17]

Persons or organisations are considered relevant persons under regulation 11(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. 291 at paragraphs 96–102) and has sought to do so through meetings (Ref. 291 at paragraph 104). CAPL has sought to 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. 291 at paragraph 47) and CAPL has also sought to identify those representative body organisations themselves as relevant persons (Ref. 291 at paragraph 48). As documented in the summary of consultation (Appendix D), CAPL has asked these representative bodies if there are persons or knowledge holders outside of the individuals they represent who may be 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 11A(2) of the OPGGS(E)R and NOPSEMA's guidelines (Ref. 21; Ref. 288), 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 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:

[17] Paragraphs 58 and 59 of Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193 (Ref. 290).

- 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 following is a summary of materials released as part of the consultation for this EP:

- CAPL issued an initial factsheet to identified relevant persons in October 2022 and again in February 2023; this factsheet included information about the proposed petroleum activity, potential impacts and risks, control measures, and included maps showing EMBA
- CAPL released information regarding the proposed Wheatstone Well Intervention and Infill Drilling works to the Online Consultation Hub (https://australia.chevron.com/our-businesses/upcoming-activities) on 3 February 2023 and emailed the link to relevant persons; the Online Consultation Hub contains all the base level of information as described above
- CAPL published notices in The Australian and The West Australian on 3 February 2023; in the Pilbara News, Mid-West Times, and Northwest Telegraph on 8 February 2023, in Business News on 13 February 2023, and National Indigenous Times on 21 February 2023
- CAPL published a LinkedIn post on 24 February 2023 with a link to the Online Consultation Hub that has information regarding Wheatstone Well Intervention and Infill Drilling works
- CAPL developed posters, presentation materials, and handouts for use and distribution in face-to-face meetings
- CAPL attended various face-to-face meetings with relevant persons (see Appendix D)
- CAPL held an information session in the town of Onslow outlining its planned activities, including Wheatstone Well Intervention and Infill Drilling works, on 14 March 2023.

A copy of the consultation material is included in appendix c. A summary of the consultation strategy and information provided to each category of relevant persons is included in Table 6-1.

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 • provision of 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 inputreceived 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 (as outlined in Section 6.2.3), 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 • provision of 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 – determine the adequacy of consultation material provided and confirm if any additional information is required for relevant persons to provide input – confirmation of 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

Category of persons or organisations	Consultation strategy and information provided
	• 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 (as outlined in Section 6.2.3), 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	• provision of 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 (as outlined in Section 6.2.2), 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 (as outlined in Section 6.2.3), 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 11A(3) of the OPGGS(E)R and NOPSEMA's guidelines (Ref. 11; Ref. 288), 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. 289), however, consistent with the Court's analysis in the "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. 11) or up to eight weeks (Ref. 292).

Available guidance regarding consultation with State departments or agencies indicates a reasonable period for standard activities is no less than 20 business days (Ref. 298), and up to six weeks (Ref. 299).

Guidance taken from the *Aboriginal Cultural Heritage Act 2021—Consultation Guidelines* (Ref. 294) suggests that up to 12 weeks may be a reasonable period of time to allow identification, contact, and response, from First Nations peoples (subject to any alternative timeframe being agreed through co-design of consultation).

CAPL provided all relevant persons an initial period following the issue of consultation materials to respond. Where no response was received, CAPL followed up with each relevant person (via phone, email, or in person) to enquire if there was 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 11(A)(3) 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 9(8) of the OPGGS(E)R "[a]ll sensitive information (if any) in an environment plan, and the full text of any response by a relevant person to consultation under regulation 11A 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 regulations 9(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 11A 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. 288), titleholders must identify who is a relevant person and the rationale used to determine that identification as a relevant person.

Identifying relevant persons requires an assessment of:

- the petroleum activity (Section 3)
- the environment in which the petroleum activity is being undertaken, including:
- environmental, socio-economic, 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 the identification of relevant persons:

- identified what types of authorities, persons, or organisations may be relevant to the values and sensitivities present within the EMBA
- reviewed the functions, interests, or activities of the types of authorities, persons, or organisations identified, and determined 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. 291; Ref. 292; Ref. 296; Ref. 297; Ref. 298; Ref. 299)
  - CAPL's previous consultation history for activities on the NWS
  - advice from representative industry and/or community bodies
  - online searches
  - review 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 6-2. This table lists the relevant persons that were identified for this EP, and CAPL’s reasoning for determining their inclusion.

Table 6-2: Potential authority, persons, or organisations that have functions, interests, or activities that are 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 DC2 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 located 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

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
	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 recreational activities where the OA intersects the Montebello AMP.	Government departments or agencies Tourism and recreation operators
	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	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 whilst implementing the activities within the scope of this EP, incidences of fauna strike are not expected.	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
intervention and / or well abandonment activities.				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.	
Seabed disturbance – • MODU—installation and removal of mooring anchors (8-12) within the 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 installation of	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 Changes to cultural heritage values	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 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	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
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.				values, in particular with respect to the protection of sea country.	
Light emissions – • MODU—navigational and operational lighting from the MODU within the OA during the	Marine environmental quality Marine fauna Cultural values	Interest and activity – Environmental conservation Cultural connections	A localised and temporary change in ambient light Change in fauna behaviour for light-sensitive species	The petroleum activities are expected to result in localized, temporary changes to ambient light no greater than a radius of ~1.4 km from the MODU and vessels.	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
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)				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.	

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
Air emissions – • well intervention or clean-ups-venting of hydrocarbons within wellbore • well testing and flow-back (contingency only) • 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	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 that relevant persons may hold interests relevant to this aspect.	Government departments or agencies First Nations people and/or representative bodies ENGOs
Underwater sound – • drilling, well intervention and /	Marine environmental quality	Interest and activity – Environmental conservation	Localised and temporary change in	The petroleum activities are expected to result in localized and short term changes to ambient acoustic levels.	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
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 fauna Cultural values Commercial fishing Tourism and recreation	Cultural connections Commercial fishing Recreational fishing Marine recreation	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	Acoustic modelling for vessels indicated that behavioural noise effect criteria for all cetaceans may be met within 13.2 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, 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.	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
				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 implementation of: • 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	Benthic habitat and communities Cultural values	Interest and activity – Environmental conservation Cultural connections	Displacement of, or competition with, native species.	The OA is in water depths of ~115 to 240 m, is located offshore from the mainland coast and large ports, and the seabed is predominantly soft sediments. Thus, the more favourable	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
• the presence of biofouling on vessels undertaking well intervention and / or well abandonment activities within the OA				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—	Marine environmental quality	Interest and activity – Environmental conservation	Localised and temporary reduction in water quality	Impacts and risks associated with planned discharges of drill cuttings and fluids are expected to be limited 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
planned and contingency activities (various discharges including drilling fluids and cuttings, spacer fluids, completions fluids and wellbore clean-up fluids) • well abandonment—metal swarf cuttings, and wellbore content (consisting of seawater and viscous sweeps, e.g. bentonite).	Benthic habitat and communities Marine fauna Cultural values	Cultural connections	Alteration/smothering of benthic habitat Indirect impacts to fauna arising from chemical toxicity	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 the following KEFs: • Continental slope demersal fish communities • Ancient coastline at 125m depth contour. Although these two 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 period of 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.	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
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
Unplanned release – waste • vessel operations during well intervention and / or well abandonment	Marine fauna Cultural values	Interest and activity – Environmental conservation Cultural connections	Marine pollution resulting in entanglement or injury/mortality of marine fauna.	Unplanned releases of waste may result in impacts to injury/mortality 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	Government departments or agencies First Nations people and/or representative bodies

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
activities within the OA				relevant to the values and sensitivities that may be impacted by this aspect.	
Unplanned release – loss of containment • using, handling, and transferring hazardous materials and chemicals on board (<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	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 cultural heritage values 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	Interest and activity – Environmental conservation	Potential to cause further harm to oiled fauna due to hazing,	Oiled wildlife response has the potential to result in injury/mortality to fauna, however will only be	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
	Cultural values	Cultural connections	barriers, deterrents, and cleaning activities, and has the potential to cause injury/death.	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.	First Nations people and/or representative bodies

6.2.5.1 Self-identification

As part of the consultation process (Figure 6-1) CAPL publicly advertised upcoming petroleum activities (refer to Section 6.2.2), to allow for any authorities, persons, or organisations that have not already been 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 was 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.

Where an authority, person, or organisation does self-identify, CAPL conducted an assessment of the merits and claims and a response was progressed (as per the process in Section 6.3.6).

6.3 Consultation process

The consultation undertaken during the preparation of this EP used the following process (Figure 6-1):

- described the petroleum activity
- identified environmental aspects
- defined the EMBA and identified environmental values and sensitivities
- evaluated environmental impacts and risks and demonstrated these are reduced to ALARP and acceptable levels
- identified functions, interests, or activities that may be affected
- identified relevant persons
- undertook consultation, including provision of sufficient information to enable relevant persons to understand how this activity may affect their functions, interests, or activities
- requested input from all relevant persons with the intent of identifying opportunities to better manage the activity and enhance the EP for the activity
- considered all input provided and assessed the merit of any objections or claims raised by the relevant persons
- provided a response to the objection or claim, and ensured the response was captured in the EP.

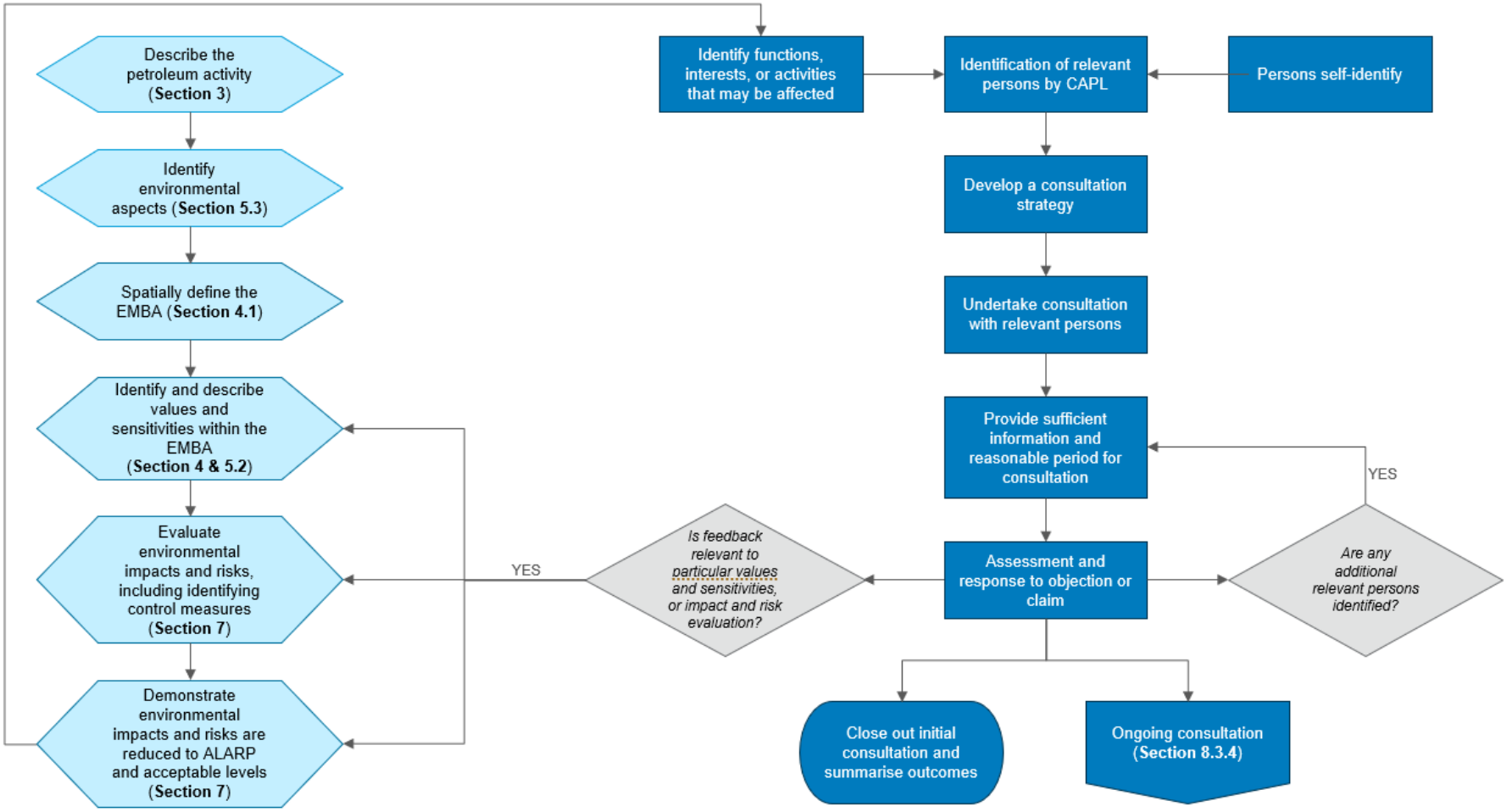


Figure 6-1: Relevant persons consultation process

6.3.1 Relevant persons under regulation 11A(a) and (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 riskssociated with the petroleum activity
- the responsibilities of the Commonwealth or State department or agency, which was determined by:
- CAPL's previous consultation history for petroleum activities on the NWS
- online searches
- published guidance, including NOPSEMA's Consultation with Commonwealth agencies with responsibilities in the marine area guideline (Ref. 291).

The Commonwealth and State departments or agencies that were identified as a relevant person for consultation during the preparation of this EP are presented in Table 6-3.

6.3.2 Relevant persons under regulation 11A(c)

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 Mines, Industry, Regulation and Safety (DMIRS) has been identified as a relevant person for consultation during the preparation of this EP (Table 6 4).

6.3.3 Relevant persons under regulation 11A(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).

The persons or organisations that were identified as a relevant person for consultation during the preparation of this EP are presented in Table 6 4.

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 ABARES data) occurring within the Hydrocarbon EMBAs

Category of persons or organisations	Considerations for determining a relevant person
	• 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 State commercial fisheries: • guidance from WAFIC (Ref. 297) 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 utilise 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

Category of persons or organisations	Considerations for determining a relevant person
	• other State (based on spatial data from DMIRS) petroleum titles that intersect with the Hydrocarbon EMBAs, and with current or proposed activities occurring (based on publicly available EP summaries from DMIRS 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 • where an AMP is present within the Hydrocarbon EMBAs, a review of the 'authorisations issued' from Parks Australia (Ref. 283) • 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 11A(e)

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 11(A)(d) (using the process as described in Section 6.3.3), 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 application of the methodology and identification, the relevant persons identified for the purposes of regulation 11A 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 Wheatstone Intervention and Infill Drilling EP

Relevant person	Rationale
Commonwealth department or agencies (regulation 11A(1)(a))	
Australian Communications and Media Authority (ACMA)	ACMA is a relevant agency for consultation where an activity has the potential to impact economic or social benefits communications infrastructure for Australia. As identified in Section 4.4.6, the EMBA overlaps existing submarine cables. Therefore, the activities under the EP may be relevant to ACMA.
Australian Fisheries Management Authority (AFMA)	As identified in NOPSEMA's consultation guideline (Ref. 23) 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. 23) AHO is a relevant agency for consultation when nautical products or other maritime safety information is required to be updated. Vessel operations are required for the activities within scope of this EP (Section 3.5.1), 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. 23) 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. 23) 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. 23) 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.

Relevant person	Rationale
Department of Climate Change, Energy, Environment and Water (DCCEEW)	As identified in NOPSEMA's consultation guideline (Ref. 23) 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. 23) 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 • 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 11A(1)(b))	
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 Western Australian waters. The MEER's role is to develop marine oil spill response capabilities, provide resources and support during response operations, training programs, assist in the development of 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 (DWER)	DWER supports Western Australia'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.

Relevant person	Rationale
Pilbara Ports Authority	The Pilbara Ports Authority assumes oversight of Barrow Island, Onslow, Port of Ashburton and more and operates as a corporatized 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 11A(1)(c))	
Department of Mines, Industry, Regulation and Safety (DMIRS)	DMIRS is the department of the responsible State Minister. Therefore, they are considered a relevant person as per Regulation 11A(1)(c) of the OPGGS(E)R.
Person or organisation whose functions, interests, or activities may be affected by the petroleum activity (regulation 11A(1)(d))	
First Nations people and/or representative bodies	
Nganhurra Thanardi Garrbu Aboriginal Corporation	The Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) was registered in 2019 to represent, protect and support the interests of the Baiyungu, Thalanyji and Yinggarda People. 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. 186) 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 PBC and the Baiyungu, Thalanyji and Yinggarda People.
Baiyungu People	
Thalanyji People	
Yinggarda People	
Wirrawandi Aboriginal Corporation Registered Native Title Body Corporate	Wirrawandi Aboriginal Corporation RNTBC was registered in 2018 to hold and manage the native title rights and interests for the Mardudhunera and Yaburara people. Native Title determination WCD2018/006) intersects with the EMBA (Section 4.6.3). Therefore, the activities under the EP may be relevant to this PBC and the Mardudhunera and Yaburara people.
Mardudhunera People	
Yaburara People	
Yinggarda Aboriginal Corporation	The Yinggarda Aboriginal Corporation was registered in 2019 to represent, protect and support the interests of the Yinggarda People. Native Title determination WCD2019/016 intersects with the EMBA (Section 4.6.3). Therefore, the activities under the EP may be relevant to this PBC and the Yinggarda People.
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

Relevant person	Rationale
Commonwealth Fisheries Association	such, these organisations have functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
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.
Ningaloo Visitor Centre	Ningaloo Visitor Centre is located in Exmouth and provides advice and services to both locals and tourists. 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.
Boating Industry Association Western Australia (BIAWA)	BIAWA is the voice of the West Australian recreational boating industry, with the main purpose to promote and encourage safe boating and other aquatic sports and pastimes within WA. 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.
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	

Relevant person	Rationale
Ebb and Flow / Glass Bottom Boats	
Exmouth Dive and Whalesharks Ningaloo	
Image Dive and Charters	
Live Ningaloo	
Mackerel Islands and Onslow Beach Resort	
Mahi Mahi Charters	
Montebello Island Safaris	
Ningaloo Blue Dive	
Ningaloo Glass Bottom Boat	
Ningaloo Whaleshark n Dive	
Ningaloo Whaleshark Swim	
Sail Ningaloo	
Top Gun Charters	
View Ningaloo	
Wilderness Island	
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 11A(1)(d) of the OPGGS(E)R.
Onslow Chamber of Commerce and Industry	
Shire of Ashburton	

Relevant person	Rationale
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 11A(1)(d) of the OPGGS(E)R.
Other petroleum titleholders	
British Petroleum (BP)	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 11A(1)(d) of the OPGGS(E)R.
Carnarvon Energy	
Eni Australia	
Exxon Mobil	
Jadestone Energy	
Kato Energy / Kato NWS Pty Ltd	
Kufpec	
PGS Australia Pty Ltd	
Santos	
Sapura OMVUPstream	
Terrafirma Offshore Pty Ltd	
TGS NOPEC Geophysical Company Pty Ltd	
Vermillion Oil and Gas	
Western Gas	
Woodside	

Relevant person	Rationale
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 11A(1)(d) of the OPGGS(E)R.
Cape Conservation Group	
Protect Ningaloo	
Other	
Australian Institute of Marine Science (AIMS)	AIMS undertake research at Rankin Bank. The EMBA for this EP overlaps Rankin Bank (Section 4.3.1). Therefore, AIMS may be considered relevant persons under regulation 11A(1)(d) of the OPGGS(E)R.
Australian Marine Oil Spill Response Centre (AMOSC)	AMOSC are a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the environment plan. Therefore, they are considered relevant persons under regulation 11A(1)(d) of the OPGGS(E)R.
Oil Spill Response Limited	Oil Spill Response Limited are a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the environment plan. Therefore, they are considered relevant persons under regulation 11A(1)(d) of the OPGGS(E)R.
Vocus Communications	Vocus Communications are a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the environment plan. Therefore, they are considered relevant persons under regulation 11A(1)(d) of the OPGGS(E)R.
Any other person or organisation that the titleholder considers relevant (regulation 11A(1)(e))	
First Nations people and/or representative bodies	
Baiyungu Aboriginal Corporation (BAC)	The Baiyungu Aboriginal Corporation was registered to represent, protect and support the interests of the Baiyungu People. While no Native Title determination currently exists within the EMBA and this group have not been identified as having responsibilities for sea country for the AMPs within the EMBA, under regulation 11(A)(1)(e) CAPL selected to include the BAC in consultation. Note that CAPL has consulted NTGAC which also represents the Baiyungu People.
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	The Buurabalayji Thalanyji Aboriginal Corporation was registered in 2008 to represent, protect and support the interests of the Thalanyji People. While no Native Title determination currently exists within the EMBA and this group have not been identified as having responsibilities for sea country for the AMPs within the EMBA, under regulation 11(A)(1)(e) CAPL selected to include the BTAC in consultation. Note that CAPL has consulted NTGAC which also represents the Thalanyji People.

Relevant person	Rationale
Ngarluma Registered Native Title Body Corporate (NRNTBC)	The Ngarluma Registered Native Title Body Corporate was registered in 2005 to represent, protect and support the interests of the Ngarluma and Yindjibarndi People. While no Native Title determination currently exists within the EMBA and this group have not been identified as having responsibilities for sea country for the AMPs within the EMBA, under regulation 11(A)(1)(e) CAPL selected to include the NRNTBC in consultation.
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	The Ngarluma Yindjibarndi Foundation Ltd. Is the Traditional Owner organisation that delivers social and economic outcomes for its members and broader community. While no Native Title determination currently exists within the EMBA and this group have not been identified as having responsibilities for sea country for the AMPs within the EMBA, under regulation 11(A)(1)(e) CAPL selected to include the NYFL in consultation.
Commercial fishery licence holders and/or representative bodies	
Australian Council of Prawn Fisheries	Australian Council of Prawn Fisheries is made up of industry bodies and companies that deal with wild prawns or the prawn industry. Commercial prawn fisheries operate outside the boundary of EMBA, however under regulation 11(A)(1)(e) CAPL selected to include the council in consultation.
Northern Prawn Fishery	Northern Prawn Fishery targets prawns in northern Australian waters. The Northern Prawn Fishery operates outside the boundary the EMBA, however under regulation 11(A)(1)(e) CAPL selected to include the fishery in consultation.
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 11(A)(1)(e) CAPL selected to include the council in consultation.
Cygnet Bay Pearl Farm	These pearling operators have operations occurring outside the boundary of EMBA, however under regulation 11(A)(1)(e) CAPL selected to include the council in consultation.
Maxima Pearling Company	
Paspaley Pearls	
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 11(A)(1)(e) CAPL selected to include the WRL Council in consultation.
Tourism and recreation operators	
Tourism Western Australia	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 11(A)(1)(e) CAPL selected to include this organization in consultation.

Relevant person	Rationale
Karratha Tourism and Visitor Centre	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 11(A)(1)(e) CAPL selected to include this organization 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 11(A)(1)(e) CAPL selected to include this organization in consultation.
City of Karratha	
Gascoyne Development Commission	
Karratha and Districts Chamber of Commerce and Industry	
Shire of Carnarvon	
Other	
Member for Pilbara	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 11(A)(1)(e) CAPL selected to include this organization in consultation.
Member of Legislative Authority – North West Central	
Member of Mining and Pastoral Region	
Minister for Environment WA	The Minister of the Environment is tasked with the protecting the natural environment and promoting conservation. 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 11(A)(1)(e) CAPL selected to include this organization 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 11(A)(1)(e) CAPL selected to include this organization in consultation.
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

Relevant person	Rationale
	EMBA for this EP intersects Commonwealth and State waters around Exmouth, and therefore under regulation 11(A)(1)(e) CAPL selected to include this organization in consultation.
Gascoyne Junction Community Resource Centre	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 11(A)(1)(e) CAPL selected to include this organization in consultation.
Coral Bay Progress Association	
Care for Hedland Environmental Association	
WA Coastal and Marine Community Network	
WA Marine Science Institute	The Western Australian Marine Science Institution (WAMSI) is a collaboration of state and federal government and academic science organisations working together to provide independent marine research for the benefit of the environment, the community and the Blue Economy. 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 11(A)(1)(e) CAPL selected to include this organization in consultation.
Western Australian Museum	The Western Australian 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 11(A)(1)(e) CAPL selected to include this organization in consultation.
Centre for Whale Research Western Australia	The Centre for Whale Research (Western Australia) Inc. is a non-profit research established in 1993 to conduct scientific research into marine mammals. 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 11(A)(1)(e) CAPL selected to include this organization in consultation.
Wilderness Society	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 11(A)(1)(e) CAPL selected to include this organization in consultation.
Whale and Dolphin Conservation Society	
International Fund for Animal Welfare (IFAW)	
Greenpeace	

Relevant person	Rationale
Coral Futures Corporation	
Conservation Council of Western Australia	
Australian Conservation Foundation	

6.3.6 Assessment and response

CAPL has assessed the merits of all objections and claims regarding the consequences of the petroleum activity on a relevant persons functions, interests, or activities received during the consultation period that relate to the petroleum activity, consistent with regulation 16(b)(ii) of the OPGGS(E)R. This was done by evaluating appropriate evidence, including evidence provided by the relevant person submitting the objection or claim, and identifying 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 through the application of appropriate control measures. CAPL considers 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 summarises these statements and explains why they have not been considered in preparing the EP.

A summary of the outcomes of consultation undertaken with relevant persons during the preparation of this EP is provided in Appendix D. The table provides a description of the matters, objections or claims, assessment of 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 all consultation undertaken 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 16 of the OPGGS(E)R requires that an EP contain:

- a report on all consultations under regulation 11A 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 10A(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”.

A summary of each response, CAPL’s assessment of the merits of any objection or claim, and CAPL’s response to each objection or claim is provided within

Appendix D. The consultation summary also describes what (if any) changes to the EP, including control measures, were made in response to each objection or claim.

6.3.8 Conclusion on consultation

CAPL has provided sufficient information and reasonable time to enable these relevant persons to make an informed assessment of the possible impacts and risks of the petroleum activity on their functions, interests or activities, and sufficient time to provide relevant feedback for CAPL to assess relevant persons claims and action the assessment and response. CAPL commits to ongoing consultation with relevant persons as outlined in Section 8.3.4.2.

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 13(5), 13(6) and 13(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	–	–	–	A	Yes	Yes
7.4	Light emissions	6	6	5	10	A	Yes	Yes
7.5	Air emissions	6	–	–	–	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	–	–	–	A	Yes	Yes
7.12	Planned discharges—BOP fluids	6	–	–	–	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

Source

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

- 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 DC2 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 OA during the drilling, well intervention and / or well abandonment activities. The OA consists of an area of 588 km^2. It is expected that each infill well drilled will take approximately 65 days (approximately 455 days for all seven wells) (Section 3.1.2). This includes drilling, completing and suspending each infill well, 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 will be located within the proposed 500 m safety exclusion zone around the MODU. CAPL also intends to apply for a 500 m safety exclusion zone for all new wells 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 seafloor have been identified as commercial fisheries that utilise 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.

No Commonwealth managed commercial fisheries using trawl or trap methods are active within the OA (Section 4.4.1.1). Of the State managed fisheries with management areas that overlap the OA, and have recent fishing efforts recorded (Section 4.4.1.2), two also use trap methods that would intersect with the seafloor: the Pilbara Trap Managed Fishery, and the Pilbara Crab 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 OA. The Pilbara Crab Managed Fishery does not regularly record active fishin within the OA, with only one year (2016) within the previous ten-year period recorded (Section 4.4.1.2).

Subsea infrastructure has been in place within the OA for several years (installation completed in 2015), 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.

In addition, as the new wellheads and subsea equipment will be located within a proposed exclusion zone towards the center of the OA, this risk is further mitigated.

The stationary presence of the MODU and the use of support vessels during the drilling, well intervention and / or well abandonment activities has the potential to result in a disruption to other marine users, including commercial shipping or fishing vessels.

As identified in Section 4.4.1, there are three commercial fisheries with recent fishing effort that overlap the OA. The commercial fisheries include one Commonwealth managed fishery (North west Slope Trawl Fishery), and two State managed fisheries (Pilbara Line, and Pilbara Trap fisheries). Although Commonwealth and State fisheries are present, the level of fishing effort within the OA is typically low. Fishing effort records obtained from DPIRD (Ref. 18) for State managed commercial fisheries indicate that fishing effort within the OA varies each year, but that there may be up to >6 vessels operating some years. Fishing activity within the Commonwealth North West Slope Trawl Fishery is restricted to waters >200 m water depth. The entire fishery has a small number of active permits and vessels (e.g., seven permits and four vessels were active during the 2018-2019 season [Ref. 1, Appendix D]). Any deviation required by fishing vessels around the MODU (and its safety exclusion zone) or the support vessels within the OA, is not expected to impact on the functions, interests, or activities of other marine users.

The OA is predominantly located outside major shipping fairways and commercial vessel traffic density within the OA is low (4.4.4). Therefore, the presence of the MODU and support vessels within the OA 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.

Because exclusion zones are already in place around the existing production wells, and only seven additional production wells are to be drilled, the potential impacts are limited to the drilling period, which is ~65 days per well. Consequently, any impacts would be practically indistinguishable, with little to no potential impacts to, or concerns from, affected external stakeholders.

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.

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.

<table>
<tr><td>Marine Safety Reliability and Efficiency (MSRE) process</td><td colspan="2">Chevron Marine Standard Non Tankers: Corporate OE Standard (Ref. 31) 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.</td></tr>
<tr><td colspan="3">Additional control measures and cost benefit analysis</td></tr>
<tr><td>Control measure</td><td>Benefit</td><td>Cost</td></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td colspan="3">Likelihood and risk level summary</td></tr>
<tr><td>Likelihood</td><td colspan="2">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 within this program, the likelihood of interaction with other marine users is considered 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><td colspan="3">Determination of acceptability</td></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>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.<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 maritime safety information control measure.</td></tr></table></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. 31).</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>
</table>

Environmental performance outcome	Environmental performance standard	Measurement criteria
No impacts to other marine users outside of the OA from petroleum activities	**Relevant persons consultation** Relevant persons that have requested notifications will be advised of the commencement and expected completion dates	Relevant persons consultation records
	Maritime safety information Where required, Notice to Mariners and/or AUSCOAST warnings will be issued prior to commencing the petroleum activity	Record of lodgement of notification to relevant agency
	Marine Standard Vessels will meet the crew competency, navigation equipment, and radar requirements of the Marine Standard	Records indicate that vessels meet the crew competency, navigation equipment, and radar requirements of the Marine Standard

7.2 Physical presence—marine fauna

Source

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

- 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.

Potential impacts and risks

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

Consequence evaluation

The MODU and support vessels will be present within the OA during the drilling, well intervention and / or well abandonment activities. The OA consists of an area of 588 km^2. It is expected that each infill well drilled will take approximately 65 days (approximately 455 days for all seven wells) (Section 3.1.2). This includes drilling, completing and suspending each infill well, 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 activities has the potential to result in unplanned interactions with 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 OA. Several BIAs also overlap with the OA, including:

- Flatback Turtle (internesting buffer)
- Pygmy Blue Whale (distribution and migration)
- Whale Shark (foraging).

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

The *Recovery Plan for Marine Turtles in Australia* (Ref. 48) identifies vessel disturbance as a key threat; however, it also notes that this is particularly an issue in shallow coastal foraging habitats,

and interesting areas with high numbers of recreational and commercial craft, or in areas of marine development. The OA for this EP occurs in Commonwealth waters (approximately 116 to 228 m deep and ~40km from the nearest coast). Recent studies (Ref. 185) 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. 185) reported that Flatback Turtles preference habitats within proximity of 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. 185).

Given vessel activity is limited to within the OA 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.

A review of the documents made or implemented under the EPBC Act for shark and cetacean species likely to be present within the OA (e.g., Whale Shark [Ref. 49], Fin Whale [Ref. 50], Sei Whale [Ref. 51], and Blue Whale [Ref. 52]) indicates that either vessel disturbance or interaction (such as collisions) as a key threat to the recovery of the species.

For all cetacean species likely to be present within the OA, these documents indicate that management actions are limited to reporting of 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. 53). There have been recorded instances of cetacean deaths in Australian waters (e.g., a Bryde's Whale in Bass Strait in 1992) (Ref. 55), although the data indicates deaths are associated with container ships and fast ferries. Mackay et al (Ref. 56) report that four fatal and three 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.

The *Conservation Management Plan for the Blue Whale 2015–2025* (Ref. 52) 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. 54) 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. Given that vessels will be stationary or slow moving whilst 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. 173). Although the OA intercepts with the eastern extent of the defined BIA, it is expected based on recent satellite tracking and acoustic detection that Pygmy Blue Whales travel further offshore in deeper waters (Ref. 57, Ref. 58). The BIA in the vicinity of the drilling, well intervention and/or well abandonment activities is not considered to be a 'confined migratory pathway'[18].

A review of the *Conservation Advice Rhincodon typus Whale Shark* (Ref. 49) 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). Given vessel activity is limited to within the OA, and the high-density foraging BIA is not located within the OA, the activity is considered to be consistent with all relevant management actions.

Whale Sharks are known to spend considerable time close to the surface increasing their vulnerability to vessel strike. Whale Sharks tagged off Western Australia (Ref. 59, Ref. 60) 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

[18] 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.

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. 61) 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 OA overlaps the Whale Shark foraging BIA, vessels will be stationary or slow-moving whilst 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.		
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. 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**	
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.	
Additional control measures and cost benefit analysis		
Control measure	**Benefit**	**Cost**
Interacting with Whale Sharks	Implementation of the activities within the scope of this EP may coincide with the use of the migration BIA (July to November), therefore is possible that Whale Sharks may be present within the OA. The implementation of separation distances and speed limits between vessels and Whale Sharks would decrease the risk of adverse physical interactions.	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.
Likelihood and risk level summary		
Likelihood	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).	
Risk level	Very low (9)	

<table>
<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 mortality, 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, CSMFIMP (Ref. 208)
EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 52)
Conservation Advice Balaenoptera borealis Sei Whale (Ref. 51)
Conservation Advice Balaenoptera physalus Fin Whale (Ref. 50)
Conservation Advice Rhincodon typus Whale Shark (Ref. 49)
Recovery Plan for Marine Turtles in Australia (Ref. 48)
North-west Marine Parks Network Management Plan 2018 (Ref. 257).</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</td><td>Requirements of regulation 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></td><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></td><td>Conservation Advice Balaenoptera borealis Sei Whale
Conservation action: Ensure all vessel strike incidents are reported in the National Vessel Strike Database</td><td>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 borealis Sei Whale.</td></tr>
<tr><td></td><td>Conservation Advice Balaenoptera physalus Fin Whale
Conservation action: Ensure all vessel strike incidents are reported in the National Vessel Strike Database</td><td>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.</td></tr>
</table>

	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 Western Australian coastline along the 200 m isobath	Requirements of minimise interaction with Whale Sharks has been incorporated into the **Interacting with Whale Sharks** control measure.
	Recovery Plan for Marine Turtles in Australia No specific management action identified.	N/A
	North-west Marine Parks Network Management Plan No specific zone rules 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, given that 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 not inconsistent with these documents. Objectives of the relevant documents are shown below	
	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.
	North-west Marine Parks Network Management Plan 2018	As per Section 4.5.1.

	Therefore, CAPL has defined the following acceptable level of impact such that it is not inconsistent with these documents: • no injury or mortality to Pygmy Blue Whales or marine turtles 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.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
No injury or mortality to marine fauna within the OA from vessel activities associated with the petroleum activity.	**EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans** 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	Induction materials include relevant marine fauna caution and no approach zone requirements
		Training records confirm offshore personnel involved in the activities have completed the induction
		Vessel records show if marine fauna interaction occurred within caution or approach zones, and what mitigation (e.g., divert or slow vessel) measure was implemented
	Interacting with Whale Sharks Vessels will implement the following, where practicable • vessels will implement a separation distance of 30 m from Whale Sharks • vessels must operate at ≤6 knots within 250 m of a Whale Shark.	Induction materials include relevant marine fauna interaction requirements
		Training records confirm personnel involved in offshore vessel activities have completed the induction
		Vessel records show if marine fauna interaction occurred within separation distance, and what mitigation (e.g., divert or slow vessel) measure was implemented

7.3 Seabed disturbance

Source
Activities identified as having the potential to result in seabed disturbance are: • MODU— installation and removal of mooring anchors (8-12) within the 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 installation of 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.

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 will be positioned within the OA using an 8- to 12-point mooring system (up to three 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. 12) or up to 0.091 km^2 if all seven additional wells are drilled. The direct disturbance footprint of drilling on the seabed is expected to be relatively small (e.g., <0.001 km^2), and the ROV is very small (e.g., <15 m^2). The OA consists of an area of ~588 km^2. The indicative, cumulative seabed disturbance area represents <0.0001% of the OA.

Although anchoring is not a routine activity from support vessels, it has been carried through as a contingent activity in the event anchoring is required within the OA due to a significant weather event. NERA (Ref. 12) 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 three vessels were required to anchor, this indicative seabed disturbance area represents <0.000007% of the OA.

The benthic habitat within the OA where seabed disturbance is planned to occur is expected to predominantly be soft substrate (Ref. 17; Section 4.3.1). The particular values and sensitivities within the OA with the potential to be impacted by seabed disturbance include the following:

- Continental slope demersal fish communities (KEF)
- Ancient coastline at 125 m depth contour (KEF)

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. 62). Although physical habitat modification is considered a pressure of potential for this KEF, this modification has been associated with fishing activities (Ref. 62).

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 (~0.091 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., installation of MODU anchors, or seabed equipment, etc.), 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. 12). As such, CAPL has ranked the 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), and no protected underwater cultural heritage sites or artefacts have been identified within the OA (Section 4.6.2). At the time of writing, CAPL understands through consultation with the relevant First Nations groups that there are no known artefacts or specific sites of cultural value associated with the seabed within the OA. Therefore, no impacts to seabed-based cultural heritage (e.g. shipwrecks or archaeology) are expected and no further evaluation has been undertaken.

Indirect impacts to intangible cultural values may occur due to impacts on marine environmental quality or benthic communities and habitats. The consequence evaluations to these receptors are provided above, and range from incidental to minor. Given the relatively small footprint associated with the petroleum activity and that it predominantly occurs within the vicinity of other existing infrastructure, a significant adverse change to cultural values attributed to the offshore marine area 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 practiced 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. 64).
Monitoring mooring line tensions	*ISO 19901-7:2013: Station keeping systems for floating offshore structures and mobile offshore units* (Ref. 63) 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 prior to well spudding commencing.
Marine Standard	Chevron *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 31) ensures that various legislative requirements are met, including vessels will meet the crew competency, navigation equipment, and radar requirements.
Underwater cultural heritage	As described in Section 4.6.2, no known First Nations artefacts or specific sites of cultural value associated with the seabed within the OA. CAPL acknowledge that the identification of First Nations underwater cultural heritage is an area of uncertainty, and as such, CAPL is committed to implementing an adaptive management process to ensure that impacts and risks associated with this receptor are continually reduced to ALARP and managed to acceptable levels. To address the uncertainty the following adaptive management process will be implemented: • implement ongoing consultation with First Nations people and/or representative bodies • if ongoing consultation identifies the presence of First Nations underwater cultural heritage or potential underwater cultural heritage is identified during the petroleum activity, then CAPL will undertake an MoC evaluation that will include a consideration of whether other data (e.g. archaeological survey) or additional control measures (e.g. use of buffers around underwater artefacts) are required to ensure that impacts and risks to underwater cultural heritage are being reduced to ALARP and managed to an acceptable level.

Additional control measures and cost benefit analysis

<table>
<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><td colspan="3">Likelihood and risk level summary</td></tr>
<tr><td>Likelihood</td><td colspan="2">N/A</td></tr>
<tr><td>Risk level</td><td colspan="2">N/A</td></tr>
<tr><td colspan="3">Determination of acceptability</td></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. 64)
• ISO 19901-7:2013: Station keeping systems for floating offshore structures and mobile offshore units (Ref. 63)
• North-west Marine Parks Network Management Plan 2018 (Ref. 257).</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. 31).</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><td>Environmental performance outcome</td><td>Environmental performance standard</td><td>Measurement criteria</td></tr>
<tr><td>Reduce the risk of impacts to sensitive</td><td>Mooring analysis
Mooring analysis for the MODU will be undertaken prior to anchoring activities commencing</td><td>Records verify that mooring analysis was</td></tr>
</table>

environmental receptors within the OA from petroleum activities		undertaken prior to MODU anchoring
	Monitoring mooring line tensions Mooring line tensions will be monitored through the duration of the petroleum activity	Records verify mooring line tensions were monitored for the duration of the petroleum activity
	ROV inspection A visual inspection of the seabed will be undertaken prior to well spudding activities commencing	Records verify that a visual seabed inspection was undertaken prior to well spudding
	Marine Standard Vessels will meet the crew competency, navigation equipment, and radar requirements of the Marine Standard	Records indicate that vessels meet the crew competency, navigation equipment, and radar requirements of the Marine Standard
Reduce the risk of impacts or risks to underwater cultural heritage	**Underwater cultural heritage** CAPL will implement ongoing consultation with First Nations people and/or representative bodies in accordance with regulation 14(9) of the OPGGS(E)R and Section 8.3.4.2	Relevant persons consultation records
	Underwater cultural heritage If the above ongoing consultation identifies the presence of, or potential for, First Nations underwater cultural heritage, then CAPL will undertake a MoC (Section 8.3.2.2) evaluation to determine what, if any, further actions are required to ensure that impacts and risks to underwater cultural heritage are being reduced to ALARP and managed to an acceptable level	Where required, records show that the MoC process was undertaken in response to any identified First Nations underwater cultural heritage

7.4 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 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).

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 the OA during the drilling, well intervention and / or well abandonment activities. It is expected that each infill well drilled will take approximately 65 days (approximately 455 days for all seven wells) (Section 3.1.2). This includes drilling, completing and suspending each infill well, 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). 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. 65) 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. 65), CAPL expects that there would be a temporary change (~65 days or up to 455 cumulatively) 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 the 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, and during drilling is a one-time occurrence per well. As MODU flare tip height and flaring specifications are not yet known, modelling analogues were identified. Modelling of routine flaring from an 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 MOPU 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.300). The boundary of the worst-case spatial extent of 42.4 km is ~7 km from the Montebello Islands and ~80 km from Barrow Island, but does not intersect. No other islands in the NWS or the mainland is intersected by this spatial extent. Flaring during the daytime would be less visible. 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. 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 OA. Several BIAs also overlap with the OA, including: • Flatback Turtle (internesting buffer) • Whale Shark (foraging) • Wedge-tailed Shearwater (breeding BIA). No habitat critical for the survival of a species was identified within the OA. The *National Light Pollution Guidelines* (Ref. 8) 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. 72; Ref. 73) and fledgling seabirds grounded in response to artificial light 15 km away (Ref. 74). Anthropogenic disturbance and artificial lighting are identified as threats within the *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 71). 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. 67) and that lighting can attract birds

from large catchment areas (Ref. 68). 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. 69). 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. 193).

Modelling of routine flaring from an FPSO for the Dorado Development (referred to above) predicted the flare is no longer visible at 42.4 km, and established 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.300). The boundary of the worst-case spatial extent of 42.4 km is ~7 km from the Montebello Islands and ~80 km from Barrow Island, but does not intersect. No other islands in the NWS or the mainland is intersected by this spatial extent. Flaring during the daytime would be less visible.

At its closest, the OA is located ~40 km north from the closest coast (Montebello Islands). 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. 71) and light pollution is identified as a threat within the Wildlife Conservation Plan for Seabirds (Ref. 193). 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. 75; Ref. 68). 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 cumulative duration of the proposed activities (455 days), it is likely there will 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. 76). However, Marquenie (Ref. 76) 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. 48) 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. 48) 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 OA include Barrow, Montebello and Lowendal islands, which have been identified as nesting habitat for Flatbacks, Greens, and/or Hawksbill turtles (Ref. 48). At its closest, the OA is located ~40 km from the closest coast (Montebello Islands). As light emissions from the MODU and support vessels are expected to result in a change to ambient conditions up to a maximum of ~42.4 km from each source, no coastal areas (and therefore no adult nesting turtles, or turtle hatchlings) are expected to be exposed.

The OA does not intersect with habitat critical for the survival of a species for internesting as defined within the Recovery Plan (Ref. 49), however it does have a small overlap with the outer edge of the earlier spatially defined internesting Flatback Turtle BIA. Recent studies (Ref. 70) 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. 70) reported that Flatback Turtles preference habitats within proximity of 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. 70). This suggests that although the OA does overlap with the internesting buffer BIA, due to the OA being located offshore (>40 km from the Montebello Islands) and with increasing water depths (up to ~228 m), it is not expected that aggregating turtles would be exposed to light emissions within the OA during their internesting period. Therefore, given the distance offshore and relative water depths of the proposed drilling, well intervention and / or well abandonment activities, turtles are not expected to be present within the OA and subsequently exposed to light emissions.

Artificial light may result in varied ecological changes to fish, including changes to predatory behaviour and abundance (Ref. 77, Ref. 80), altering hatching success (Ref. 78), acting as an attractant for plankton (Ref. 79), or altering circadian behavioural rhythms (Ref. 80).

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. 49). Light has not been identified as a key threat for the Whale Shark (Ref. 49). 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 OA, and thus any impacts would be limited. Consequently, only localised short-term behavioural impacts to transient individuals have the potential to arise from these activities and have therefore been evaluated 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. 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.		
Good practice control measures		
Control measure	**Description**	
Marine Standard	Chevron *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 31) 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.	
Light management	If all seven planned wells were drilled, the drilling, well intervention and / or well abandonment activities may overlap withseasonal 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.	
Additional control measures and cost benefit analysis		
Control measure	**Benefit**	**Cost**
N/A	N/A	N/A
Likelihood and risk level summary		
Likelihood	The MODU, vessel and flaring 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).	
Risk level	Very low (10)	
Determination of acceptability		
Principles of ESD	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.	
Relevant environmental legislation and other requirements	Legislation and other requirements considered relevant to this aspect include: • EPBC 2008/4469 Condition 26, CSMFIMP (Ref. 208) • *Navigation Act 2012* • *National Light Pollution Guidelines for Wildlife* (Ref. 8) • *Recovery Plan for Marine Turtles in Australia* (Ref. 48) • *Conservation Advice Rhincodon typus Whale Shark* (Ref. 49)	

<table>
<tr><td></td><td colspan="2">

Wildlife Conservation Plan for Seabirds (Ref. 193)
Wildlife Conservation Plan for Migratory Shorebirds (Ref. 71)
North-west Marine Parks Network Management Plan 2018 (Ref. 257).

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>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></td><td>National Light Pollution Guidelines
Undertake an environmental impact assessment</td><td>This section provides an impact assessment and consideration of control measures as identified within the mitigation toolboxes for marine turtles, seabirds, and migratory shorebirds.</td></tr>
<tr><td></td><td>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</td><td>The control measures identified above are considered appropriate to manage the risk to marine turtles to ALARP. Given the unsuitability of the majority 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.</td></tr>
<tr><td></td><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 whale sharks and mitigation options for these impacts</td><td>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.</td></tr>
<tr><td></td><td>Wildlife Conservation Plan for Seabirds
No specific action identified.</td><td>N/A</td></tr>
<tr><td></td><td>Wildlife Conservation Plan for Migratory Shorebirds
No specific action identified.</td><td>N/A</td></tr>
<tr><td></td><td>North-west Marine Parks Network Management Plan
No specific zone rules identified.</td><td>N/A</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. 31).</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding light emissions arising from the activity.</td></tr>
</table>

<table>
<tr><td>Defined acceptable level</td><td>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:

<table><tr><th>Plan</th><th>Objective</th></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>Wildlife Conservation Plan for Migratory Shorebirds</td><td>Objective 1: Protection of important habitats for migratory shorebirds has occurred throughout the East Asian-Australasian Flyway (EAAF)
Objective 3: Anthropogenic threats to migratory shorebirds in Australia are minimised or, where possible, eliminated.</td></tr><tr><td>Wildlife Conservation Plan for Seabirds</td><td>Objective 2: Seabirds and their habitats are identified, protected and managed in Australia.</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 level of impact such that it is not inconsistent 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 behaviors of marine turtles within biologically important areas such that it would prevent the long-term recovery of the species
• no disruption of biologically important behaviors 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.</td></tr>
</table>

Environmental performance outcome	Environmental performance standard	Measurement criteria
Avoid displacement of marine fauna, or disruption of biologically important behaviours of marine fauna, from biologically important areas, important habitats, or habitat critical to the survival of a species from occurring within the OA No adverse change to the values of Australian Marine Parks from petroleum activities	**Marine Standard** Vessels will meet the lighting requirements of the Marine Standard	Records indicate that vessels meet lighting requirements of the Marine Standard
	Light management MODU and support vessels working at night will be required to: • reduce external lighting to the minimum required for safe operations and navigation • operational lighting directed downwards to working deck area • use window coverings to shield internal lights from view	Inspection records during night operations confirm only minimum lighting for safe operations is used

7.5 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 flow-back (contingency only)
- 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

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 OA during the drilling, well intervention and / or well abandonment activities. It is expected that each infill well drilled will take approximately 65 days (approximately 455 days for all seven wells) (Section 3.1.2). This includes drilling, completing and suspending each infill well, 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).

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/flaring 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 then vented or flared. As the gas produced from the Wheatstone and Iago 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 there may be small volumes of hydrocarbon gas that are required 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 stabilized by use of 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 can subsequently result in air emissions.

Air emissions may include criteria pollutants (e.g., nitrogen oxides [NO_x]), and greenhouse gases (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. 81). NO_2 is the focus of the modelling because it is considered the main (non-greenhouse) 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. Given that the 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. 81), exposures are considered to be 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 can subsequently result in greenhouse gas emissions, which will contribute to a reduction in the global carbon budget.

Direct greenhouse gas (GHG) emissions from activities within this EP are estimated to be ~ 0.0195 Mt CO_2-e per well, or 0.1365 Mt CO_2-e for all seven planned wells [19],[20] . These direct emissions represent ~0.11% of national Australian emissions (when compared to June 2022 inventory) (Ref. 82).

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'*. Given that 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-46L, WA-47-L and WA-48-L permits, no indirect emissions were identified for activities under this EP. The objective of the infill drilling program is to maintain Wheatstone Project gas supply, as opposed to increasing production capacity. The indirect emissions evaluation in the Wheatstone Project Start-up and Operations Plan (Ref.6) is therefore still relevant for assessing indirect emissions associated with the project. As such, indirect emissions are not further described in this EP.

According to the IPCC, Sixth Assessment Report for Working Group 1, "the total anthropogenic effective radiative forcing in 2019, relative to 1750, was 2.72 [1.96 to 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%)"[21] (Ref. 83).

The IPCC defines the term "carbon budget" as "refer[ing] 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."[22] (Ref. 84).

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 1350 Gt CO_2 [23] (Ref. 84).

If the total direct GHG emissions from activities associated with this EP (assuming all seven wells are drilled) is ~0.1365 Mt CO_2-e then the activities under this EP may contribute ~0.1-0.3 x 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.

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.

[19] Emissions calculation is based on 565 days of moored MODU operations, 65 days of three vessels on DP (assuming 2 x anchor handler and 1 x platform supply vessel), and 45 helicopter transfers, using NGER energy content and emissions factors (Ref. 85).

[20] 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.

[21] IPCC, AR6, WG1, at TS-35.

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

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

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 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	Prior to commencement of activities, the Marine Standard (Ref. 31) 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 nitrous oxides (NOx) emission levels will comply with regulation 13 of MARPOL 73/78 Annex VI.	
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 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. 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 for this aspect include: • Marine Order 97 • MARPOL 73/78.	
	Requirement	**Demonstration**
	Marine Order 97 Gives effect to Annex VI of MARPOL 73/78	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
Internal context	The following CAPL management processes or procedures were deemed relevant for this aspect: • *Chevron Marine Standard Non Tankers: Corporate OE Standard*(Ref. 31).	
External context	During relevant persons consultation, no objections or claims were raised regarding atmospheric emissions 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 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**
Planned air emissions from vessel operations during the petroleum activity will meet Marine Order 97 requirements	**Reduced sulfur content fuel** Only low-sulfur (0.50 mass % concentration [m/m]) fuel oil will be used to minimise SO_x emissions	Bunker receipts verify the use of low-sulfur fuel oil
	Marine Order 97: Marine Pollution Prevention – Air Pollution Prior to commencement of activities, the following will be verified, as per the Marine Standard: • vessels will hold a valid IAPP certificate and a current IEE certificate • all vessels (as appropriate to vessel class) will have a SEEMP as per MARPOL 73/78 Annex VI • vessel engine nitrous oxides (NOx) emission levels will comply with regulation 13 of MARPOL 73/78 Annex VI.	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

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. 268). 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. 268).

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).

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. 53; Ref. 66) 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 criterions is not relevant.

7.6.2 Exposure criteria for continuous sound

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

- frequency-weighted accumulated sound exposure levels (SEL_{24h}) from NOAA Technical Guidance (Ref. 215) for the onset of permanent threshold shift (PTS)[24] and temporary threshold shift (TTS)[25] in marine mammals (Table 7-3)
- un-weighted SPL for behavioural threshold for marine mammals based on NOAA (Ref. 165) (Table 7-3)

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

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

- sound exposure guidelines for fish, fish eggs and larvae (including plankton) (Ref. 88) (Table 7-3)
- frequency-weighted accumulated sound exposure levels (SEL_{24h}) from Finneran et al. (Ref. 87) 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. 89). Modelling outputs for continuous sound horizontal maximum distances (Rmax) from the sound source to the relevant noise effect criteria for marine mammals, turtles, and fish are shown in Table 7-4 (Ref. 86). 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.

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
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 three 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	Mortal or potential mortal injury	Recoverable injury	Permanent threshold shift	Temporary threshold shift	Masking	Behavioural
Low-frequency cetaceans	N/A	N/A	SEL_{24h}: 0.14 km	SEL_{24h}: 1.65 km	N/A	SPL: 13.2 km
High-frequency cetaceans	N/A	N/A	SEL_{24h}: 0.05 km	SEL_{24h}: 0.13 km	N/A	SPL: 13.2 km
Very high-frequency cetaceans	N/A	N/A	SEL_{24h}: 0.18 km	SEL_{24h}: 1.63 km	N/A	SPL: 13.2 km
Marine turtles	N/A	N/A	SEL_{24h}: 0.05 km	SEL_{24h}: 0.10 km	N/A	N/A
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).

7.6.2.1 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. 86).

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. 86). 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. 86).

The JASCO Animal Simulation Model Including Noise Exposure (JASMINE) was used to model the movement of Pygmy Blue Whales 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. 86).

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. 86). 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 TSS 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. 86).

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	Permanent threshold shift	Temporary threshold shift	Behavioural
Acoustic modelling	R_{max}	SEL_{24h}: 0.14 km	SEL_{24h}: 1.65 km	SPL: 13.2 km
Exposure modelling	$ER_{95\%}$	SEL_{24h}: –	SEL_{24h}: 0.04 km	SPL: 4.23 km
	Probability	SEL_{24h}: –	SEL_{24h}: 19%	SPL: 52%

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

7.6.3 Risk assessment

Source

Activities identified as having the potential to result in underwater sound emissions:

- drilling, well intervention and / or well abandonment activities within the OA
- field support—use of DP by vessels within the OA during the drilling, well intervention and / or well abandonment activities
- field support—helicopter operations within the OA during the drilling, well intervention and / or well abandonment activities.

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 • auditory impairment, temporary threshold shift (TTS), permanent threshold shift (PTS), recoverable or non-recoverable injury to marine fauna.	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. 164). 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. 164).

Project Vessels

The MODU and support vessels will be present within the Sound EMBA during the drilling, well intervention and / or well abandonment activities. It is expected that each infill well drilled will take approximately 65 days (approximately 455 days for all seven wells) (Section 3.1.2). This includes drilling, completing and suspending each infill well, 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 up to 137 dB re 1 µPa and 120 dB re 1 µPa at 405 m and ~3-4 km from the sound source respectively (Ref. 112). When underway at ~12 knots vessel sound of 120 dB re 1 µPa was recorded at 0.5-1 km (Ref. 112). Generally, during operations within the scope of this EP, the vessels will be moving at low speeds (<4-5 knots), producing lower underwater sound emissions than those recorded in the study.

Drilling activities

The acoustic modelling for the drilling activities indicates SPLs at 160 dB re 1 µPa and 120 dB re 1 µPa occurred at up to 90 m and ~13 km from the sound, respectively (Ref. 86).

Field support

Sound emitted from helicopter operations is typically below 500 Hz (Ref. 97). 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. 66). Richardson et al. (Ref. 53) report that helicopter sound was audible in air for four 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

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 acoustic source to be exposed to sound level above the noise effect criteria for behavioural disturbance (Table 7-5).

The particular values and sensitivities within the ensonified area with the potential to be impacted by underwater sound include:

- low frequency cetaceans (e.g., baleen whales) that are listed as threatened and/or migratory under the EPBC Act
- migration BIA for Pygmy Blue Whales.

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 Sound EMBA, low-frequency cetaceans (e.g., baleen whales) 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; no areas of known aggregation within or around the ensonified area have been identified. As such the following consequence evaluation for low-frequency cetaceans focusses on Pygmy Blue Whales.

Based on passive acoustic data (Ref. 173) predicted foraging (and/or resting/breeding) areas were identified. The closest foraging area is ~5 km northwest of the Sound EMBA. Thums et al also indicated greatest numbers of Pygmy Blue Whales during April to July (northern migration), and November and December (southern migration) (Ref. 173). 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 migration periods. However, although the defined BIA for Pygmy Blue Whales overlaps the Sound EMBA, it is expected based on recent satellite tracking and acoustic detection that Pygmy Blue Whales travel further offshore in deeper waters (Ref. 57, Ref. 58). The BIA in the vicinity of the drilling, well intervention and / or well abandonment activities is not considered to be a 'confined migratory pathway[18].

Estimates of SPL for helicopters range 149–162 dB re 1 µPa (Ref.53; Ref. 66), 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. 53). 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 have therefore been evaluated as Minor (5).

TTS and PTS

Acoustic modelling indicated that the R_{max} from the source to TTS and PTS criteria for low-frequency cetaceans was 1.65 km and 0.14 km respectively; for high-frequency cetaceans was 0.13 km and 0.05 km respectively; and for very high-frequency cetaceans was 1.63 km and 0.18 km.

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 that marine fauna are expected to be transitory through the area, these modelled maximum ranges are overly conservative and do not represent a realistic scenario.

The particular values and sensitivities within the ensonified area with the potential to be impacted by underwater sound include:

- low frequency cetaceans (e.g., baleen whales) that are listed as threatened and/or migratory under the EPBC Act
- migration BIA for Pygmy Blue Whales.

As such the following consequence evaluation for low-frequency cetaceans focusses on Pygmy Blue Whales.

Animat exposure modelling indicated that the maximum distance to the TTS noise effect criteria for Pygmy Blue Whales was ~40 m from the acoustic source; and that the PTS noise effect criteria was not predicted to be exceeded (Table 7-5).

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. Specifically for Pygmy Blue Whales, this requires them to remain within ~40 m of the sound source for at least a 24-hour period before TTS auditory impairments may occur. Given that Pygmy Blue Whales (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.

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).

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. 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. Given that 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. 88). 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 (Ref. 1, Appendix D). 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. 49) 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. 112). 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.

Given that there is limited potential exposure to migrating Whale Sharks or other listed fish from underwater continuous sound from the moving support vessels, it is therefore 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 have therefore been 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 mortality 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 OA and Sound EMBA. Given their transient nature, these fish are not expected to remain within close proximity (<110 m) of a sound source for extended periods (12 hours) such that an auditory impairment due to continued sound exposure would occur.

On this basis, neither TTS nor recoverable injury to fish are considered credible and have therefore not been considered further.

Plankton

Behavioural disturbance

Plankton is a collective term for all marine organisms that are unable to 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 high risk of causing masking or behavioural changes to plankton in close proximity 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. 62).

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 mortality to plankton (Table 7-3), and as such are not discussed further.

ALARP decision context justification

Offshore commercial vessel operations and installation activities are commonplace and well-practised nationally and internationally. The application of control measures to manage impacts and risks arising from this aspect are well defined, understood by the industry, and are 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.

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.

Additional control measures and cost benefit analysis

Control measure	Benefit	Cost
N/A	N/A	N/A

Likelihood and risk level summary

Likelihood	Baleen Whales may exhibit behavioural avoidance when sound levels are at or above 160 dB re 1 µPa (Ref. 165). 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. 166), 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. 112; Ref. 167). 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).
Risk level	Low (8)

Determination of acceptability

<table>
<tr><td>Principles of ESD</td><td>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.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td>Legislation and other requirements considered applicable for this aspect include:
EPBC 2008/4469 Condition 26, CSMFIMP (Ref. 208)
EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 52)
Conservation Advice Balaenoptera borealis Sei Whale (Ref. 51)
Conservation Advice Balaenoptera physalus Fin Whale (Ref. 51)
Conservation Advice Rhincodon typus Whale Shark (Ref. 49)
Recovery Plan for Marine Turtles in Australia (Ref. 48)
North-west Marine Parks Network Management Plan 2018 (Ref. 257).
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.
Vertical and horizontal distances for helicopter operations.</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 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.2.3: Anthropogenic noise in biologically important areas will be managed such that any blue whale continues to utilise the area without injury, and is not displaced from a foraging area</td><td>The Sound EMBA does not intersect with a BIA or foraging area 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>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</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>
</table></td></tr>
</table>

<table>
<tr><td></td><td>Biologically Important Areas to ensure that biologically important behaviour can continue</td><td></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></td><td>North-west Marine Parks Network Management Plan 2018
No specific zone rules 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.
Interim objective 4 Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td></td><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></td><td>North-west Marine Parks Network Management Plan 2018</td><td>As per Section 4.5.1.</td></tr>
<tr><td></td><td colspan="2">Therefore, CAPL has defined the following acceptable level of impact such that it is not inconsistent with these documents:
• no injury or mortality 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 anthropogenic underwater sound</td></tr>
</table>

	• no displacement of Pygmy Blue Whales from foraging areas resulting from anthropogenic underwater sound • no displacement of marine turtles from habitat critical to the survival or a species resulting from anthropogenic activities • no disruption of biologically important behaviors of marine turtles within BIAs, resulting from anthropogenic 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.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
No injury to marine fauna from underwater sound emissions from vessel or helicopter activities within the OA associated with the petroleum activity Avoid 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 vessel or helicopter activities associated with the petroleum activity No adverse change to the values of Australian Marine Parks from the petroleum activity	**EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans** Vessels will implement caution and no approach zones, 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.	Induction materials include relevant marine fauna caution and no approach zone requirements
		Training records confirm personnel involved in offshore vessel activities have completed the induction
		Vessel records show if marine fauna interaction occurred within caution or approach zones, and what mitigation (e.g., divert or slow vessel) measure was implemented
	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.	Records indicate that the helicopter supply contractor has been made aware of commitments under EPBC regulations 8.07
		Records show if marine fauna interaction occurred, and what mitigation (e.g., divert) measure was implemented

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:

- MBES: ~218 dB re 1 µPa RMS @ 1 m (Ref. 269)
- SSS: ~229 dB re 1 µPa RMS @ 1 m (Ref. 269)

To inform the potential spatial extent of underwater sound emissions, an un-weighted spherical spreading model (Ref. 53) has been used to predict distances to noise effect thresholds for different marine fauna.

To inform the potential spatial extent of underwater sound emissions from VSP operations, an un-weighted spherical spreading model (Ref. 53) 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 therefore 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 a variety of exposure criteria for the different types of impacts and species groups are considered. The following noise effect thresholds, based on current best available science, for use 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. 215) 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. 165) 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. 87) 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. 88), as applied by the US NMFS, along with a sound level associated with behavioural disturbance 175 dB re 1 µPa (SPL) (Ref. 274; Ref. 269) (Table 7-6)
- sound exposure guidelines for fish, fish eggs and larvae (including plankton) (Ref. 273) (Table 7-6)
- peak-peak pressure levels (PK-PK) at the seafloor ($PK\text{-}PK_{seafloor}$) 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. 269), Day et al. (Ref. 270), Day et al. (Ref. 271), Day et al. (Ref. 272) and Payne et al. (Ref. 273)
- 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. 284).

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. 89).

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	SEL24h: 183 dB re 1 µPa2s PK: 219 dB re 1 µPa	SEL24h: 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	SEL24h: 185 dB re 1 µPa2s PK: 230 dB re 1 µPa	SEL24h: 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	SEL24h: 155 dB re 1 µPa2s PK: 202 dB re 1 µPa	SEL24h: 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	SEL24h: 204 dB re 1 µPa2s PK: 232 dB re 1 µPa	SEL24h: 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)	SEL24h: >219 dB PK: >213 dB	SEL24h: >216 dB PK: >213 dB	N/A	SEL24h: >>186 dB	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish (swim bladder not involved in hearing)	SEL24h: 210 dB PK: >207 dB	SEL24h: 203 dB PK: >207 dB	N/A	SEL24h:: >>186 dB	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish (swim bladder involved in hearing)	SEL24h: 207 dB PK: >207 dB	SEL24h: 203 dB PK: >207 dB	N/A	SEL24h: 186 dB	(N) Low (I) Low (F) Moderate	(N) High (I) High (F) Moderate
Fish eggs and fish larvae (relevant to plankton)	SEL24h: >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.53; Ref 273).

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 consist of up to 20 air guns, each operating at around 2,000 psi and expelling a total volume of air of ~2,000 – ~5,000 cubic inches. At the source, pulses are between 220-240 dB, typically reducing to 170 dB within 1 km and approximately 150 dB within 10 km (Ref. 207). Comparatively, typical noise levels emitted from the VSP source is ~195 dB re 1 µPa @ 1 m (Ref. 207).

7.7.3 Risk assessment

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-	5 –

		recoverable injury to marine fauna.	

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. 164). 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. 164).

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. 207).

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 United States (US) National Marine Fisheries Service (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. 215).

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 Sound EMBA. The threatened and/or migratory cetaceans that may be present within the Sound EMBA are low-frequency and mid-frequency cetaceans (Section 4.3.3.1).

A migration BIA for the Pygmy Blue Whale overlaps with the Sound EMBA (Section 4.3.3.1.1), 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 EMBA (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).

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.

Given the limited spatial and temporal exposures to marine mammals from underwater impulsive sound above the noise effect criteria for VSP operations, it is therefore 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 have therefore been 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 SEL24h is a cumulative metric that assumes a receptor is consistently exposed to the relevant noise effect criteria for a 24-hour period. Given both a moving sound source (i.e., the survey vessel) and moving marine fauna, and the limited 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 Sound EMBA (appendix b). All cetacean species are expected to be transiting through the area; no areas of known aggregation within or around the Sound EMBA have been identified. Given the transitory cetacean, and a moving sound source, an exposure requiring a high-frequency cetaceans to remain consistently within ~2 km for a 24-hour period 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 SEL24h is a cumulative metric that assumes a receptor is consistently exposed to the relevant noise effect criteria for a 24-hour period. In reality, given both a moving sound source (i.e., the survey vessel) and moving marine fauna, 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 EMBA, 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 also overlaps the OA (Section 4.3.3.1.1). As such, 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 northern part of the Sound EMBA, it is expected based on recent satellite tracking and acoustic detection studies that the Pygmy Blue Whales are more likely to travel predominantly northwest of the Sound EMBA in deeper waters further offshore.

The Conservation Management Plan for the Blue Whale (Ref. 52) includes a specific action that "Anthropogenic noise in biologically important areas will be managed such that any blue whale continues to utilise the area without injury and is not displaced from a foraging area". The Sound EMBA does not intersect with a foraging BIA for the Pygmy Blue Whale.

The nearest foraging BIA occurs ~230 km southwest 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. 173) has identified 'most important areas' for foraging for the Pygmy Blue Whale based on proxy indicators; the northern most part of the Sound EMBA is adjacent to this area, but does not intersect with it (Section 4.1). The same study also showed that monthly spatial predictions indicated higher densities around the Montebello Island region during May and June (northern migration) and November and December (southern migration) (Ref. 75). These months of predicted higher densities of Pygmy Blue Whales may overlap with the proposed activity period, indicating that there is the potential for foraging activity to occur within the Sound EMBA. Therefore, while foraging activity may occur within Sound EMBA, the numbers of Pygmy Blue Whales expected to be present may still be low.

As the area identified for probable foraging is located outside the Sound EMBA, and given the moving sound source, it is not considered credible for TTS SEL_{24h} to occur as even if the whale was temporarily stationary and/or slower moving while foraging, as the sound source is not stationary, and 24-hours of continuous accumulated exposure would not occur. Furthermore, given the nature of survey activities (limited to <7 days) and as marine mammal species are expected to display transient (not sedentary) behaviours within the EMBA, 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).

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 Sound EMBA. In addition, an internesting BIA and habitat critical to the survival of a species for Flatback Turtles overlaps with the Sound EMBA.

The Recovery Plan for Marine Turtles in Australia (Ref. 48) 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. 48) 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 southern part of the OA, 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 OA, only localised short-term behavioural impacts to transient individuals have the potential to arise from these activities and have therefore been 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) and as turtle species are expected to display transient behaviours within the OA, any auditory impairment or injury is expected limited to a few individuals and have therefore been 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 Sound EMBA. A foraging BIA for the Whale Shark also overlaps with the Sound EMBA.

Based on the transient nature of the sound source and 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 have therefore been 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 Sound EMBA. A foraging BIA for the Whale Shark also overlaps with the Sound EMBA.

Whale Shark migration along the WA coast occurs mainly between July and November (Section 4.3.3.3.1). The activities within 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 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 OA, any auditory impairment or injury is expected to be localized and limited to individuals, and have therefore been evaluated as Minor (5).

Plankton

Plankton is a collective term for all marine organisms that are unable to 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 moderate risk of causing behavioural changes to plankton in close proximity 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. 62). 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 mortality 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. 285). In a review of mortality estimates (Ref. 286) 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. 287) 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. 267) 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 consitute a considerably higher risk profile then 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.

ALARP decision context justification

Offshore VSP operations are commonplace and well-practised nationally and internationally. The application of control measures to manage impacts and risks arising from this aspect are well defined, understood by the industry, and are 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.
EPBC 2008/4469 Condition 26, CSMFIMP (Ref. 208)	**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 a period of 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 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

	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** • 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 three 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.

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

Likelihood and risk level summary	
Likelihood	Baleen Whales may exhibit behavioural avoidance when sound levels are at or above 160 dB re 1 µPa (Ref. 165). 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. 166), 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. 112; Ref. 167). 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).
Risk level	Low (8)

Determination of acceptability	
Principles of ESD	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.

<table>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered applicable for this aspect include:
EPBC 2008/4469 Condition 26, CSMFIMP (Ref. 208)
EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 52)
Conservation Advice Balaenoptera borealis Sei Whale (Ref. 51)
Conservation Advice Balaenoptera physalus Fin Whale (Ref. 51)
Conservation Advice Rhincodon typus Whale Shark (Ref. 49)
Recovery Plan for Marine Turtles in Australia (Ref. 48)
North-west Marine Parks Network Management Plan 2018 (Ref. 257).</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 Regulation 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 BIAs will be managed such that any blue whale continues to utilise the area without injury, and is not displaced from a foraging area</td><td>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 southwest 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), the Sound EMBA also does not intersect with any ‘most important area’ for foraging. As such it is not exposed to underwater sound emissions resulting from the activity.
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.</td></tr>
<tr><td></td><td>Conservation Advice Balaenoptera borealis Sei Whale
No specific conservation action identified.</td><td>N/A</td></tr>
<tr><td></td><td>Conservation Advice Balaenoptera physalus Fin Whale
No specific conservation action identified.</td><td>N/A</td></tr>
<tr><td></td><td>Conservation Advice Rhincodon typus Whale Shark</td><td>N/A</td></tr>
</table>

	No specific conservation action identified.	
	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 WD-1 exploration drilling is not considered to be inconsistent with the *Recovery Plan for Marine Turtles in Australia*. 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 habitat critical to the survival of a species and BIAs without displacement or disruption to biologically important behaviours is expected.
	North-west Marine Parks Network Management Plan 2018 No specific zone rules 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 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:	
	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.
	North-west Marine Parks Network Management Plan 2018	As per Section 4.5.1.

	Therefore, CAPL has defined the following acceptable level of impact such that it is not inconsistent with these documents: • no injury or mortality 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 anthropogenic underwater sound • no displacement of Pygmy Blue Whales from foraging areas resulting from anthropogenic underwater sound • no displacement of marine turtles from habitat critical to the survival or a species resulting from anthropogenic activities • no disruption of biologically important behaviors of marine turtles within BIAs, resulting from anthropogenic 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.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
No injury to marine fauna from underwater sound emissions from petroleum activities No adverse change to the values of Australian Marine Parks from petroleum activities	**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	Records of MFO's presence during VSP operations
	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	VSP operations report verifies that pre-start-up visual observations were conducted
	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	VSP operations report verifies that observation and shut-down zones were adhered to
	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 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	VSP operations report verifies that soft-star-up procedures commenced in pre-start-up visual observations and soft start-up was implemented over a 20-minute period
	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	VSP operations report verifies operational procedures were implemented

	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 • 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 three 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.	VSP operations report verifies low-visibility procedures were implemented

7.8 Invasive marine pests

Source

Activities identified as having the potential to result in the introduction of an invasive marine pest (IMP) are:

- MODU— planned discharged of ballast water or presence of biofouling on the MODU within the 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 the 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: • displacement of, or compete with, native species.	2

Consequence evaluation

The MODU and support vessels will be present within the OA during the drilling, well intervention and / or well abandonment activities, which are estimated to take ~65 days to complete per activity and up to 455 days cumulatively for the seven planned infill wells. The OA consists of an area of ~588 km^2, in water depths of ~115 to 240 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 six introduced marine species becomes a pest (Ref. 90).

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 Resource 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. 91) estimates: 40% chance of colonisation at 3 nm, 30% chance at 12 nm, and 20% chance at 24 nm.

The OA is located in deeper waters (~115 to 240 m), and as such low light levels are expected at the seabed. The OA is also located >40 km (>35 nm) from the closest coast (Montebello Islands), and >140 km (>75 nm) from the mainland coast and large ports.

The particular values and sensitivities within the OA with the potential to be impacted by introduction of an IMP includes the following KEFs:

- Continental slope demersal fish communities
- Ancient coastline at 125m depth contour.

Although two KEFs were identified as having the potential to be exposed, as described in Section 4.3.1, benthic habitat in the disturbance footprint is expected to comprise soft sediment substrate that are typically unvegetated and with low benthic invertebrate habitation, and is widespread and homogenous through the region. The nature of the marine habitats within the disturbance footprint indicate that establishment would be difficult due to the water depths and the presence of soft sediment communities. Hard substrates are present within the OA along the Wheatstone Ridgeline (Section 4.3.1.3), however the closest DC2 manifold location to the ridgeline is > 4km away.

Once established, some IMPs can be difficult to eradicate and therefore there is the potential for a long-term change in habitat structure (Ref. 92). Highly disturbed shallow water and coastal marine environments (such as marinas) have been found to be more susceptible to colonisation than open-water environments, where the number of dilutions and the degree of dispersal is high (Ref. 93, Ref. 94, Ref. 95, Ref. 96). Though Invasive Species are identified as being of concern to the habitats under the *North-west Marine Bioregional Plan* (Ref. 62), the marine nature of the habitats within the OA are considered of less concern as the establishment would be difficult due to the water depths, lack of hard substrates, and the presence of soft sediment communities.

If an IMP was introduced, and if it did colonise an area, there is the potential for that colony to spread outside the OA resulting in a widespread long-term impact. As such, CAPL has ranked the consequence associated this impact as Severe (2).

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 over 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. 36) 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. 5)* • undertaking biofouling risk assessments in line with the National *Biofouling Management Guidance for the Petroleum Production and Exploration Industry* (Ref. 10) 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. 9) and *Australian Biofouling Management Requirements (Ref. 5)*. 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, etc.) is provided to enable suitable risk assessments to be completed prior to vessel mobilisation 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. 4) 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.
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. 5)*, 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.

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

Likelihood and risk level summary	
Likelihood	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 in close proximity to the OA.
Risk level	Low (7)

Determination of acceptability	
Principles of ESD	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 OA 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.
Relevant environmental legislation and other requirements	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])

<table>
<tr><td></td><td colspan="2">

Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Biofouling Guidelines) (Ref. 9)
Australian Ballast Water Management Requirements (Ref. 4)
Australian Biofouling Management Requirements (Ref. 5)
National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (Ref. 10)
North-west Marine Parks Network Management Plan 2018 (Ref. 257).

</td></tr>
<tr><td></td><td>Requirements</td><td>Demonstration</td></tr>
<tr><td></td><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></td><td>Protection of the Sea (Harmful Anti-fouling Systems) Act 2006 (Cth)
Gives effect to Marine Order 98</td><td>Anti-fouling certifications (as per Division 2) have been incorporated into the anti-fouling certificate control measure</td></tr>
<tr><td></td><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>
<tr><td></td><td>Australian Biofouling Management Requirements
Best practice guidance for biofouling management within Australian seas, including legislative obligations under Biosecurity Act 2015 (Cth)</td><td>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.</td></tr>
<tr><td></td><td>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</td><td>Proactive management of biofouling (e.g., use of biofouling management plan) has been incorporated into the quarantine procedure control measure.</td></tr>
<tr><td></td><td>National Biofouling Management Guidance for the Petroleum Production and Exploration Industry
Undertake a biofouling risk assessment</td><td>Biofouling risk assessments for vessels have been incorporated into the quarantine procedure 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:
Quarantine Procedure Marine Vessels (Ref. 36).</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding IMPs 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>
</table>

<table>
<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:

Plan | Objective
North-west Marine Parks Network Management Plan 2018 | As per Section 4.5.1.

Therefore, CAPL has defined the following acceptable level of impact such that it is not inconsistent 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 biofouling and ballast water, 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">No introduction and establishment of invasive marine pests from vessel activities within the OA associated with the petroleum activity

No adverse change to the values of Australian Marine Parks from petroleum activities</td><td>Quarantine procedure
All 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</td><td>*The Quarantine Certificate - Vessel Mobilisation* issued by CAPL confirms that relevant vessels meet requirements of the *Quarantine Procedure Marine Vessels*</td></tr>
<tr><td>Ballast water management
International marine 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.</td><td>For international marine vessels, records show compliance with the Australian Ballast Water Management Requirements</td></tr>
<tr><td>Antifouling certificate
Marine 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* and/or the International Convention on the Control of Harmful Anti-fouling Systems on Ships</td><td>Inspection reports confirm that international antifouling coating certifications are up to date</td></tr>
<tr><td>Maritime arrivals reporting system
Vessels entering into the Australian territorial sea from outside Australian territory will complete pre-arrival reporting (unless Excepted under Biosecurity Determination</td><td>Records confirm that international vessels completed pre-arrival reporting (or can demonstrate meeting</td></tr>
</table>

	2016), in accordance with the *Biosecurity Act 2015.*	conditions for an exception)

7.9 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 the OA during drilling, well intervention and / or well abandonment activities
- field support—general vessel operations within the 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 will be present within the OA during the drilling, well intervention and / or well abandonment activities, which are estimated to take ~65 days to complete per activity and up to 455 days cumulatively for the seven planned infill wells. The OA consists of an area of ~588 km^2, in water depths of ~115 to 240 m.

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. 65). Therefore, nutrients from sewage, or other similar discharges will not accumulate or lead to eutrophication due to the highly dispersive environment (Ref. 65). This outcome was verified by sewage discharge monitoring for another offshore project (Ref. 97), 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 five 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. 97). 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 is designed to safely collect, contain and dispose 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 fire-fighting deluge systems onboard vessels often leads to a release of fire-fighting 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. 279; Ref. 280). 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), fire-fighting foams are generally considered to have a relatively low toxicity to aquatic species (Ref. 281; Ref. 282) and further dilution of the foam mixtures in dispersive aquatic environments may then occur before there is any substantial demand for dissolved oxygen (Ref. 283).

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 following completion of 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 OA 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).

As identified in Section 4.5.1, the OA overlaps with the Montebello Marine Park. Natural values of this AMP include species listed as threatened, migratory, marine, or cetacean under the EPBC Act, as well as any identified BIAs for regionally significant marine fauna; and also the ancient coastline at 125 m depth contour 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. 13).

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. 98) 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, they are expected to be localised, typically returning to background conditions within tens to a few hundred metres of the discharge location (Ref. 99; Ref. 100; Ref. 101).

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).

Given the limited impacts expected to predatory-prey dynamics from planned vessel discharges, it is therefore expected that there would also be limited environmental impacts to the values of the Montebello Marine Park.

ALARP decision context justification

Offshore commercial vessel operations, and subsequent planned discharges, are commonplace and well-practiced 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. Notwithstanding this, CAPL has considered additional mitigation measures that could potentially further reduce the impacts and risks from planned discharges to Montebello Marine Park.

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 authorized to be discharged to the environment.	
Additional control measures and cost benefit analysis		
Control measure	**Benefit**	**Cost**
Spatial restriction of vessel discharges within an AMP	The impacts and risks associated with intermittent vessel discharges have been assessed as Incidental (i.e., limited environmental impact). In accordance with the rules for multiple use zones of Australian Marine Parks, waste from normal operations of vessels is allowable if compliant with legislative requirements. The intermittent discharge of waste from vessels during the drilling, well intervention and / or well abandonment activities within the boundary of the Montebello Marine Park is not inconsistent with the rules allowed for a multiple use zone. In addition, given the limited environmental impacts expected to occur, these are not considered to be inconsistent with the overall objectives of the North-west Marine Park Management Plan. Therefore, applying a spatial restriction to vessel discharges would not further reduce the consequence of the impacts and risks. However, given that there is the potential for concurrent vessel operations as part of this activity, and other petroleum activities may be occuring within the Marine Park, the application of a spatial restriction to vessel discharges may reduce the potential for cumulative impacts to the Montebello Marine Park.	Implementing this control measure may result in an increase in operational costs (e.g., longer survey length due to changes in operational schedules, etc.) However, due to the values identified for the Montebello Marine Park, the additional cost of implementing this measure is not considered grossly disproportionate to the limited environmental benefit gained. Therefore, this control measure has been adopted for use.
Likelihood and risk level summary		
Likelihood	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	

<table>
<tr><td></td><td>impact to the ecological function of the particular values and sensitivities present within the OA.</td></tr>
<tr><td>Risk level</td><td>Very low (10)</td></tr>
<tr><td colspan="2">Determination of acceptability</td></tr>
<tr><td>Principles of ESD</td><td>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>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
North-west Marine Parks Network Management Plan 2018 (Ref. 257).
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>Marine Order 91

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>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>Marine Order 96

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>North-west Marine Parks Network Management Plan 2018

The Plan requires that “waste from normal operations of vessels must be compliant with requirements under the International Convention for the Prevention of Pollution from Ships (MARPOL), the International Maritime Organisation (IMO) convention covering prevention of pollution of the marine environment by ships from operational or accidental causes”</td><td>The Montebello Marine Park is a multiple use zone (IUCN VI). The control measures identified for the management of planned discharges from vessel operations are in accordance with MARPOL requirements, and therefore also in accordance with the requirements of the multiple use zone of an Australian Marine Park.</td></tr></table></td></tr>
<tr><td>Internal context</td><td>The following CAPL management processes or procedures were deemed relevant for this aspect:
Chevron Marine Standard Non Tankers: Corporate OE Standard(Ref. 31).</td></tr>
</table>

<table>
<tr><td></td><td colspan="2">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 stakeholder consultation, DNP requested that CAPL avoid vessel discharges in the Montebello AMP where possible. As outlined above, CAPL has adopted a control in relation to this. No other objections or claims were raised regarding planned discharges from vessel operations 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:
<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 not inconsistent with these documents:
• Vessel discharges are compliant with MARPOL requirements
• 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 planned vessel discharges, 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="2">No impacts to marine habitats or marine fauna outside of the OA from planned discharges during petroleum activities</td><td>MARPOL 73/78 sewage discharge
Offshore discharge of sewage from vessels will be in accordance with these MARPOL 73/78 Annex IV requirements:
• an IMO approved comminution and disinfection system to discharge (greater than 3 nm from the nearest land); or
• an IMO approved Sewage Treatment Plant at any location; or
• untreated sewage discharged ≥12 nm from the nearest land while the vessel is proceeding at no less than 4 knots.</td><td>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)</td></tr>
<tr><td>MARPOL 73/78 food waste discharge
Offshore discharge of food waste from vessels will be in accordance with these MARPOL 73/78 Annex V requirements:</td><td>Records show food waste is discharged in accordance with MARPOL 73/78 Annex V</td></tr>
</table>

	• 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.	
	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: • through an IMO approved on board oil-water separator **when the marine vessel is *en route*.**	Records show oily bilge water is discharged in accordance with MARPOL 73/78 Annex I, including current International Oil Pollution Prevention (IOPP) Certificate
No adverse change to the values of Australian Marine Parks from the drilling, well intervention and / or well abandonment activities	**Spatial restriction of vessel discharges within an AMP** No vessel-based discharges of sewage, food waste, or oily bilge water, will occur within the boundary of the Montebello Marine Park during the drilling, well intervention and / or well abandonment activities	Records demonstrate that spatial data for the boundary of the Commonwealth Montebello Marine Park have been provided to the seismic and support vessel contractors
		Records show planned discharges from vessels during the the drilling, well intervention and / or well abandonment activities were outside the Montebello Marine Park

7.10 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 (consisting of seawater and viscous sweeps, e.g. 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 seafloor (e.g., during drilling of the top-hole sections), and at the surface once the riser is installed (Section 3.2; Table 3-6).

Surface discharges will cause the largest (spatial) changes to water quality given influence by surface currents and wind speeds. Hinwood et al. (Ref. 44) details that when cuttings are discharged to the ocean from surface, the larger particles which represent ~90% of the mass of

the mud solids, form a plume that settles quickly to seabed close to the release point. Neff (Ref. 103) states that in well-mixed oceans waters (as is the case within the OA), the drilling cuttings and fluid plume from a surface discharge is diluted by more than 100-fold within 10 m of the discharge. On this basis, CAPL expects that changes to water quality will be limited conservatively to within hundreds of metres of the discharge source.

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 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 seafloor, 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 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. 44). Neff (Ref. 104) 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. 105, Ref. 106, Ref. 107, Ref. 108). Jones et al. (Ref. 109, Ref. 110) 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 seafloor up to at least 250 m from the well. Similarly, Gates and Jones (Ref. 202) 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 three years after. Density of benthic megafauna within this disturbance area was lower than pre-drill transects (Ref. 202).

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.

The benthic habitat at the proposed drilling locations (within approximately 2.5 km of the proposed DC2 Manifold locations) is expected to predominantly be soft substrate (Ref. 17; Section 4.3.1). The particular values and sensitivities within the OA with the potential to be impacted by seabed disturbance includes the following KEFs:

- Continental slope demersal fish communities
- Ancient coastline at 125m depth contour.

Although these two KEFs were identified as having the potential to be exposed, as described in Section 4.3.1, benthic habitat in these areas is expected to comprise soft sediment infauna communities 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. 62). Although physical habitat modification is considered a pressure of potential for this KEF, this modification has been associated with fishing activities (Ref. 62). The habitat type at the proposed drilling locations (adjacent to the DC2 Manifold locations) (i.e., soft sediment, typically unvegetated, and with low benthic invertebrate habitation) is widespread through the region.

In collaboration with the University of Western Australia, 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, which is ~77 km away from the operational area in this EP. GOR-3C is located in Title WA-37-L, with a water depth of 198 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 to 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.

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 to 100 m, and light cover more than 100 m from the well (Ref. 209). 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. 209). These findings are supported by other studies around the world that indicate biological effects from seabed communities associated with the deposition of NADF cuttings are limited to ~500 m from a well site (Ref. 210; Ref. 211; Ref. 212).

Neff (Ref. 104) found that recolonisation of synthetic-based, mud-cuttings piles in cold-water marine environments began within one to two 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. 111). Additional studies indicate that benthic infauna and epifauna recover relatively quickly, with substantial recovery in deepwater benthic communities within three to ten years (Ref. 110). The surveys at GOR-3C identified that even after 34 days of spud, bioturbation was observed in those areas covered by moderate drill spoil, indicating recovery is expected to occur rapidly for these wells (Ref. 209). Although effectiveness and recovery time may differ, those species present in soft sediment are well adapted to changes in substrate, especially burrowing species (Ref. 213), 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 deep water wells drilled using synthetic-based muds (Ref. 203). The synthetic based muds were either paraffin (e.g., Saraline 185V) or olefin based. Samples collected post drilling using paraffins as the synthetic base fluid showed limited areal coverage, predominately within 150 m of discharge and at depths <6 cm (Ref. 203). The farther station at 250 m showed approximately 50% of the surface concentration at 150 m and *de minimus* deposition below 4 cm (Ref. 203).

Jones et al. (Ref. 109, Ref. 110) considered habitat recovery following deposition of WBF and cuttings. After three years, there was significant removal of cuttings particularly in the areas with relatively low initial deposition (Ref. 110). 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.

Based on a conservative 500 m impact area, there is the potential for smothering impacts over an area of ~1.372km^2 per well (based on cutting piles with a 500 m radius) within the identified KEFs. Based on the smallest spatial area covered by a single KEF (ancient coastline at 125 m depth contour, which covers an area of ~16 189 km^2) and on the assumption all seven wells will be drilled within a single KEF, there is the potential to disturb ~0.0085% of the KEF.

Given the timeframe lapsed, the seabed habitats within the relevant license 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 license permit areas, are considered irrelevant for seabed disturbance.

As soft sediment benthic communities are known to recover over a longer period of time (Ref. 112), the potential impacts associated with this program 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. 44). Similarly, many drilling fluid additives that are likely to be used, such as barite,

bentonite, or guar gum, are listed as an “E” Category fluids under the OCNS and considered to pose little or no risk to the environment (PLONOR).

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. 204). 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 insoluble mineralised sulphide salts (Ref. 204). These solid metal sulphides have limited environmental mobility. Given the low concentrations of stock barite that would be within a WBF formulation, coupled with the low concentrations of heavy metals including mercury and cadmium in stock barite (<1 ppm and <3 ppm respectively), the overall volumes of heavy metals within the drill fluid discharges are minimal.

WBFs have been shown to have little or no toxicity to marine organisms (Ref. 205). The lack of toxicity and low bioaccumulation potential of the drilling fluids means that the effects of the discharges are highly localised and are not expected to spread through the food web (Ref. 104). Several metal bioaccumulation bioassays of WBF cuttings found that metal concentrations in the tissues of exposed animals were very similar to those in the tissues of unexposed animals (Ref. 111).

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 seawater 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 a UV 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, deep water location (~100 – 250 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. 103) 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 include:

- Continental slope demersal fish communities (KEF)
- Pygmy Blue Whale (distribution and migration BIA)
- Flatback Turtle (internesting buffer BIA)
- Whale Shark (foraging 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 period of 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. 48) and the *Conservation Advice Rhincodon typus Whale Shark* (Ref. 49) 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).

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 at the proposed drill locations (DC2 Manifold locations) 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. 32).	
Wells fluid field guidelines offshore	Discharges will be managed as per CAPL's *Wells Fluid Field Guidelines Offshore 2020* (Ref. 113), including: • no whole NADF will be discharged to the environment • 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 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. 206) provides the following limits for barite: • 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.	
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 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).	
Risk level	Low (7)	

<table>
<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. 62).
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 52)
Recovery Plan for Marine Turtles in Australia (Ref. 48)
Conservation Advice Rhincodon typus Whale Shark (Ref. 49)
North-west Marine Parks Network Management Plan 2018 (Ref. 257).</td></tr>
<tr><td></td><td>Requirement</td><td>Demonstration</td></tr>
<tr><td></td><td>Marine Bioregional Plan for the North-West Marine Region
No specific action identified</td><td>N/A</td></tr>
<tr><td></td><td>Conservation Management Plan for the Blue Whale 2015–2025
No specific action identified.</td><td>N/A</td></tr>
<tr><td></td><td>Recovery Plan for Marine Turtles in AustraliaNo specific action identified.</td><td>N/A</td></tr>
<tr><td></td><td>Conservation Advice Rhincodon typus Whale Shark
<u>Conservation action:</u> 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</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>
<tr><td></td><td>North-west Marine Parks Network Management Plan 2018
No specific zone rules identified.</td><td>N/A</td></tr>
<tr><td>Internal context</td><td colspan="2">The following CAPL management processes or procedures were deemed relevant for this aspect:
Hazardous Materials Management Procedure (Ref 32).
Chevron Australia Wells Fluid Field Guidelines Offshore 2020 (Ref. 113).</td></tr>
<tr><td>External context</td><td colspan="2">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="2">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.</td></tr>
</table>

<table>
<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>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>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 not inconsistent with these documents:
• no injury or mortality to Pygmy Blue Whales 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 planned vessel discharges, 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="3">No impacts to marine habitats or marine fauna outside of the OA from planned discharges during petroleum activities

No adverse change to the values of Australian Marine Parks from petroleum activities</td><td>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>Hazardous materials selection process assessment records (or similar)</td></tr>
<tr><td>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
• 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 base oil</td><td>Records show that drilling fluid management procedures were implemented</td></tr>
<tr><td>Stock barite management
Mercury and cadmium concentrations in stock barite will be limited to:</td><td>Records confirm that stock barite meets the maximum mercury and cadmium concentration specifications</td></tr>
</table>

	• mercury: maximum 1 mg/kg dry weight in stock barite • cadmium: maximum 3 mg/kg dry weight in stock barite	

7.11 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 seafloor (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. 81) 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 this program. 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. 81). 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 include:

- Pygmy Blue Whale (distribution and migration)
- Whale Shark (foraging)
- Flatback Turtle (internesting)
- Continental slope demersal fish communities (KEF).

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. 81) 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. 81) 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.

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 seafloor (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.

The majority 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. 81) 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 will therefore set in-situ, limiting the impact to the area directly around the well. BP modelled a 200 T subsurface cement discharge (Ref. 81) and determined that impacts would be limited to a radius of approximately ~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)
- Ancient coastline at 125 m depth contour (KEF).

Although two KEFs were 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. 62).

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. 81). 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.

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. 32).
Drilling and cementing procedures	It is standard industry practice for drilling and cementing procedures to be developed prior to activities commencing. 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

<table>
<tr><td></td><td colspan="2">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.</td></tr>
<tr><td colspan="3">Additional control measures and cost benefit analysis</td></tr>
<tr><td>Control measure</td><td>Benefit</td><td>Cost</td></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><td colspan="3">Likelihood and risk level summary</td></tr>
<tr><td>Likelihood</td><td colspan="2">N/A</td></tr>
<tr><td>Risk level</td><td colspan="2">N/A</td></tr>
<tr><td colspan="3">Determination of acceptability</td></tr>
<tr><td>Principles of ESD</td><td colspan="2">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.</td></tr>
<tr><td rowspan="3">Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered as relevant control measures include:
• North-west Marine Parks Network Management Plan 2018 (Ref. 257).</td></tr>
<tr><td>Requirement</td><td>Demonstration</td></tr>
<tr><td>North-west Marine Parks Network Management Plan 2018
No specific zone rules identified.</td><td>N/A</td></tr>
<tr><td>Internal context</td><td colspan="2">The following CAPL management processes or procedures were deemed relevant for this aspect:
• Hazardous Materials Management Procedure (Ref 32).
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.</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding planned discharges from subsea operations arising from the activity.</td></tr>
<tr><td rowspan="3">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 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>Plan</td><td>Objective</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 level of impact such that it is not inconsistent 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 planned vessel discharges, that the risk to values of the AMP are also subsequently managed.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
No impacts to marine habitats outside of the OA from planned discharges during petroleum activities No adverse change to the values of Australian Marine Parks from petroleum activities	**Hazardous materials selection process** Fluids planned for discharge are subject to the hazardous materials selection process as per the CAPL *Hazardous Materials Management Procedure*	Hazardous materials selection process assessment records (or similar)
	Drilling and cementing procedures Drilling and cementing procedures will be developed prior to activities commencing	Records show that drilling and cementing procedures were developed
	Drilling and cementing procedures Drilling and cementing procedures will be implemented, including: • quantity of cement mixed for each operation will not significantly (>30%) vary from the volume calculated.	Records show that drilling and cementing procedures were implemented

7.12 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 seafloor 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. 102). 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 approximately 2,500 L of diluted control fluid weekly. The control fluid is a water-soluble product and is diluted to approximately 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. The discharges will occur within the OA at the well locations, which are located in water depths of ~115 m to ~240 m.			

Modelling undertaken for another offshore drilling project indicates that a release of BOP fluids during function testing is expected to reach a dilution of 3000 times within a maximum displacement plume of 98 m (Ref. 102). Based on this information, it is expected concentrations of BOP control fluid would be approximately 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. 114, Ref. 115)], 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.

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 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. 32).
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.

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 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	Legislation and other requirements considered as relevant control measures include: • *North-west Marine Parks Network Management Plan 2018* (Ref. 257).	
	Requirement	**Requirement**
	North-west Marine Parks Network Management Plan 2018 No specific zone rules identified.	*North-west Marine Parks Network Management Plan 2018* No specific zone rules identified.

<table>
<tr><td>Internal context</td><td colspan="2">The following CAPL management processes or procedures were deemed relevant for this aspect:
• Hazardous Materials Management Procedure (Ref 32).
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.</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding these discharges 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 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>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 not inconsistent 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 planned vessel discharges, 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="2">No impacts to marine habitats outside of the OA from planned discharges during petroleum activities

No adverse change to the values of Australian Marine Parks from petroleum activities</td><td>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>Hazardous materials selection process assessment records (or similar)</td></tr>
<tr><td>Equipment maintenance
Critical equipment will be maintained in accordance with manufacturers’ specifications</td><td>Records confirm the BOP is maintained in accordance with manufacturer specifications</td></tr>
</table>

7.13 Unplanned release—waste

Source
Activities identified as having the potential to result in the unplanned release of waste are: • MODU—general MODU operations within the OA during drilling, well intervention and / or well abandonment activities

- field support—general vessel operations within the OA during drilling, well intervention and / or well abandonment activities.

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 OA. 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. 48; Ref. 116). 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. 116). However, the national Threat Abatement Plan (Ref. 116) 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". This type 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).

ALARP decision context justification

Offshore commercial vessel operations, and the subsequent management of waste, are commonplace and well-practiced 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.

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. Marine Order 95 (Marine pollution prevention – garbage) gives effect to MARPOL 73/78 Annex V.

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,

<table>
<tr><td></td><td>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).</td></tr>
<tr><td>Risk level</td><td>Very low (9)</td></tr>
<tr><td colspan="2">Determination of acceptability</td></tr>
<tr><td>Principles of ESD</td><td>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.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td>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. 116)
Recovery Plan for Marine Turtles in Australia (Ref. 48)
Wildlife Conservation Plan for Migratory Shorebirds (Ref. 71).
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 52)
Conservation Advice Rhincodon typus Whale Shark (Ref. 49).
North-west Marine Parks Network Management Plan 2018 (Ref. 257).

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>Marine Order 95
Gives effect to Annex V of MARPOL 73/78</td><td>Requirements for the prevention of pollution from garbage have been incorporated into the Marine Order 95 (Marine pollution prevention – garbage control measure</td></tr>
<tr><td>Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia’s coasts and oceans
No specific action identified.</td><td>N/A</td></tr>
<tr><td>Recovery Plan for Marine Turtles in Australia
No specific management action identified.</td><td>N/A</td></tr>
<tr><td>Wildlife Conservation Plan for Migratory Shorebird
Ensure all areas important to migratory shorebirds in Australia continue to be considered in development assessment processes.</td><td>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.</td></tr>
<tr><td>Conservation Management Plan for the Blue Whale
No specific management action identified.</td><td>N/A</td></tr>
<tr><td>Conservation Advice Rhincodon typus Whale Shark</td><td>N/A</td></tr>
</table>
</td></tr>
</table>

	No specific conservation action identified.	
	North-west Marine Parks Network Management Plan 2018 The Plan requires that "waste from normal operations of vessels must be compliant with requirements under the International Convention for the Prevention of Pollution from Ships (MARPOL), the International Maritime Organisation (IMO) convention covering prevention of pollution of the marine environment by ships from operational or accidental causes".	The Montebello Marine Park is a multiple use zone (IUCN VI). The control measures identified for the management of planned discharges from vessel operations are in accordance with MARPOL requirements, and therefore also in accordance with the requirements of the multiple use zone of an Australian Marine Park.
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:	
	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.
	North-west Marine Parks Network Management Plan 2018	As per Section 4.5.1
	Therefore, CAPL has defined the following acceptable level of impact such that it is not inconsistent with these documents: • no injury or mortality 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 • 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 of waste, that the risk to marine fauna and/or values of the AMP are also subsequently managed.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
No unplanned release of waste to the environment during petroleum activities No injury or mortality to marine fauna from an unplanned release of waste within the OA associated with the petroleum activities No adverse change to the values of Australian Marine Parks from petroleum activities	**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	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
	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	Current and completed Garbage Record Book (for marine vessels >400 T or certified to carry >15 persons)
	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	Current IAPP Certificate (for marine vessels >400 T or certified to carry >15 persons)
		Current and completed Garbage Record Book (for marine vessels >400 T or certified to carry >15 persons).

7.14 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 on board (<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 (~20m^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. 117) 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

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 OA include:

- Flatback turtle (internesting buffer BIA)
- Wedge-tailed Shearwater (breeding BIA)
- Whale Shark (foraging BIA)
- Pygmy Blue Whale (distribution and migration BIA)
- continental slope demersal fish communities (KEF)
- commercial fisheries.

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).

ALARP decision context justification

Offshore drilling operations are commonplace and well-practiced 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.

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. 31) ensures that various legislative requirements and CAPL standards are met. Specifically, pre-mobilisation 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.
Wells fluid field guidelines offshore	Bulk transfers of NADF from vessels to MODU will be undertaken in accordance with CAPL's *Wells Fluid Field Guidelines Offshore 2020* (Ref. 113). These guidelines provide a guide to fluids management procedures, and ensure best practices are documented and applied across operations.
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.
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.

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

Likelihood and risk level summary	
Likelihood	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.
Risk level	Very low (9)
Determination of acceptability	
Principles of ESD	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.
Relevant environmental legislation and other requirements	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. 257).

<table>
<tr><td></td><td colspan="2">CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.
Requirement | Demonstration
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
North-west Marine Parks Network Management Plan
The Plan requires that “[a]ctions 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 the management of 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="2">The following CAPL management processes or procedures were deemed relevant for this aspect:
• Marine Standard (Ref. 31)
• Chevron Australia Wells Fluid Field Guidelines Offshore 2020 (Ref. 113).</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 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
North-west Marine Parks Network Management Plan 2018 | As per Section 4.5.1.
Therefore, CAPL has defined the following acceptable level of impact such that it is not inconsistent 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><td>Environmental performance outcome</td><td>Environmental performance standard</td><td>Measurement criteria</td></tr>
<tr><td>No unplanned release of</td><td>Marine Standard</td><td>OVIS report / ABU Marine OE Inspection Checklist confirms</td></tr>
</table>

hydrocarbons or hazardous materials to the environment during petroleum activities No adverse change to the values of Australian Marine Parks from petroleum activities	Prior to commencement of activities, 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.	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
	Wells fluid field guidelines offshore Bulk transfers of NADF are implemented in accordance with the CAPL *Wells Fluid Field Guidelines Offshore 2020*	Records confirm that bulk transfers of NADF were conducted in accordance with the the CAPL *Wells Fluid Field Guidelines Offshore 2020*
	Equipment maintenance Critical equipment will be maintained in accordance with manufacturers specifications	Records confirm critical equipment is maintained in accordance with manufacturer specifications
	Permit system Implement a permit system to control the isolation of overboard drainage aboard the MODU where there is potential for unplanned discharge of hazardous materials	Where required, records confirm the implementation of a permit system
Reduce the risk of impacts to the environment from the unplanned release of hydrocarbons or hazardous materials during petroleum activities	**SOPEP** Marine vessels >400 T will carry on board a SOPEP in accordance with MARPOL 73/78 Annex I – Prevention of Oil Pollution	OVIS report / ABU Marine OE Inspection Checklist confirms an approved SOPEP is on board marine vessels >400 T
		Inspection records (or similar) show drills conducted in accordance with SOPEP
		Inspection records (or similar) show spill kits available in accordance with SOPEP
	SOPEP In the event of a vessel-based spill event, emergency response activities will be implemented in accordance with the vessel SOPEP (or equivalent)	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 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 activities, size of largest fuel tanks and fuel type to be utilised for the activities in this EP, CAPL was able to identify the typical credible worst-case scenario (as per AMSA guidelines; Ref. 117) as being a surface release between ~500 to 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, modelling of a vessel spill event of 1,063 m^3 has 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 (Ref. 118).

The release location selected for use (Table 7-8), while outside the OA for this EP, is considered an appropriate and conservative approach to inform the risk assessment given that the modelled release location is closer to sensitive shorelines.

A three-dimensional oil spill model (SIMAP) was used to simulate the drift, spread, weathering and fate of the spilled oil (Ref. 118). 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, 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	~20 km south of OA, and within the Montebello Marine Park
Latitude	20°09'22" S
Longitude	115°24'11" E
Water depth	~50–60 m
Oil type	MDO
Simulation spill type	Surface
Simulation spill volume	1,063 m^3 (based on the largest single tank)
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, 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 impact thresholds

Environmental impact threshold	Justification
Surface ≥1 g/m^2 (low)	In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 119), CAPL has set the surface impact threshold for socio-economic 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. 120) 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.
Surface ≥10 g/m^2 (moderate)	In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 119), 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. 120) 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. 119). This threshold is consistent with observations ranging from physical oiling to toxicity effects for marine fauna within literature, including French et al. (Ref. 121), French-McCay (Ref. 122), Engelhardt (Ref. 123), Clark (Ref. 124), Geraci and St. Aubin (Ref. 125) and Jenssen (Ref. 126).
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. 127], Nordtug et al. [Ref. 128], Redman [Ref. 129]). 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. 119), 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. 119). 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) ≥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. 119), CAPL has set the in-water (entrained) impact threshold for sublethal ecological effects at ≥100 ppb.

Environmental impact threshold	Justification
	This threshold is considered by NOPSEMA as appropriate for informing risk evaluation (Ref. 119). 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. 131) 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. 119), CAPL has set the shoreline impact threshold for socio-economic 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. 119), 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. 121) and French-McCay (Ref. 122) define shoreline oil accumulation at ≥100 g/m^2 as potentially harmful to wildlife (including invertebrates, birds, furbearing aquatic mammals and marine reptiles), based on studies for sub-lethal 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. 132) 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. 133]; Suprayogi and Murray [Ref. 134]).

^ 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.

** Results for time-integrated thresholds were not modelled for the purposes of risk assessment in the EP (and as such, no results are presented). The justification for these thresholds has been included for completeness as these thresholds with concentration and duration components may be used during modelling and monitoring in the event of unplanned release.*

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. 118).

7.15.2.2 Modelling outputs

Stochastic modelling outputs from RPS (Ref. 118) are summarised in Table 7-11 having regard to the particular values and sensitivities identified in Section 4.

For the 1,063 m^3 MDO release south of the OA:

- The maximum distance from the release location to the ≥1 g/m2 visible impact threshold was ~64 km south-southwest (transitional), and ~38 km south-southwest (summer) for the ≥10 g/m2 impact threshold.
- The probability of contact to any shoreline at ≥10 g/m2 was 7% in summer, 1% in winter, and no contact predicted in transitional months. The minimum time before shoreline contact was ~3 days and the maximum volume of oil ashore was 24.4 m3. The maximum length of shoreline exposed at ≥10 g/m2 was ~27 km, and at ≥100 g/m2 was ~10 km.
- 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 >10 m below the surface predicted to occur during any season.

Table 7-11: Vessel collision spill modelling EMBA 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, minimum time to exposure)		(probability of exposure)	(probability of exposure)	(probability of exposure, minimum time to exposure, mean length of shoreline)	
AMP	Gascoyne	—	—	—	1–4%	—	—
	Montebello	100%, ~1 hour	100%, ~1 hour	—	89–97%	—	—
	Ningaloo	—	—	—	0–1%	—	—
KEF	Ancient coastline at 125 m depth contour	0–6%, ~0.75 days	—	—	19–30%	—	—
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	—	—	—	1–4%	—	—
	Commonwealth waters adjacent to Ningaloo Reef	—	—	—	0–1%	—	—
	Continental slope demersal fish communities	0–1%, ~2.7 days	—	—	9–27%	—	—
	Exmouth Plateau	—	—	—	0–2%	—	—
	Glomar Shoals	—	—	—	0–2%	—	—
World Heritage Properties / National Heritage Places	The Ningaloo Coast *(inferred from Cape Range IBRA, and Exmouth shoreline)*	—	—	—	0–2%	0–2%, ~14.4 days, ~3 km	—
Commonwealth Heritage Properties	Ningaloo Marine Area – Commonwealth Waters *(inferred from Ningaloo IMCRA)*	—	—	—	1–2%	—	—

^ *Ranges in values shown are due to the different results between seasons.*

7.15.3 Risk assessment

Source

Activities identified as having the potential to result in a vessel collision event are:

- field support—vessel operations within the OA.

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.	6
		• Changes to cultural heritage values	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).

Direct contact with hydrocarbons may result in skin and eye irritation, burns to mucous membranes of eyes and mouth, and increased susceptibility to infection (Ref. 135). However, direct contact with surface oil is considered to have little deleterious effect on whales, possibly due to the skin's effectiveness as a barrier. Furthermore, effect of oil on cetacean skin is probably minor and temporary (Ref. 135). French-McCay (Ref. 136) 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 applicable; 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. 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. Necropsies from cetacean mortalities have generally concluded that death resulted from causes other than oil (Ref. 276).

Dugongs have smooth skin surfaces and therefore are less likely to be affected by oil adhering to their skin. 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. 277). 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. 276).

Studies have shown little impact on Bottlenose Dolphins after hydraulic and mineral oil immersion and ingestion, although there was evidence of temporary skin damage in dolphins and a Sperm Whale from contact with various oil products including crude oil (Ref. 135; Ref. 137).

Marine mammals are vulnerable if they inhale volatiles when they surface within a hydrocarbon slick. For the short period that they persist, vapours from the 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. 135).

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 analyses were utilised to understand the potential extent and duration of exposure.

Under this scenario, the deterministic model for the worst-case trajectory for the Montebello Islands indicates that surface hydrocarbons concentrations ≥1 g/m^2 (i.e., visible threshold) are present for <5 days following the spill event, with a maximum area of coverage of ~99 km^2 occurring 36 hours after the spill commenced. This deterministic scenario is considered most relevant for offshore waters, and subsequent impacts to offshore BIA's 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 <1% of the entire BIA.

The deterministic model for the worst-case trajectory for Ningaloo World Heritage area indicates that surface hydrocarbons concentrations ≥1 g/m^2 (i.e., visible threshold) are present for <2 days following the spill event, with a maximum area of coverage of ~32 km^2 occurring 18 hours after the spill commenced. This deterministic scenario is considered most relevant for nearshore waters around Ningaloo and Exmouth Gulf, and subsequent impacts to nearshore BIA's in those regions. Using the Dugong breeding BIA as an example, modelling indicates that the extent of surface exposures was predicted to be limited to <1% of the entire BIA. As the extent and duration of exposure to nearshore environments is expected to be limited the potential for significant environmental impacts would also be limited. However, it is acknowledged that behaviours in nearshore waters will result in increased sensitivity to hydrocarbon exposures as species are not expected to be transient.

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. 138).

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. 139). 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. 138).

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 within the EMBA. The behaviours associated with these BIAs include aggregation, basking, foraging, internesting, mating, and nesting.

Based on this scenario, the Montebello Islands was the only area predicted to be exposed to shoreline hydrocarbons accumulation of ≥100 g/m^2. These islands are identified as habitat critical to the survival of Flatback, Green and Hawksbill turtles (**Table 4-8**). 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 model for the worst-case trajectory for the Montebello Islands indicates that surface hydrocarbons concentrations ≥1 g/m^2 (i.e., visible threshold) are present for <5 days following the spill event, with a maximum area of coverage of ~99 km^2 occurring 36 hours after the spill commenced. This deterministic run also predicted the largest volume of oil ashore as ~24 m^3, and the maximum length of shoreline exposed to ≥100 g/m^2 was ~10 km occurring ~4 days after the spill commenced. Using the Flatback Turtle internesting and nesting BIAs around Montebello Islands as an example, modelling indicates that the extent of surface and shoreline exposures was predicted to be limited to <1% of the entire BIA, or <1% of the coastline. This information indicates that if a vessel spill event occurred during the nesting season, it is not expected to impact entire local nesting populations.

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 Minor (5) and Moderate (4), 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 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. 140). Fish are most vulnerable to oil during embryonic, larval and juvenile life stages. However, very few studies have demonstrated increased mortality of fish as a result of oil spills (Ref. 141; Ref. 142; Ref. 143).

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. 144). 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 mortalities rarely occur in the event of a hydrocarbon spill in open waters (Ref. 145). Fish that have been exposed to dissolved hydrocarbons can eliminate the toxicants once placed in clean water; hence, individuals exposed to a spill would recover (Ref. 146).

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 utilised to understand the potential extent and duration of exposure.

Under this scenario, the deterministic model for the worst-case trajectory for Montebello Islands indicates that surface hydrocarbons concentrations ≥1 g/m^2 (i.e., visible threshold) are present for <5 days following the spill event, with a maximum area of coverage of ~99 km^2 occurring 36 hours after the spill commenced. This deterministic scenario is considered most relevant for offshore waters, and subsequent impacts to offshore BIA's in those regions. Using the Whale Shark foraging BIA, modelling indicates that the extent of surface exposures was predicted to be limited to <1% 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. 147; Ref. 139). Damage to external tissues, including skin and eyes, can occur, along with internal tissue irritation in lungs and stomachs (Ref. 148). Acute and chronic toxic effects may result where the product is ingested as the bird attempts to preen its feathers (Ref. 148).

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)
- Little Tern (resting).

The Montebello Islands was the only area predicted to be exposed to shoreline hydrocarbons accumulation of ≥100 g/m^2.

The deterministic model for the worst-case trajectory for the Montebello Islands indicates that surface hydrocarbons concentrations ≥1 g/m^2 (i.e., visible threshold) are present for <5 days following the spill event, with a maximum area of coverage of ~99 km^2 occurring 36 hours after the spill commenced. This deterministic run also predicted the largest volume of oil ashore as ~24 m^3, and the maximum length of shoreline exposed to ≥100 g/m^2 was ~10 km occurring ~4 days after the spill commenced. Using the Wedge-tailed Shearwater breeding BIA around the Montebello Islands as an example, modelling indicates that the extent of surface and shoreline exposures was predicted to be limited to <1% of the entire BIA, or <1% of the coastline. This information indicates that if a vessel spill event occurred during breeding season, it is not expected to impact entire local nesting populations.

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. 149; Ref. 150), act as a barrier to diffusion of CO_2 across cell walls in macroalgae (Ref. 151), and a decline in metabolic rate and partial mortality in corals (Ref. 152; Ref. 153) and impair respiration and photosynthesis by symbiotic zooxanthellae (Ref. 154; Ref. 155). 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 seven years after the event (Ref. 156).

As identified in Section 4.3.4.1, particular values and sensitivities with coral reef habitats that occur within the EMBA include:

- Mermaid Reef – Rowley Shoals (Commonwealth Heritage Place)
- Ningaloo Coast (World Heritage Property, National Heritage Place).
- Ningaloo Marine Area – Commonwealth Waters (Commonwealth Heritage Place)
- Scott Reef and Surrounds – Commonwealth Area (Commonwealth Heritage Place).

Coral, seagrass, and macroalgae habitats are also known to occur around the Barrow and Montebello islands, as well as other Pilbara inshore islands.

Stochastic modelling showed that in-water (entrained) hydrocarbons were predicted to remain within the surface layers only. Therefore, exposure to coral reefs in deeper waters are not predicted to occur. However, smothering of benthic habitat communities may occur if a surface slick occurs in the intertidal area.

The deterministic model for the worst-case trajectory for the Montebello Islands indicates that surface hydrocarbons concentrations ≥1 g/m^2 (i.e., visible threshold) are present for <5 days following the spill event, with a maximum area of coverage of ~99 km^2 occurring 36 hours after

the spill commenced. This deterministic run also predicted the largest volume of oil ashore as ~24 m^3, and the maximum length of shoreline exposed was ~10 km occurring ~4 days after the spill commenced.

The deterministic model for the worst-case trajectory for the Ningaloo World Heritage area indicates that surface hydrocarbons concentrations ≥1 g/m^2 (i.e., visible threshold) are present for <2 days following the spill event, with a maximum area of coverage of ~32 km^2 occurring 18 hours after the spill commenced.

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. 157). 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. 158).

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. 278) 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 shoreline accumulation above the ≥100 g/m^2 impact threshold may occur at the Montebello Islands during summer; but no accumulation ≥1,000 g/m^2 was predicted to occur. This higher threshold is typically associated with impacts to coastal vegetation communities (Table 7-10), and therefore, shoreline exposure to mangroves and intertidal mudflats is not discussed further.

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 no dissolved oil above impact thresholds (≥50 ppb) was 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 >10 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. 158). 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, whilst offshore exposures are expected to dilute and disperse over a longer period of time. 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 during summer has the potential to occur predominantly along the Montebello and Barrow Islands, with smaller/patchier occurrences along some of the other Pilbara inshore islands and North West Cape coast, depending on the environmental conditions at the time of the event. Only a small area of the Montebello Islands was predicted to be exposed during winter, and no shoreline contact was predicted to occur during transitional) seasons.

The deterministic model for the worst-case trajectory for the Montebello Islands indicates that the maximum length of shoreline oil above the visible impact threshold (≥10 g/m^2) at any given time was ~23 km, and the maximum volume of oil ashore was ~24 m^3.

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) has the potential to occur along parts of Barrow and Montebello islands, some Pilbara Inshore 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 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.

Deterministic analysis for the largest volume of oil ashore for the Montebello Islands, Barrow Island and the coast associated with Cape Range National Park indicates that the minimum time before shoreline hydrocarbons concentrations ≥10 g/m^2 are present, was ~4, ~28, and 17 days following the spill event, with a maximum volume ashore of ~24 m^3, ~1.35 m^3, and ~0.7 m^3 respectively.

Stochastic modelling also showed that the longest length of shoreline with exposure of ≥10 g/m^2 is ~23, ~8, and ~ 4 km along the coastline of the Montebello Islands, Barrow Island and the coast associated with Cape Range National Park, respectively. 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.

Shoreline loading can impact the visual amenity of coastal areas and limit beach access for users. However, if shoreline contact occurs, it is expected that any impacts from this type of event would be non-continuous short term in duration and will result in a limited volume ashore.

Indirect impacts to cultural values may also occur due to impacts on marine fauna, benthic or coastal habitats or other natural resources (e.g. fisheries). The consequence evaluations to marine fauna, habitats, and fisheries are provided above and range from minor to moderate. However, given the vessel spill event (if it occurs) is singular, non-continuous, and a limited volume of hydrocarbon is released over a short time, only a small proportion of marine fauna population is expected to be affected, and as such a significant adverse change to cultural values attribute to the offshore marine area is not predicted to occur.

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 cause smothering was ranked as Moderate (4).

Changes to values and sensitivities of Australian Marine Parks

Modelling predicts surface exposure ≥10 g/m^2 and entrained exposure ≥100 ppb from a vessel spill event as having a high probability of occurrence within the Montebello Marine Park (Table 7-11). Modelling predicted a low probability of entrained oil exposure within the Gascoyne and Ningaloo Marine Parks (Table 7-11). No interaction with seabed was predicted to occur. Given the much higher probability of exposure, the following evaluation is focused on the Montebello Marine Park.

The natural values of the Montebello 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 commercial fishing.

The consequence evaluations to marine fauna 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 Montebello Marine Park has been ranked as Minor (5).

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 over 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. 31) 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. 2) 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. 3) to support all spill monitoring activities across all its assets.

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

<table>
<tr><th colspan="2">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td>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>Low (8)</td></tr>
<tr><th colspan="2">Acceptability summary</th></tr>
<tr><td>Principles of ESD</td><td>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>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. 52)
Conservation Advice Balaenoptera borealis Sei Whale (Ref. 51)
Conservation Advice Balaenoptera physalus Fin Whale (Ref. 50)
Conservation Advice Rhincodon typus Whale Shark (Ref. 49)
Recovery Plan for Marine Turtles in Australia (Ref. 48)
North-west Marine Parks Network Management Plan (Ref. 257.).
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 maritime safety information control measure.</td></tr>
<tr><td>Marine Order 91
Gives effect to Annex I of MARPOL 73/78</td><td>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>Marine Order 30
Gives effect to the Prevention of Collisions Convention</td><td>Requirements for navigation, lights, and signals have been incorporated into the Marine Standard control measure</td></tr>
<tr><td>Conservation Management Plan for the Blue Whale 2015–2025
No specific management action identified.</td><td>N/A</td></tr>
</table></td></tr>
</table>

	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. 2). Response and recovery of habitats and marine fauna is within the scope of the OSMP (Ref. 3). Therefore, this activity is not considered to be inconsistent with the *Recovery Plan for Marine Turtles in Australia*.
	North-west Marine Parks Network Management Plan The Plan requires that "[a]ctions 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 the management of 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	The following CAPL management processes or procedures were deemed relevant for this aspect: • Marine Standard (Ref. 31) • OPEP (Ref. 2) • OSMP (Ref. 3).	
External context	During relevant persons consultation, no objections or claims were raised regarding a vessel collision event 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	

<table>
<tr><td></td><td colspan="2">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 not inconsistent with these documents:
• no injury or mortality 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">No unplanned release of hydrocarbons or hazardous materials to the environment during petroleum activities

No adverse change to the values of Australian Marine Parks from petroleum activities</td><td>Marine Standard
Vessels will meet the crew competency, navigation equipment, and radar requirements of the Marine Standard</td><td>Records indicate that vessels meet the crew competency, navigation equipment, and radar requirements of the Marine Standard</td></tr>
<tr><td>Maritime safety information
Notify relevant agency of activities, vessel movements, and requested Safe Navigation Area (SNA), to enable them to generate radio-navigation warnings and/or Notice to Mariners prior to commencing offshore activities</td><td>Record of lodgement of notification to relevant agency</td></tr>
</table>

Reduce the risk of impacts to the environment from the unplanned release of hydrocarbons or hazardous materials during petroleum activities	**SOPEP** Marine vessels >400 T will carry on board a SOPEP in accordance with MARPOL 73/78 Annex I – Prevention of Oil Pollution	OVID report / ABU Marine OE Inspection Checklist confirms an approved SOPEP is on board marine vessels >400 T
		Inspection records (or similar) show drills conducted in accordance with SOPEP
	SOPEP In the event of a vessel-based spill event, emergency response activities will be implemented in accordance with the vessel SOPEP (or equivalent).	Records confirm that emergency response activities were implemented in accordance with the vessel SOPEP in the event of a vessel-based spill
	OPEP In the event of a spill occurring, the OPEP will be implemented	Records confirm the OPEP has been implemented
	OSMP In the event of a spill occurring, the OSMP will be implemented	Records confirm the OSMP has been implemented

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 two 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 infill 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.

A subsea release of ~ 376,323 m^3 (2,367,000 bbl) of Iago condensate over a 90-day period was selected as the worst-case credible spill scenario for the well intervention and infill 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 (IAG-1E) referenced in this EP, described in Section 3.1.1. The Iago 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 Wheatstone/Iago permit areas.
- Similar reservoir composition. The well modelled (IAG-1E) is one of the production wells referenced in this EP. The DC2 wells are expected to have similar reservoir properties, as described in Section 3.1.1. Accordingly, the resulting worst credible discharge (WCD) condensate rate was 4181.4m^3/day. This rate was used for the oil spill modelling.
- The approximately 13-week (90 days) duration is considered to provide a maximum credible indication of a LOWC event. Response Time Models (RTMs) for DC2 indicate it is reasonable to expect that the IAG-1E well could be killed within the approximately 13-week (90 days) 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 *Source Control Emergency Response Plan* (SCERP) (Ref. 172). A summary of the key tasks associated with drilling a relief well (and incorporated into the RTMs) is:
  - 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.

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. 159).

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. 159). 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 7-12 summarises the model settings; Table 7-13 summarises the hydrocarbon properties for Iago condensate; and Table 7-10 describes the modelled environmental exposure and impact thresholds respectively.

Table 7-12: Well control event spill scenario model settings

Parameter	Details
Release location	IAG-1E well
Latitude	19°56'42.26" S
Longitude	115°19'30.71" E
Water depth	118.2 m
Oil type	Iago condensate
Simulation spill type	Subsea
Simulation spill volume	376,323 m^3 (2,367,000 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 7-13: Physical properties and boiling point ranges for Iago condensate

Characteristic	Value
Density	783 kg/m^3 (at 15 °C)
Dynamic viscosity	1.11 cP (at 20 °C)

Characteristic	Value			
Pour point	-24 °C			
API gravity	49.1 API			
Classification	Group I, non-persistent oil			
Boiling point	**Volatile <180 °C**	**Semi-volatile 180–265 °C**	**Low volatility 265–380 °C**	**Residual >380 °C**
% total	56.0%	24.0%	17.5%	2.5%
% aromatics	1.6%	0.3%	0.2%	–

7.16.2.1 Weathering and fate

Iago condensate is non-persistent oil, with a density of 783 kg/m^3, an API of 49.1, and a low pour point (−24°C) (Table 7-13). The low viscosity (1.1 cP) indicates that this oil will spread quickly when released and form a thin film on the sea surface, increasing the evaporation rate.

The Iago condensate is a mixture of volatile and persistent hydrocarbons with high proportions of volatile and semi- to low-volatile components (Table 7-13). In favourable evaporation conditions, ~56.0% of the oil mass should evaporate within the first 12 hours, a further ~24% should evaporate within the first 24 hours, and a further ~17.5% should evaporate over several days. Approximately 2.5% of the oil is shown to be persistent (Table 7-13); 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 (<0.04%), indicating a very low propensity for the mixture to take up water to form water-in-oil emulsion over the weathering cycle (Ref. 214).

7.16.2.2 Modelling outputs

Stochastic modelling outputs from RPS (Ref. 159) are summarised in Table 7-14, Table 7-15 and Table 7-16 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 376,323 m^3 subsea release of condensate at IAG-1E:

- 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 210.8 km south-southwest (transitional), 88.9 km northeast (transitional and winter) and 12.7 km west-southwest (summer), respectively.
- a total of 17, 11 and 11 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 probability of accumulation on any shoreline at, or above, the low threshold (≥ 10 g/m^2) was greatest during summer at 14%, while the minimum

time before shoreline accumulation was 16.83 days predicted during winter. The maximum total volume of oil ashore was predicted during the summer with 13.6 m^3 (over the duration of the simulation). There was no oil accumulation on any individual shoreline receptors predicted at or above the moderate (> 100g/m^2) threshold.

- In the surface (0-10 m) depth layer, a total of 47, 48 and 42 BIAs were predicted to be exposed to dissolved hydrocarbons at, or above, the low threshold (≥10 ppb) during summer, transitional and winter, respectively.. Additionally, eight AMPs and eight IMCRAs were predicted to be exposed to dissolved hydrocarbons at, or above the low threshold during all seasons, while 13 (transitional) and 11 (summer and 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 44, 40 and 40 BIAs were predicted to be exposed to entrained hydrocarbons at, or above, the low threshold (≥10 ppb) during summer, transitional and winter, respectively. During summer, transitional and winter, 9, 7 and 7 AMPs and were predicted to be exposed to entrained hydrocarbons at, or above the low threshold, respectively. Additionally, 10 (summer), 11 (transitional) and 11 (winter) KEFs were predicted to be exposed to entrained hydrocarbons at, or above the low threshold.

Table 7-14: 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	100%	94-99%	0.17	0.21	11.00	2.08
KEF	Ancient coastline at 125 m depth contour*	100%	100%	0.04	0.04	72.42	60.75
	Continental slope demersal fish communities	100%	70-79%	0.33	0.42	7.50	1.58
World Heritage Properties / National Heritage Places	The Ningaloo Coast *(inferred from the Ningaloo Coast World Heritage Area IAA)*	1%,	—	20.58	—	0.04	—

* *The release location resides within the receptor boundaries*

^ *Ranges in probability values shown are due to the different results between seasons.*

Table 7-15: 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	Minimum time to exposure (days)	Maximum residence time (days)	Probability of exposure	Minimum time to exposure (days)	Maximum residence time (days)
AMP	Argo-Rowley Terrace	1-2%	25.33	0.17	2-5%	23.92	1.13
	Carnarvon Canyon	1%	52.54	0.04	—	—	—
	Gascoyne	31-38%	7.04	0.67	43-51%	7.00	4.83
	Montebello	97-100%	0.21	29.17	100%	0.17	64.71
	Ningaloo	26-46%	7.29	0.96	30-53%	8.33	6.04

Sensitivity	Name	In-water (dissolved)^			In-water (entrained)^		
		≥50 ppb			≥100 ppb		
		Probability of exposure	Minimum time to exposure (days)	Maximum residence time (days)	Probability of exposure	Minimum time to exposure (days)	Maximum residence time (days)
	Shark Bay	1-2%	14.58	0.17	—	—	—
KEF	Ancient coastline at 125 m depth contour*	100%	0.04	74.71	100%	0.04	86.46
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	42-53%	5.96	0.92	55-66%	5.92	4.46
	Commonwealth waters adjacent to Ningaloo Reef	26-46%	7.29	0.96	30-53%	8.33	6.04
	Continental slope demersal fish communities	100%	0.29	10.08	100%	0.25	45.42
	Exmouth Plateau	5-12%	5.17	0.46	25-43%	4.92	5.04
	Glomar Shoals	1-10%	11.42	0.67	0–16%	16.29	3.04
	Western demersal slope and associated fish communities	1%	26.71	0.04	—	—	—
World Heritage Properties / National Heritage Places	The Ningaloo Coast *(inferred from the Ningaloo Coast World Heritage Area IAA)*	26-53%	6.46	0.96	30-53%	6.46	0.96
Commonwealth Heritage Properties	Ningaloo Marine Area – Commonwealth Waters *(inferred from Ningaloo IMCRA)*	36-46%	6.63	0.96	46-53%	7.00	7.25

* *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 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		minimum 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)*	2-4%	—	16.83	—	3.5	—

^ *Ranges in probability values shown are due to the different results between seasons.*

7.16.3 Risk assessment

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	3
		• changes to cultural heritage values	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) (Ref. 117; Ref. 168).

Direct contact with hydrocarbons may result in skin and eye irritation, burns to mucous membranes of eyes and mouth, and increased susceptibility to infection (Ref. 125). However, direct contact with surface oil is considered to have little deleterious effect on whales, possibly due to the skin's effectiveness as a barrier. Furthermore, effect of oil on cetacean skin is probably minor and temporary (Ref. 125). French-McCay (Ref. 136) 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 applicable; 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. 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 J.R and St. Aubin D.J (Ref. 135) identify that several cetaceans are able to detect and avoid a variety of oils. Necropsies from cetacean mortalities have generally concluded that death resulted from causes other than oil (Ref. 276).

Dugongs have smooth skin surfaces and therefore are less likely to be affected by oil adhering to their skin. 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. 277). 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. 276).

Studies have shown little impact on Bottlenose Dolphins after hydraulic and mineral oil immersion and ingestion, although there was evidence of temporary skin damage in dolphins and a Sperm Whale from contact with various oil products including crude oil (Ref. 135; Ref. 137).

Marine mammals are vulnerable if they inhale volatiles when they surface within a hydrocarbon slick. For the short period that they persist, vapours from the 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. 135).

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 utilised 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 hydrocarbons concentrations ≥10 g/m^2 peak at a maximum area of coverage of ~45 km^2 occurring ~12.5 days after the spill commenced. This deterministic scenario is considered most relevant for offshore waters, and subsequent impacts to offshore BIA's 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 <1% of the entire BIA.

Based on an assessment of the predicted magnitude 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. 138).

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, Ref. 139). 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. 138).

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 within the EMBA. The behaviours associated with these BIAs include aggregation, basking, foraging, internesting, mating, and nesting.

No shoreline contact was predicted above the moderate (impact) threshold (>100 g/m^2) by the modelling; therefore, impact to nesting areas is not predicted to occur. Based on stochastic modelling, shoreline accumulation at the low (visible) threshold (>10 g/m^2) was highest on the Montebello Islands, with an 8% probability of exposure and a maximum of 4 km of shoreline impacted.

The deterministic analysis for the for the largest sea surface swept area above the moderate (impact) threshold indicates that surface hydrocarbons concentrations ≥10 g/m^2 peak at a maximum area of coverage of ~45 km^2 occurring ~12.5 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.

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.

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. 169), 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. 140). Fish are most vulnerable to oil during embryonic, larval and juvenile life stages. However, very few studies have demonstrated increased mortality of fish as a result of oil spills (Ref. 141, Ref. 142, Ref. 143).

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. 144). 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 mortalities rarely occur in the event of a hydrocarbon spill in open waters (Ref. 145). Fish that have been exposed to dissolved hydrocarbons can eliminate the toxicants once placed in clean water; hence, individuals exposed to a spill would recover (Ref. 146). 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 utilised 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 ~45 km^2 occurring ~12.5 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 analysis for the for the largest area of entrained hydrocarbon indicates that entrained hydrocarbons concentrations ≥100 ppb peak at a maximum area of coverage of ~2.500 km^2 occurring ~47 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.

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. 135; Ref. 147). Damage to external tissues, including skin and eyes, can occur, along with internal tissue irritation in lungs and stomachs (Ref. 148). Acute and chronic toxic effects may result where the product is ingested as the bird attempts to preen its feathers (Ref. 148).

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, Wedge-tailed Shearwater (foraging in high numbers), Sooty tern (foraging)
- Little Tern (resting).

No shoreline contact was predicted by the modelling; therefore, impact to nesting areas is not predicted to occur.

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 ~45 km^2 occurring ~12.5 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 <1% of the entire BIA. 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 Coral, seagrass and 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. 149; Ref. 150), act as a barrier to diffusion of CO_2 across cell walls in macroalgae (Ref. 151), and a decline in metabolic rate and partial mortality in corals (Ref. 152; Ref. 153) and impair respiration and photosynthesis by symbiotic zooxanthellae (Ref. 154; Ref. 155). 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 seven years after the event (Ref. 156).

As identified in Section 4.3.1, particular values and sensitivities with coral reef habitats that occur within the EMBA include:

- Ningaloo Coast (World Heritage Property, National Heritage Place).
- Ningaloo Marine Area – Commonwealth Waters (Commonwealth 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 7-14). 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 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 ~45 km^2 occurring ~12.5 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 is not expected to occur.

The deterministic analysis for the for the largest area of entrained hydrocarbon indicates that entrained hydrocarbons concentrations ≥100 ppb peak at a maximum area of coverage of ~2.500 km^2 occurring ~47 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).

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 >10 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 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. 158).

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 impact threshold) has the potential to occur along parts of Barrow and Montebello islands, and several other Pilbara inshore islands.

Deterministic analysis for the largest volume of oil ashore indicates that shoreline hydrocarbons concentrations ≥10 g/m2 are present within ~18 days following the spill event, with a maximum volume ashore of ~4.4 m^3. Stochastic modelling also showed that the longest length of shoreline with exposure of ≥10 g/m^2 is ~12.5 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. However, 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 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 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 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 17.5 days following the spill event, with a maximum volume ashore of ~4 m^3 and a maximum length of 12.5 km of shoreline contacted.
- Barrow Islands Group: The minimum time before shoreline hydrocarbons are present 19.5 days following the spill event, with a maximum volume ashore of ~4.3 m^3 and a maximum length of 8.7 km of shoreline contacted.
- Muiron Islands: The minimum time before shoreline hydrocarbons are present 22.2 days following the spill event, with a maximum volume ashore of ~1.4 m^3 and a maximum length of 1.9 km of shoreline contacted.
- Ningaloo Coast World Heritage Area: The minimum time before shoreline hydrocarbons are present 22.2 days following the spill event, with a maximum volume ashore of ~3.1 m^3 and a maximum length of 5.8 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.

Shoreline loading can impact the visual amenity of coastal areas and limit beach access for users. However, if shoreline contact occurs, it is expected that any impacts from this type of event would be non-continuous short term in duration and will result in a limited volume ashore.

Indirect impacts to cultural values may also occur due to impacts on marine fauna, benthic or coastal habitats or other natural resources (e.g. fisheries). The consequence evaluations to marine fauna, habitats, and fisheries are provided above and range from minor to moderate. However, given the vessel spill event (if it occurs) is singular, non-continuous, and a limited

volume of hydrocarbon is released over a short time, only a small proportion of marine fauna population is expected to be affected, and as such a significant adverse change to cultural values attribute to the offshore marine area is not predicted to occur.

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 cause smothering was ranked as Moderate (4).

Changes to values and sensitivities of Australian Marine Parks

Based on the proximity to the LOWC release location (~6 km), the Montebello Islands Marine Park was predicted to have a 100% and 99% probability of surface exposure above the visible impact threshold (≥1 g/m^2) and impact threshold of ≥10 g/m^2, respectively. There was a very low probability (2%) of surface exposure above the high threshold. Despite this high probably at the low and moderate thresholds, the maximum residence time of floating oil at these thresholds (the maximum continuous amount of time that floating oil, at a specified threshold, occurs within a single model grid cell) was 11 days and 2 days for the low and moderate thresholds, respectively.

At the moderate threshold, modelling predicted 100% probability of dissolved oil exposure within the Montebello Islands Marine Park, 46% probability within the Ningaloo Marine Park, 38% probability within the Gascoyne and 1-2% 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 ~29 days for the Montebello Islands Marine Park and less than 1 day for all other marine parks.

At the moderate threshold, modelling predicted a high probability (100%) of entrained oil exposure within the Montebello Islands Marine Park, moderate (53% and 51%) within the Ningaloo Marine Park and Gascoyne Marine Park, and low (5%) within the Argo-Rowley Terrace Marine Park. 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 ~65 days for the Montebello Islands Marine Park, ~5-6 days for the Ningaloo Marine Park and Gascoyne Marine Park and ~1 day for the Argo-Rowley Terrace Marine Park.

No interaction with seabed was predicted to occur. Given the much higher probability of exposure, the following evaluation is focused on the Montebello Marine Park.

The natural values of the Montebello 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 commercial fishing.

The consequence evaluations to marine fauna 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 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 over 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. The purpose of a WOMP is to ensure 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. 170) 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.
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. 172). Where applicable to the activities, the SCERP will address: • arrangements for the provision of the Source Control IMT personnel (numbers, competency, capability for the duration of the response) • arrangements for the provision of equipment and supplies • arrangements for equipment and personnel monitoring and tracking • activation and mobilisation plans, including activation and expenditure authority and regulatory approval processes • logistics plans and providers • well kill and shut-in plans.
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. 2) 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. 3) to support all spill monitoring activities across all its assets.

Additional control measures and cost benefit analysis		
Control measure	**Benefit**	**Cost**

<table>
<tr><td>N/A</td><td colspan="2">N/A</td><td>N/A</td></tr>
<tr><td colspan="4">Likelihood and risk level summary</td></tr>
<tr><td>Likelihood</td><td colspan="3">The blowout frequencies data from IOGP (Ref. 171) was used to evaluate the likelihood of a LOWC scenario (blowout of an appraisal well), which was determined to be equivalent to 1.5 x 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="3">Low (8)</td></tr>
<tr><td colspan="4">Determination of acceptability</td></tr>
<tr><td>Principles of ESD</td><td colspan="3">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="3">Legislation and other requirements relevant for this aspect include:
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 52)
Conservation Advice Balaenoptera borealis Sei Whale (Ref. 51)
Conservation Advice Balaenoptera physalus Fin Whale (Ref. 50)
Conservation Advice Rhincodon typus Whale Shark (Ref. 49)
Recovery Plan for Marine Turtles in Australia (Ref. 48)
North-west Marine Parks Network Management Plan (Ref. 62).</td></tr>
<tr><td></td><td>Requirement</td><td colspan="2">Demonstration</td></tr>
<tr><td></td><td>Conservation Management Plan for the Blue Whale 2015–2025
No specific management action identified.</td><td colspan="2">N/A</td></tr>
<tr><td></td><td>Conservation Advice Balaenoptera borealis Sei Whale
No specific conservation action identified.</td><td colspan="2">N/A</td></tr>
<tr><td></td><td>Conservation Advice Balaenoptera physalus Fin Whale
No specific conservation action identified.</td><td colspan="2">N/A</td></tr>
<tr><td></td><td>Conservation Advice Rhincodon typus Whale Shark
No specific conservation action identified.</td><td colspan="2">Assessment of spill risk strategies is within scope of the OPEP (Ref. 2).
Response and recovery of habitats and marine fauna is within the scope of the OSMP (Ref. 3).
Therefore, this activity is not considered to be inconsistent with</td></tr>
</table>

		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 "[a]ctions 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 the management of 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	The following CAPL management processes or procedures were deemed relevant for this aspect: • WOMP (Ref. 7) • WellSafe Standard Operational Procedure (Ref. 171) • OPEP (Ref. 2) • OSMP (Ref. 3) • SCERP (Ref. 172).	
External context	During relevant persons consultation, no objections or claims were raised regarding well control events 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:	
	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.
	North-west Marine Parks Network Management Plan 2018	As per Section 4.5.1.
	Therefore, CAPL has defined the following acceptable levels of impact such that it is not inconsistent with these documents: • no injury or mortality 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.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
No unplanned release of hydrocarbons or hazardous materials to the environment during petroleum activities No adverse change to the values of Australian Marine Parks from petroleum activities	**WOMP** A NOPSEMA-accepted WOMP will be in place prior to activities commencing	Records confirm that a WOMP has been developed and accepted prior to activities commencing
	BOP A blowout preventer will be installed, and tested during the drilling activities in accordance with the NOPSEMA-accepted WOMP	Records confirm that a BOP was installed, and has been tested during the drilling activities in accordance with the NOPSEMA-accepted WOMP
	WellSafe SOP The following certifications shall be in place prior to activities commencing in accordance with CAPL's *WellSafe Standard Operational Procedure:* • well design and plan certification • rig/rigless certification • well execution certification	Records confirm that MODU certification, well design and plan certification were verified prior the commencement of activities
	Equipment maintenance	Records confirm critical equipment (including the BOP) is maintained in

	Critical equipment will be maintained in accordance with manufacturers specifications	accordance with manufacturer specifications
Reduce the risk of impacts to the environment from the unplanned release of hydrocarbons or hazardous materials during petroleum activities	**OPEP** In the event of a spill occurring, the OPEP will be implemented	Records confirm the OPEP has been implemented
	SCERP In the event of a loss of well control, the SCERP will be implemented	Records confirm the SCERP has been implemented
	OSMP In the event of a spill occurring, the OSMP will be implemented	Records confirm the OSMP has been implemented

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. 160) 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 3/4 – 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. 161). 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. 162) 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. 162) 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. 162) aligns with WA DoT PPP (Ref. 163) and utilises 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. 162]) 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. 162), 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 prior to oil contacting the resource.

High and Very High value areas (DoT shoreline cells) identified for contact within this timeframe have been identified in Table 7-17 for vessel collision event; shoreline contact above the moderate exposure threshold was not predicted for the LOWC event (and therefore no priority planning areas are identified). 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 7-17: 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 (Montebello Islands)	30 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

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 1 – Iago condensate
- group 2 – MDO.
- Taking into account the priority planning areas identified in Table 7-17, 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., equipment or personnel that are limited in number and cannot be purchased or 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. 2) and SCERP (Ref. 172).

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. 160) 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. 160), 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. 2) 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 ~24.4 m^3 may wash ashore within ~3 days after release. 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. 2), each protection team is expected to recover 15.6 m^3 of hydrocarbon per day. On the assumption that 24.4 m^3 washes ashore on the third day, CAPL would need up to two SPD packages available on day two to implement the SPD response. Confirmation that CAPL has the arrangements in place to implement the required number of packages is provided in Table 7-18.

Implement SHC response

For a spill event such as this (a non-continuous release), deterministic analysis indicates shoreline accumulation (if it occurs) occurs rapidly. CAPL will implement strategies to protect prioritised values and sensitivities; however, the focus may be on SHC operations if time restricts the ability to conduct SPD activities.

Deterministic analysis for the largest volume of oil ashore indicates that 24.4 m^3 may wash ashore within ~3 days after release; and the maximum length of actionable shoreline oil was predicted to be ~10 km within ~4 days. This scenario predicted exposure to the western coastlines of the Montebello Islands.

The Montebello Islands consist of a series of relatively flat limestone islands and sandy beaches and lagoons, easily accessed by boat (dependent on weather and sea conditions). On this basis, response planning indicates it would be feasible to conduct SHC activities.

Based on Appendix C of the OPEP (Ref. 2), each SHC team is expected to recover 1.6 m^3 of hydrocarbon per day. If five clean-up teams are mobilised on day three and used each day, all hydrocarbons can be recovered 5 days from the start of the spill (3 days of SHC response). If required, these efforts could be ramped up as directed and informed by MES activities.

Table 7-18: 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				
No. packages – planned SPD	0	2	2	0	0	0	0	0	0	0	0	0
Does CAPL have the required capability?		Y	Y									
No. packages – planned SHC	0	0	5	5	5	0	0	0	0	0	0	0
Does CAPL have the required capability?			Y	Y	Y							

7.17.3.3 CAPL planned response LOWC

In accordance with the Strategic NEBA (Ref. 160), 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 1), limited spatial extent of predicted surface oil ≥50 g/m^2 (<2 km^2 area predicted above this threshold), and window of opportunity (~1–2 days) for application. Similarly, offshore CAR are not considered feasible response options due to the nature of the hydrocarbon (Group 1).

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. 172).

Based on the SCERP (Ref. 172), 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 7-19. 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 the infill drilling; further details are contained in the SCERP (Ref. 172).

The use of a capping stack is considered a secondary source control option for the infill drilling; further details are contained in the SCERP (Ref. 172). Based on the SCERP (Ref. 172), CAPL could have one Source Control – Well Capping package commence notifications and arrangements on day one, commence mobilisation on day three, 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 7-19.

Based on the SCERP (Ref. 172), CAPL could have one Source Control – SSDI package commence arrangements on day one, contracting, equipment deliveries, vessel preparation from day two, 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 7-19.

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. 2) 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: 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
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
	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
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
	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
No. packages – planned MES	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

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.

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	-	The application of 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 The application of 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. 174). 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. 175, Ref. 176). 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 (4000 ppb), compared to hydrocarbons treated with chemical dispersants where it ranged from ~22 mg/L to 62 mg/L. For dispersant exposures alone, the median lethal concentration ranged from 17 mg/L to 50 mg/L (Ref. 174). 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. 174). As a result of the dispersant action, the increased toxicity of chemically dispersed oil can be attributed to the increase in 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. 174, Ref. 175, Ref. 176).

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:

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. 117; Ref. 168).

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 J.R and St. Aubin D.J (Ref. 135) 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 EMBA. The following BIAs intersect the EMBA:

- Humpback Whale (migration, resting)
- Pygmy Blue Whale (distribution, migration, foraging)
- Dugongs (breeding, calving, foraging, nursing).

Modelling analysis for entrained hydrocarbon exposure was utilised to understand the potential extent and duration of exposure for dispersed hydrocarbons.

Deterministic modelling indicates that entrained hydrocarbons concentrations ≥100 ppb peak at a maximum area of coverage of ~2,500 km^2 occurring ~47 days after the spill commenced. Using the Pygmy Blue Whale migration BIA as an example, modelling indicates that the extent of entrained exposures was predicted to be limited to <1% 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. 140). Fish are most vulnerable to oil during embryonic, larval and juvenile life stages. However, very few studies have demonstrated increased mortality of fish as a result of oil spills (Ref. 141, Ref. 142, Ref. 143) 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. 144). 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 that have been exposed to dissolved hydrocarbons can

eliminate the toxicants once placed in clean water; hence, individuals exposed to a spill are expected to recover (Ref. 146). 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).

Deterministic analysis for the largest area of entrained hydrocarbon were analysed. The deterministic analysis for the for the largest area of entrained hydrocarbon indicates that entrained hydrocarbons concentrations ≥100 ppb peak at a maximum area of coverage of ~2,500 km^2 occurring ~47 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.

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. 149; Ref. 150), act as a barrier to diffusion of CO_2 across cell walls in macroalgae (Ref. 151), and a decline in metabolic rate and partial mortality in corals (Ref. 152; Ref. 153) and impair respiration and photosynthesis by symbiotic zooxanthellae (Ref. 154; Ref. 155). 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 seven years after the event (Ref. 156).

A 30-year study of the net environmental benefit of dispersant use on seagrass and corals (Ref. 177) 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. 177), 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).
- Ningaloo Marine Area – Commonwealth Waters (Commonwealth Heritage Place)

The deterministic analysis for the for the largest area of entrained hydrocarbon indicates that entrained hydrocarbons concentrations ≥100 ppb peak at a maximum area of coverage of ~2,500 km^2 occurring ~47 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).

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. 172). The SCERP includes the use of 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. 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. 2) 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. 178) 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. 3) to support all spill monitoring activities across all its assets.
Likelihood and Risk Level Summary	
Likelihood	Dispersant use is subject to the controls and application criteria as outlined in the SCERP (Ref. 172) and OPEP (Ref. 2) 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	No legislation and other requirements relevant to this aspect were identified.

Internal Context	The following CAPL management processes procedures were considered relevant for this aspect: • SCREP (Ref. 172) • OPEP (Ref. 2) • OSMP (Ref. 3) 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**
Reduce the risk of impacts to the environment during event response	**SCERP** In the event of a loss of well control, the SCERP will be implemented	Records confirm the SCERP has been implemented
	OPEP In the event of a spill occurring, the OPEP will be implemented	Records confirm the OPEP has been implemented
	OSMP In the event of a spill occurring, the OSMP will be implemented	Records confirm the OSMP has been implemented

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.

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 localised damage to or alteration of habitats and ecological communities and therefore the consequence is ranked as Minor (5).

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. 3) to support all spill monitoring activities across all its assets.

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)	
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. 3) 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**
Reduce the risk of impacts to the environment during event response	**OSMP** In the event of a spill occurring, the OSMP will be implemented.	Records confirm the OSMP has been implemented.

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.

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).			
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. 3) 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.	
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.	
Relevant Environmental Legislation and Other Requirements	No legislation and other requirements relevant to this aspect were identified.	
Internal Context	The CAPL management process or procedure was considered relevant for this aspect is: • OSMP (Ref. 3) 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**
Reduce the risk of impacts to the environment during event response	**OSMP** In the event of a spill occurring, the OSMP will be implemented	Records confirm the OSMP has been implemented

8 implementation strategy

This section provides a description of the implementation strategy as required under Regulation 14 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 6 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 prior to the commencement of 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. 28) 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.

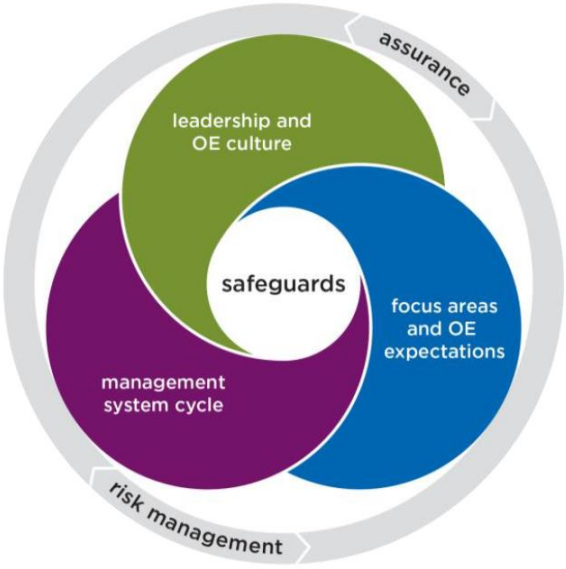


Figure 8-1: Overview of Chevron Corporation's OEMS

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 14(4) of the OPGGS(E)R, a clear chain of command for implementing the petroleum activity is outlined in Figure 8-2.

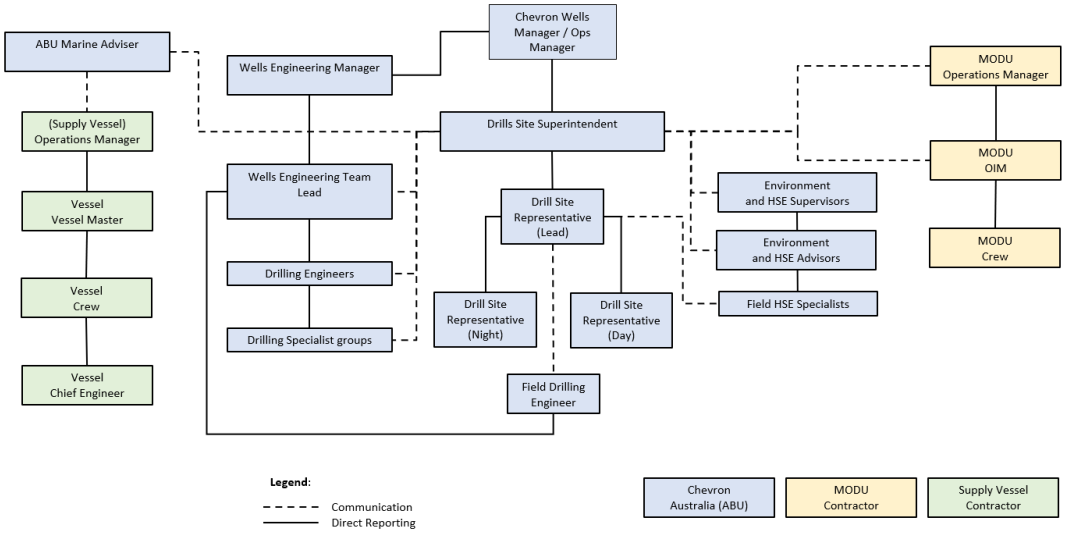


Figure 8-2: Chain of command—drilling, well intervention and / or well abandonment

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 within this EP, including completion of relevant inductions as per Section 8.2.1.3 • ongoing consultation is conducted in accordance with Section 8.4.3. • any MoC is conducted in accordance with Section 8.3.2.2, and notify the Drill Site Representative and HSE Adviser 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

Role	Responsibilities
	• all incidents, including breaches of environmental performance standards, are reported to the Chevron Wells Manager

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 Section 8.3 and Section 8.4, including:
	  ○ completion of environmental inspections
	  ○ collection of evidence against environmental performance standards
	  ○ regular review of compliance with environmental performance standards
	  ○ preparation of environmental performance report following completion of 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.
MODU 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

Role	Responsibilities
	• all emissions and discharges are monitored and recorded in accordance with Section 7.
MODU and Vessel crew	Ensure that: • working in accordance with accepted MODU and vessel procedures • compliance with this EP's requirements as applicable to assigned role • all incidents are immediately reported to the MODU OIM or Vessel Master.

8.2.1.3 Training and competency (petroleum activity)

In accordance with regulation 14(5) 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.

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 on board 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) are required to 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 amongst 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

Induction	Required personnel	Scope
		• 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 six 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.

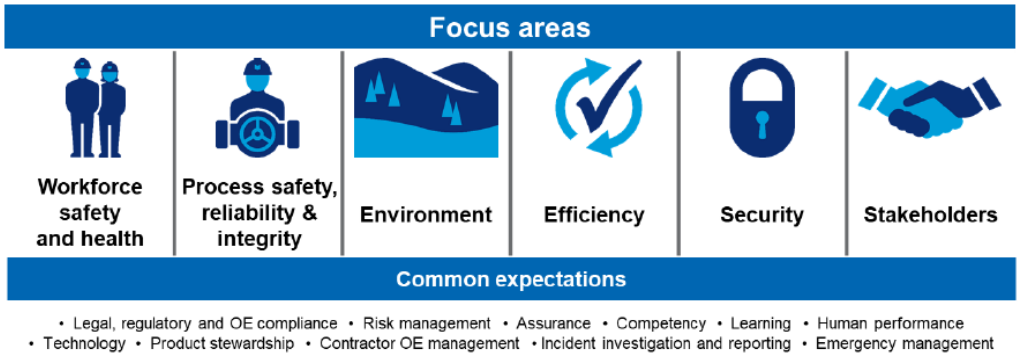


Figure 8-3: Focus areas and common expectations

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	
Workplace safety and health	• *Managing Safe Work (MSW): ABU Standardised OE Process* (Ref. 30) • *Marine Safety Reliability and Efficiency: ABU Standardised OE Process* (Ref. 31) • *ABU Hazardous Materials Management Procedure: ABU Standardised OE Procedure* (Ref. 32).
Process safety, reliability and integrity	• *OE Information Management: ABU Standardised OE Process* (Ref. 33) • *Management of Change for Facilities and Operations: ABU Standardised OE Process* (Ref. 34).

Focus area or common expectation	Key processes
Environment	• *Environmental Stewardship: ABU Standardised OE Process (Ref. 35)* • *Quarantine Procedure Marine Vessels. ABU Standardised OE Process (Ref. 36)*
Stakeholders	• *Stakeholder Engagement and Issues Management: ABU Standardised OE Process* (Ref. 37)
Common expectation	
Risk management	• *ABU OE Risk Management Process* (Ref. 23)
Assurance	• *OE Assurance Corporate Process* (Ref. 38) • *OE Corporate Standard Incident Investigation* (Ref. 39) • *OE Data Reporting Standard (Ref. 40)*
Incident investigation and reporting	• *Incident Investigation and Reporting (II&R) Execution Manual* (Ref. 41)
Emergency management	• *Emergency Management OE Process* (Ref. 42) • OPEP (Ref. 2) • OSMP (Ref. 3)

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. 30) 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. 31) 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 (ASOG), 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. 32) 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 DMIRS, from Hinwood et al. (Ref. 44).
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 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 27 of the OPGGS(E)R.

The OE information management process (Ref. 33) 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 are required to 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. 34) 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 regulation 17 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. 35) 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. 36) provides information about quarantine compliance to CAPL, contractors, and others associated with marine vessels.

The purpose of this procedure in relation to the offshore title areas is to prevent offshore facilities and activities associated with CAPL title areas becoming staging areas for the introduction of 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.

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. 37) 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 Adjustment Protocol

CAPL is committed to reducing impacts to commercial fisheries within its area of operations to ALARP. CAPL will consider an evidence-based adjustment protocol for the commercial fishing sector should fishers be verifiably impacted to a commercially material extent by the drilling, well intervention and / or well abandonment activities (Table 8-5). CAPL will provide reasonable monetary adjustment to a commercial fishing licence holder for temporary loss of catch, displacement, or equipment loss/damage, occurring within the OA and during the drilling, well intervention and / or well abandonment activities. The onus will be on the commercial fishing license holder to provide evidence to CAPL where impacts are identified with verifiable catch-data to support the claim.

All evidence-based claims made by commercial fishery licence holders will be assessed for merit by CAPL. CAPL will not accept claims under this EP if the claim covers the same time, area, fishing activity, or equipment made in another claim for a different seismic survey. If a claim cannot be resolved between CAPL and the fishery licence holder, an independent third-party will be engaged at this time to assess the claim. The third-party will be appointed with the agreement of both CAPL and the fishery licence holder at the time (and therefore specific

qualifications and/or experience requirements for this independent third-party are not defined within this EP).

If required to be appointed, the third-party will be provided with details regarding the adjustment protocol (Table 8-5), the claim, and any supporting evidence. The independent third-party will provide an assessment of the merit of the claim and a decision on validity of the claim. The decision by the independent third-party will be considered binding on CAPL and the fishery licence holder.

Table 8-5: Commercial fisheries adjustment protocol

Claim type	Considerations
Temporary loss of catch	• Loss of catch by the commercial fishing licence holder is based on an assessment of what the commercial fishing licence holder would have caught during that month within the OA “but for” the drilling, well intervention and / or well abandonment activities • A loss of catch will be concluded if there is a reduction in the catch per unit of effort for each species calculated over a month, compared to the average historical catch per unit of effort for the same species and corresponding month • If a loss of catch is substantiated, payments will be calculated based on the reduced kilograms per species caught, multiplied by the market price per kilogram at the time the catch would have been sold • Loss of catch claims will be assessed for the months during the drilling, well intervention and / or well abandonment activities and for up to 3 months from the completion date • Where a commercial fishing licence holder wants to receive a loss of catch payment, they will need to provide CAPL with monthly catch disposal records and multiple years (preferably 10 years, but will be decided on a case by case basis) of historical data to allow average monthly catch rates per species to be determined • The commercial fishing licence holder must provide evidence that their vessel(s) continued to fish over the claim period • Where a commercial fishing licence holder intends to make a temporary loss of catch claim, they will need to notify CAPL as soon as practicable, and they will need to have submitted the claim and supporting evidence within 6 months of the completion of the drilling, well intervention and / or well abandonment activities.
Displacement	• Where a commercial fishing licence holder is displaced from the OA such that it is required to relocate their operations to another area during the drilling, well intervention and / or well abandonment activities, CAPL will consider a once-off payment to reimburse operational expenses which are in addition to those the commercial fishing licence holder would have borne “but for” the drilling, well intervention and / or well abandonment activities • Where a commercial fishing licence holder intends to make an operational expense claim for relocation, they will need to notify CAPL as soon as practicable and prior to relocating, and state why the seismic survey has caused them to relocate • Where a commercial fishing licence holder wants to be reimbursed for any relocation operational expenses, they will need to provide CAPL with evidence of the operating costs of bait, fuel, wages and any other costs that are additional to the costs that would have been incurred to catch the fish “but for” the relocation • Where a commercial fishing licence holder intends to make a displacement expenses claim, they will need to notify CAPL within

Claim type	Considerations
	14 days of the displacement occurring, and have submitted the claim and supporting evidence within 1 month of the completion of the drilling, well intervention and / or well abandonment activities.
Equipment loss or damage	• Where a commercial fishing licence holder intends to make an equipment damage or loss expenses claim, they will need to evidence that CAPL was made aware of the specific equipment location and deployment dates • Where a commercial fishing licence holder intends to make an equipment damage or loss expenses claim, they will need to notify CAPL within 14 days of the loss/damage occurring, and have submitted the claim and supporting evidence within 1 month of the completion of the drilling, well intervention and / or well abandonment activities.

8.3.4.2 Ongoing consultation with relevant persons

In accordance with regulation 14(9) 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 8-6.

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 (as described in Section 6.2.2) and will assess the merits of the objections or claims of that relevant person in accordance with Section 6.3.6 and CAPL's MoC process (Section 8.3.2.2).

Records for ongoing consultation with relevant persons will be recorded and maintained in CAPLs online tracking engagements system.

Table 8-6: Notifications and ongoing consultation

Relevant person	Notification or ongoing consultation requirement	Timing	Frequency
Notifications			
AHO	Provide information to enable promulgation of Notice to Mariners	At least four weeks before commencing activities, or as	Once, prior to activities commencing

Relevant person	Notification or ongoing consultation requirement	Timing	Frequency
	Notify AHO via datacentre@hydro.gov.au	otherwise agreed with AHO	
AMSA	Provide information to enable promulgation of radionavigation warnings Notify AMSA's JRCC via rccaus@amsa.gov.au (phone: 1800 641 792 or +61 2 6230 6811)	At least 24 to 48 hours before commencing activities, or as otherwise agreed with AMSA	Once, prior to activities commencing
Relevant persons (that have requested ongoing notifications)	CAPL will provide a pre-start notification confirming the start date of the petroleum activity	At least two weeks before commencing activities	Once, prior to activities commencing
	CAPL will provide notification following completion of the petroleum activity	Within two weeks of completion of activities	Once, post activity completion
DNP	Inform DNP once the EP has been accepted by NOPSEMA. Notify DNP via marineparks@awe.gov.au	Following NOPSEMA acceptance of the EP	Once, prior to activities commencing
Ongoing consultation			
WAFIC	To inform of changes to activities or impacts/risks occurring that may affect fisheries Notify WAFIC via oilandgas@wafic.org.au	Prior to new or significant changes to activities or impacts/risks occurring	As required
Potentially affected 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	Prior to new or significant changes to activities or impacts/risks occurring	As required
First Nations people and/or representative bodies	Any new information on cultural values 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	Prior to new or significant changes to activities or impacts/risks occurring	As required

Relevant person	Notification or ongoing consultation requirement	Timing	Frequency
	per Section 8.3.2.2, that may potentially impact the functions, interests and activities of First Nations people and/or representative bodies		

8.3.4.3 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 8.3.4.2), 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 8.3.8), and consultation with required departments or agencies will occur as per regulatory requirements (e.g. refer to Table 8-12 for incident reporting requirements).

CAPL will also notify any relevant persons that requested to be notified in the event of an oil spill or in the event of any other emergency event as identified in Appendix D, and any additional relevant persons identified under

8.3.5 Risk management

The risk management process (Ref. 23) 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. 28) and ISO 31000:2018 *Risk management – Principles and guidelines* (Ref. 24).

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. 23) and the *Management of Change for Facilities and Operations* process (Ref. 34) are the key systems CAPL use to ensure, that in accordance with regulation 14(3)(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. 38) 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. 45) is a multi-year plan that 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).

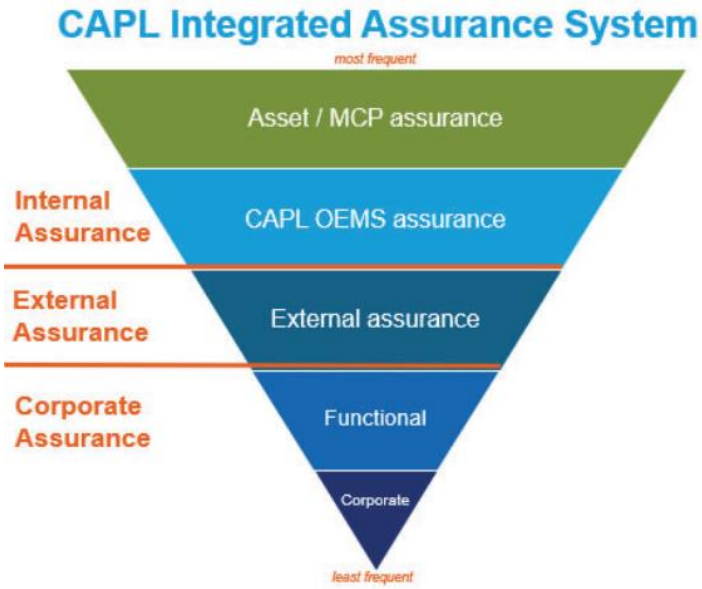


Figure 8-4: ABU integrated assurance system

To support the implementation of the *ABU OE Assurance Process* (Ref. 38), 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:

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

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, prior to 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 drilling, well intervention and / or well abandonment activities, an assurance register specific to the requirements of this EP will be developed. A HSE Advisor will undertake weekly environment inspections during the drilling, well intervention and / or well abandonment activities. The inspections will be undertaken in accordance with the *ABU OE Assurance Process* (Ref. 38). 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.

Environmental performance standards in the EP will undergo a compliance review and evidence will be gathered for each environmental performance standard to support the annual 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, 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 performance 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. 39) and *OE Data Reporting Standard* (Ref. 40).

EP 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 a weekly environment inspection is required to 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 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. 41) 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.

8.3.8 Emergency management

CAPL's emergency management implementation strategy is described in the following sub-sections.

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.

8.3.8.1 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. 12) and is consistent with the core aspects presented in the International Maritime Organisation (IMO) equivalent courses.

The ERO comprises the groups listed in Table 8-7; this table also describes the major functions of teams during an emergency.

Figure 8-5 to Figure 8-7 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. 46).

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. 2).

Table 8-7: 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 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. 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	Enterprise-level teams with specific technical expertise in selected command staff positions and unit positions in the Planning, Logistics, and

Team	Description
Functional Response Teams	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.

8.3.8.2 Emergency management process

The *Emergency Management OE Process* (Ref. 42) 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. 42) comprises nine 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 preventative 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. 41).

The OPEP (Ref. 2) 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.

8.3.8.3 Chain of command (emergency response)

A well-delineated EMT chain of command has been established for emergency response (Figure 8-5 to Figure 8-7). 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 over the course of the incident, the 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.

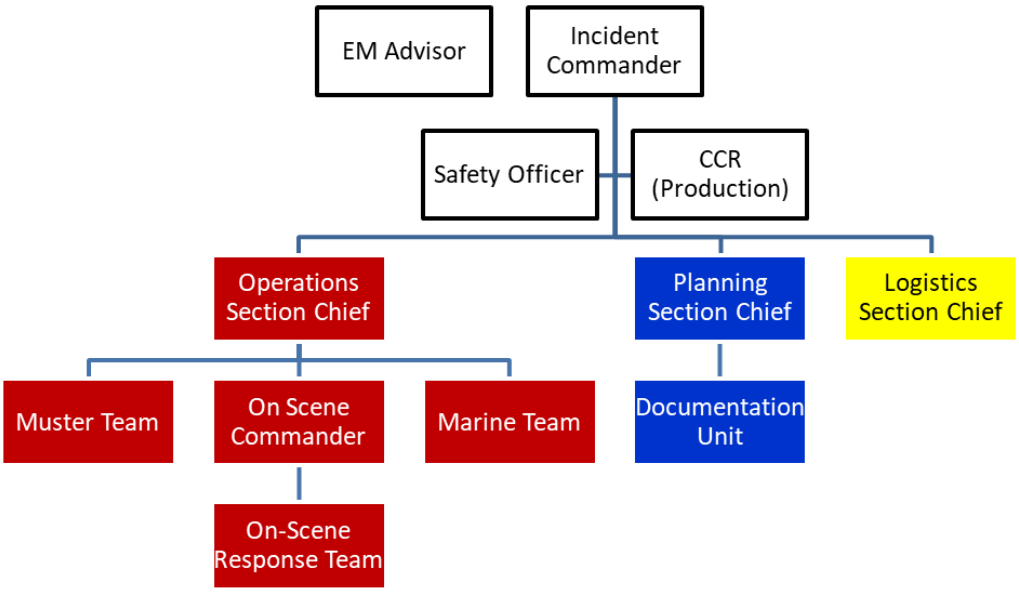


Figure 8-5: Basic installation EMT organisation chart

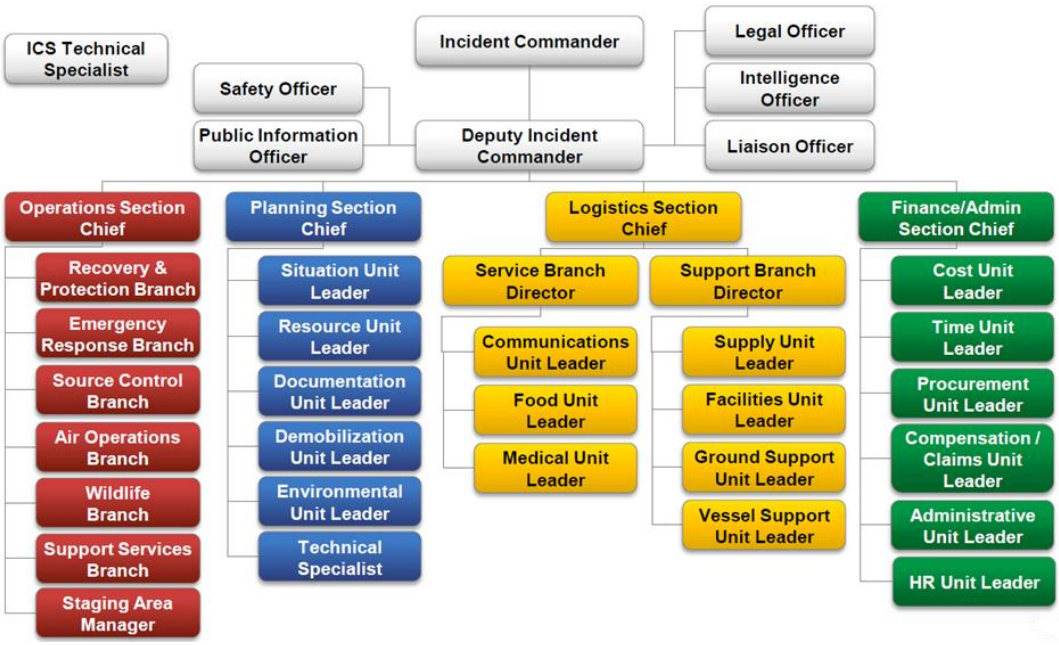


Figure 8-6: Expanded EMT organisation chart

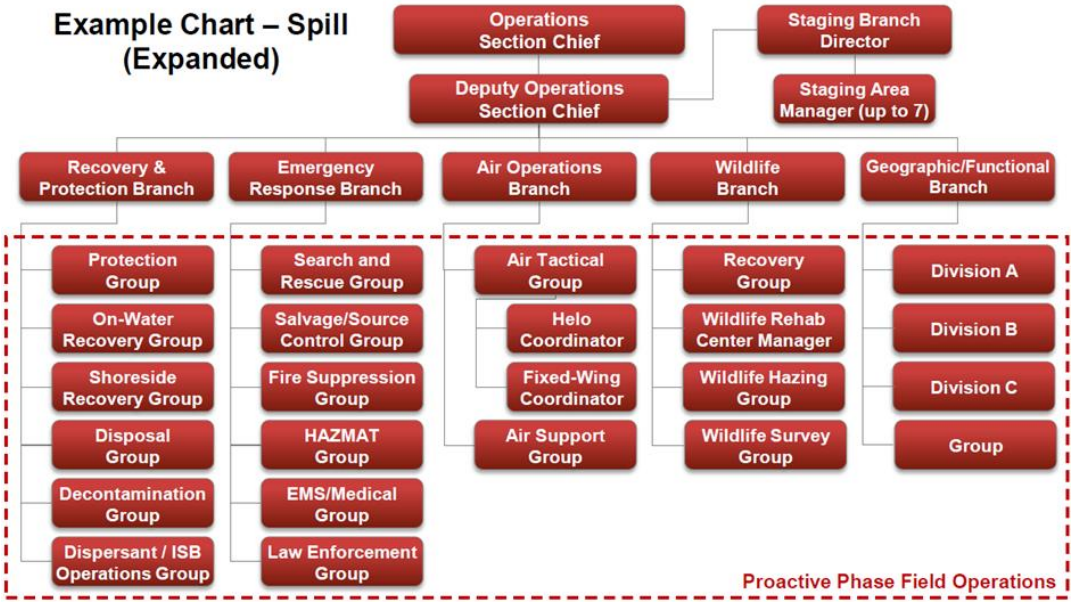


Figure 8-7: Example expanded operations Section organisation chart

8.3.8.4 Roles and responsibilities (emergency response)

Table 8-8 provides additional information about the structure of these teams and the key individual roles and responsibilities during emergency response.

Table 8-8: 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.

8.3.8.5 Training and competency (emergency response)

Competencies and training requirements for the EMT, ORT, and other personnel during implementation of the OPEP (Ref. 2) are outlined in Table 8-9. Competency and training records for personnel, including contractors and subcontractors, are maintained.

Table 8-9: Competency and training requirements—emergency response

Role	Summary	Training Standard
Note: Personnel with no specialist emergency response duties should undergo training in line with their responsibilities as indicated below for 'All personnel'.		
All personnel	• Provide basic first response to an incident, including, but not limited to: conducting a quick assessment; making safe; notifying anyone else in danger; and raising the alarm	

Role	Summary	Training Standard
	• Complete basic procedures in response to an alarm and evacuate to a muster point (as necessary) • Frequency: every 3 years if not involved in response or drills/exercises.	
In addition to the above, personnel responsible for roles with specialist oil spill response duties should undergo further training and practice in line with the responsibilities set out below. Training is provided to maintain the capability to respond to all hazards in line with the Incident Command System implemented by CAPL.		
Emergency Management Teams (EMTs)		
PEMT Incident Commander	• Selected Perth based personnel, would typically be a manager or senior manager role within CAPL • Competencies: overall management of emergency response operations and ensure operations are performed safely, effectively, and efficiently. Commands the EMT • Frequency: once a year (maintenance of competencies may be through response or training / drills / exercises).	• ICS-100 Introduction to the Incident Command System • ICS-200 Basic Incident Command System training • ICS-220 Initial Response Team • ICS-300 Intermediate Incident Command System Training (PEMT members only) • Oil Spill Awareness Training.
PEMT Command and General Staff	• Selected Perth based personnel, typically a manager, or personnel with skills and knowledge appropriate to the function • Competencies: provides strategic direction, internal planning, logistics, and operational support. Operates from the emergency command centre and supports the IC who is responsible for the overall control of the incident • Frequency: once a year (maintenance of competencies may be through response or training / drills / exercises).	• ICS-100 Introduction to the Incident Command System • ICS-200 Basic Incident Command System training • ICS-220 Initial Response Team • ICS-300 Intermediate Incident Command System Training (PEMT members only) • Oil Spill Awareness Training.

8.3.8.6 Oil spill exercise schedule

The CAPL *Oil Spill Response Multi-Year Exercise and Drill Schedule* (Ref. 47) 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. 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 multi-year exercise schedule (Ref. 47) outlines the proposed testing arrangements to be completed, including the exercise types (Table 8-10) and proposed level of response to be tested (Table 8-11) that may be used to meet the defined objectives. A minimum of one test for each level will be conducted each year.

Table 8-10: 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 amongst 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 8-11: 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 – one to two 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 – three to six 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.

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. 2) 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.

8.4 Environmental monitoring and reporting

8.4.1 Environmental monitoring

Regulation 14(7) 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. 3), 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 8-12.

Table 8-12: Incident reporting

Recordable Incident reporting – regulation 26B
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
Reportable Incident reporting – regulations 26, 26A, and 26AA	
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 two hours of the incident or as soon as practicable. This information is required: • the incident and all material facts and circumstances known at the time • any actions taken to avoid or mitigate any adverse environmental impacts.	Report verbally to NOPSEMA within two hours or as soon as practicable and provide written record of notification by email. Phone: (08) 6461 7090 Email: submissions@nopsema.gov.au
Verbal 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	Written report to be provided to: • NOPSEMA: submissions@nopsema.gov.au • National Offshore Petroleum Titles Authority: info@nopta.gov.au

• 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.	
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 mortality of EPBC Act Listed Threatened or Migratory species within seven business days of observation to DCCEEW or equivalent: • 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 Western Australian State jurisdiction	Reported as soon as practicable. petroleum.environment@dmirs.wa.gov.au
	Report verbally to the DoT MEER Duty Officer within two hours, and also provide a follow-up email with a 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 26C of the OPGGS(E)R requires environmental performance reporting for the activity described in this EP, as summarised in Table 8-13. Routine notifications required by regulations 29 and 30 of the OPGGS(E)R and also included in Table 8-13.

Table 8-13: Routine external reporting or notification requirements

Reporting requirement	Description	Reporting to	Timing
Environmental performance reporting	A report detailing environmental performance of the activity detailed in this EP	NOPSEMA submissions@nopsema.gov.au Phone: +61 8 6461 7090	Annually
Notification of start of activity	CAPL must complete Form FM1405 and submit to NOPSEMA at least 10 days before activity commencement	NOPSEMA submissions@nopsema.gov.au or: https://securefile.nopsema.gov.au/filedrop/submissions	Once prior to activity commencement
Notification of start of activity	CAPL will provide DMIRS a pre-start notification confirming the start date of the proposed activity	DMIRS: Petroleum.environment@dmirs.wa.gov.au	Once, at least 4 weeks prior to activity commencement
Notification of conclusion of activity	CAPL must complete Form FM1405 and submit to NOPSEMA within 10 days of activity completion	NOPSEMA submissions@nopsema.gov.au or: https://securefile.nopsema.gov.au/filedrop/submissions	Once following completion of activity
Notification of conclusion of activity	CAPL must notify DMIRS following completion of the activity	DMIRS: Petroleum.environment@dmirs.wa.gov.au	Once within one week of the activity ceasing

8.5 Environment Plan review

If required, any revisions and/or resubmission of this EP to NOPSEMA, in accordance with regulation 17 of the OPGGS(E)R, will be undertaken in accordance with 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

Acronym or abbreviation	Definition
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences.
ABU	Australian Business Unit
AFMA	Australian Fisheries Management Authority
AHO	Australian Hydrographic Office
AHS	Australian Hydrographic Service
AIIMS	Australasian Inter-service Incident Management System
AIS	Automated identification system
ALARP	As low as reasonably practicable
AMSA	Australian Maritime Safety Authority
AMP	Australian Marine Park
API	American petroleum index
APPEA	Australian Petroleum Production and Exploration Association
AR6	Sixth Assessment Report (AR6) of the United Nations Intergovernmental Panel on Climate Change (IPCC)
ASBTIA	Australian Southern Bluefin Tuna Industry Association
ASOG	Activity-specific operational guideline
BIAs	Biologically important areas
BOP	Blowout preventor
BTAC	Buurabalayji Thalanyji Aboriginal Corporation
BWI	Barrow Island
CAPL	Chevron Australia Pty Ltd
CAR	Containment and recovery
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CHARM	Chemical Hazard Assessment and Risk Management
cm	Centimetre
CMT	Crisis Management Team
CO_2	Carbon dioxide
cP	Centipoise
DBCA	Western Australia Department of Biodiversity, Conservation and Attractions
DAFF	Commonwealth Department of Agriculture, Fisheries and Forestry

Acronym or abbreviation	Definition
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
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DE	Diatomaceous Earth
DNP	Director of National Parks
DMIRS	Department of Mines, Industry Regulation and Safety
DoT	Western Australian Department of Transport
DP	Dynamic positioning
DPIRD	Western Australian Department of Primary Industries and Regional Development
EMBA	Environment that may be affected
EMT	Emergency Management Team
EP	Environment Plan
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
ERO	Emergency response organisation
ESD	Ecologically sustainable development
FE	Facilities Engineering
g/m^2	Grams per square metre
GHG	Greenhouse gas
HB	Handbook
HSE	Health, safety, and environment
HFO	Heavy fuel oil
IAPP	International Air Pollution Prevention
IBRA	Interim Biogeographic Regionalisation for Australia
IC	Incident Commander
ICS	Incident commander system
IEE	International energy efficiency
IEMT	Installation Emergency Management Team
IIR	Incident investigation and reporting
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMO	International Maritime Organisation
IMP	Invasive marine pests

Acronym or abbreviation	Definition
IMS	Incident management system
IOGP	International Association of Oil & Gas Producers
IOPP	International Oil Pollution Prevention
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardisation
ISPP	International sewage pollution prevention
ITOPF	International Tanker Owners Pollution Federation Limited
JRCC	Joint Resource Coordination Centre
KEF	Key ecological feature
kg	Kilogram
km	Kilometre
LC50	Lethal Concentration with the potential to result in a 50% mortality of a sample population
LOC	Loss of containment
LOWC	Loss of well control
LNG	Liquefied Natural Gas
m	Metre
m^2	Square metre
m^3	Cubic metre
MarCHES	Marine contractor HES
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
MEG	Monoethylene Glycol
MD	Measured depth
MDO	Marine Diesel Oil
MGO	Marine Gas Oil
MES	Monitoring, evaluation, and surveillance
MNES	Matters of national environmental significance
MoC	Management of change
MODU	Mobile offshore drilling unit
MSC	Management System Cycle
MSRE	Marine Safety Reliability and Efficiency
MSV	Multi-Service Vessel
MSW	Managing Safe Work

Acronym or abbreviation	Definition
N/A	Not Applicable
NADF	Non-aqueous drill fluids
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
NO_2	Nitrogen dioxide
Nox	Nitrous oxides
NOAA	National oceanic and atmospheric administration
NOPSEMA	National Offshore Petroleum Safety and Environment Management Authority
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
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 2009
ORT	On-site Response Team
OSC	Operations Section Chief
OSMP	Operational and Scientific Monitoring Plan
OSV	Offshore support vessel
OWR	Oiled wildlife response
PEMT	Perth Emergency Management Team
PLONOR	Pose little or no risk to the environment;
ppb	Parts per billion
ppm	Parts per million
PPP	Protection Prioritisation Process
PTS	Permanent threshold shift
PTW	Permit to Work
RRKC	Robe River Kuruma Aboriginal Corporation

Acronym or abbreviation	Definition
ROV	Remotely operated vehicle
RTM	Response Time Models
SCERP	Source Control Emergency Response Plan
SCSSV	Surface Control Subsurface Safety Valve
SEEMP	Ship Energy Efficiency Management Plan
SLA	Safe Lift Area
SEL	Sound exposure level
SHC	Shoreline Clean-up
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	Simultaneous operations
SME	Subject matter expert
SMPEP	Shipboard marine pollution emergency plan
SNA	Safe Navigation Area
SOP	Standard operational procedure
SOPEP	Ship Oil Pollution Emergency Plan
SOx	Sulfur oxides
SPD	Shoreline protection and deflection
SPL	Sound pressure level
SSDI	Subsea dispersant injection
TEC	Threatened ecological community
TRG	Tactical response guide
TTS	Temporary threshold shift
US	The United States of America
UK	United Kingdom
µPa	Micropascal
VSP	Vertical Seismic Profiling
VXT	vertical configuration of subsea christmas trees
WA	Western Australia
WAC	Wirrawandi Aboriginal Corporation (WAC)
WBF	Water based fluids
WAFIC	Western Australian Fisheries Industry Council
WOMP	Well operations management plan
WBRDIF	Water Based Reservoir Drill-In Fluid
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.

Table 10-1: References

Ref. No.	Description	Document ID
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2.	Chevron Australia. 2020. *Chevron ABU: Consolidated Oil Pollution Emergency Plan (OPEP)*. Chevron Australia, Perth, Western Australia. Available from: https://docs.nopsema.gov.au/A748691 [Accepted by NOPSEMA on 23 December 2020]	ABU-COP-02788
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Ref. No.	Description	Document ID
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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 consultation material

wheatstone well intervention and infill drilling

relevant persons information sheet
january 2023

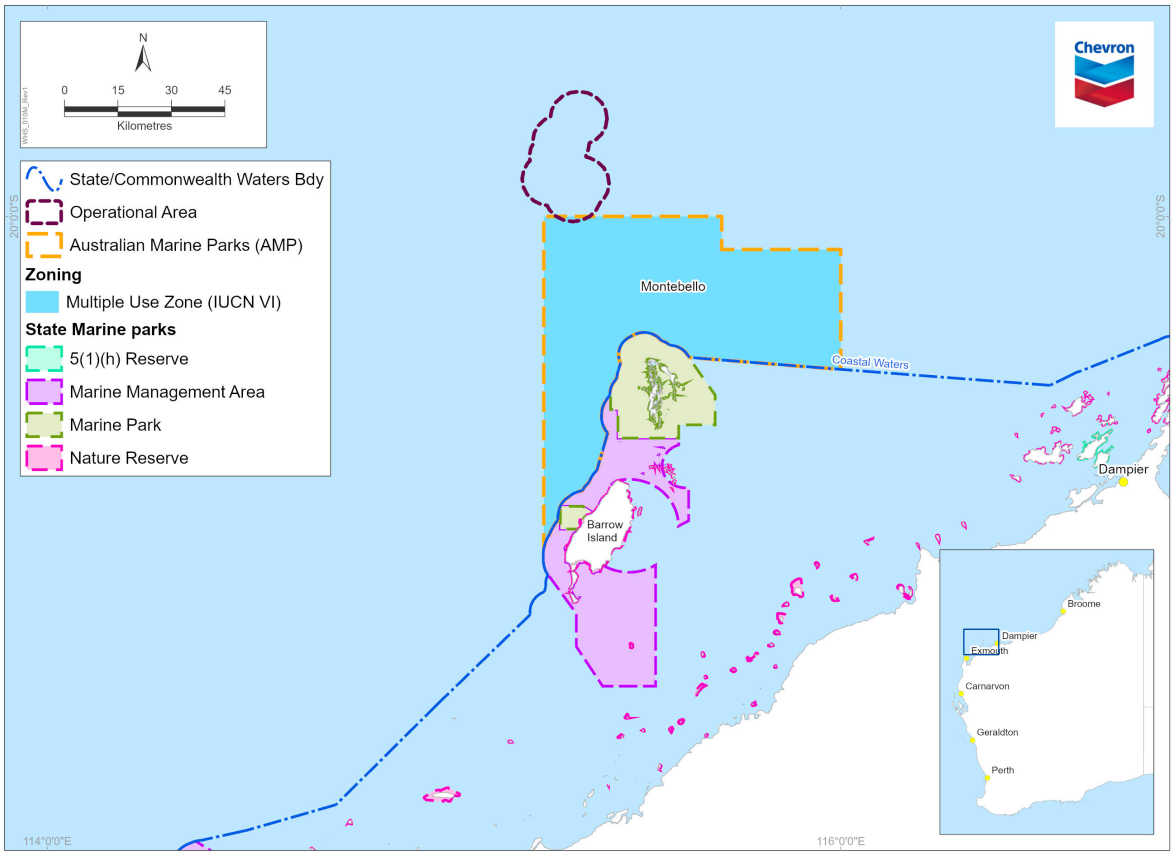


Figure 1. Location of the wells

overview

Chevron Australia is currently undertaking a 5-yearly revision of the Wheatstone Well Intervention and Infill Drilling Environment Plan.

Chevron Australia will conduct infill drilling of seven new wells and well intervention activities on the nine existing production wells in the Wheatstone and Iago fields, to maintain gas supply to the Wheatstone liquefied natural gas facility and domestic gas plant.

location and water depth

The activity is located approximately 165 kilometres northwest of the mainland Western Australian Coast, and 40 kilometres northwest of the Montebello Islands.

Nine production wells are operational within production licences WA-46-L, WA-47-L, and WA-48-L with coordinates and approximate water depth shown in the below table

.

Well	Latitude (WGS 84)	Longitude (WGS 84)	Water depth
WST-1A	-19.905	115.268	184 m
WST-1C	-19.905	115.268	183 m
WST-1D	-19.905	115.268	183 m
WST-3A-ST1	-19.810	115.295	229 m
WST-3C	-19.811	115.295	228 m
WST-3D	-19.811	115.295	228 m
WST-3F	-19.811	115.295	228 m
IAG-1B-ST1	-19.944	115.324	119 m
IAG-1E	-19.945	115.325	118 m

Chevron Australia proposes to drill up to seven additional production wells as part of an infill drilling campaign within the same production licences. The infill wells will be drilled at locations to be determined but within approximately 2.5 kilometres of centrally located manifolds. Indicative locations for six potential future manifolds are listed in the below table.

Manifold	Latitude (WGS 84)	Longitude (WGS 84)	Water depth
WST North	-19.753	115.339	237 m
WST Central-North	-19.811	115.295	228 m
WST- Central-South	-19.849	115.286	204 m
WST South	-19.905	115.268	183 m
IA North	-19.916	115.344	116 m
IA South	-19.945	115.324	118 m

All activities will occur within an operational area that extends to a 7.5-kilometre radius around the proposed manifolds.

schedule and duration

Drilling is scheduled between 2024 and 2028, subject to approvals and drill rig availability. Each well is expected to take about 65 days.

activity summary

A mobile offshore drilling unit will drill below the seabed. It will be supported by up to three vessels.

Seven infill wells will be drilled.

Based on an assessment, additional work may occur on the nine existing wells, for repairs, maintenance and data acquisition.

EMBA: environment that may be affected

Drilling activities will have the potential for environment interactions, known as ‘aspects’.

All planned aspects result in environmental impacts and changes to the environment and may present environmental risks within the operational area, with the exception of underwater sound emission, which could extend approximately 13 kilometres from the source.

Unplanned releases and events might occur while conducting activities.

Table 1 lists the potential environmental impacts and risks.

If an emergency condition occurs, the size of the ‘environment that may be affected’, also known as an ‘EMBA’, could increase.

The EMBA is based on the emergency condition’s worst case environmental scenario, which in this case is an unplanned spill 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. Figure 2 shows the EMBA.

Control measures to prevent this event are in place, listed in Table 1, but Chevron Australia is required to assess this highly unlikely scenario.

In this scenario, cultural, ecological and social values and sensitivities may be exposed to hydrocarbons. These are considered environmental risks because they are not planned to occur.

marine exclusion zone

A 500-metre safety exclusion zone will be requested around the drilling unit for the duration of the exploration drilling activities.

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 Environment Plan 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 Chevron Australia to consult with relevant persons whose functions, interests and activities may be affected by the petroleum activity.

The Environment Plan will describe the environment in which the petroleum activity takes place, an assessment of the potential environmental impacts and risks arising from the activity, and the identification of control measures to manage environmental impacts and risks to acceptable levels that are as low as reasonably practicable.

The environment plans outline how Chevron Australia has engaged with 'relevant persons', whose interests, functions, and activities may be affected and how their feedback has been considered and addressed.

your feedback

We are committed to engaging with Traditional Owners and Custodians, commercial fishers, recreational groups and other relevant individuals and organisations, as required by regulation.

We are seeking your feedback if you consider your functions, interests or activities may be affected based on the information outlined in Table 1. Let us know if you consider there are any control measures we could implement to eliminate, reduce or avoid an effect.

You can contact us at:

- 1800 225 195
- feedback@chevron.com

If a relevant person asks that their feedback be treated as confidential, Chevron Australia will make this known to NOPSEMA and the information will be kept confidential.

what's next

Your feedback during the consultation period will be considered and incorporated into the environment plan.

We commit to keeping you informed and providing responses to any relevant person who so requests.

privacy notice

If you choose to provide feedback on this proposal, Chevron Australia will collect your name and contact details, in addition to your comments, for the purposes of maintaining contact with you and inclusion of 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 regarding your submission. Chevron may transfer your information to NOPSEMA, if required and if you do not identify it as sensitive, and to other Chevron affiliates including our head office based in the United States. For further information regarding how we protect your personal information, and your rights, please refer to our privacy notice at https://australia.chevron.com/privacy.

Table 1. 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 support vessels within the Operational Area (OA)	• Presence of MODU, wellhead, other subsea equipment and support vessels within the OA has the potential to interact and disrupt other marine users • Presence of MODU, wellhead, other subsea equipment and support 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 Chevron Australia's Marine, Safety Reliability and Efficiency (MSRE) process. • 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 activities and temporary parking of remotely operated vehicle	• 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 Chevron Australia's MSRE process
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 MSRE process • 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 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, support 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

Aspect	Potential Interaction (impacts/risks)	Proposed control measures
		• 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 discharged 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 discharged 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 Chevron Australia's MSRE process, 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	• Vessels will meet the crew competency, navigation equipment, and radar requirements of *Chevron Australia's MSRE process* • Notification to relevant agencies of activities and vessel movements to allow them to send warnings and/or notices to mariners prior to commencing activities

Aspect	Potential Interaction (impacts/risks)	Proposed control measures
	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 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*

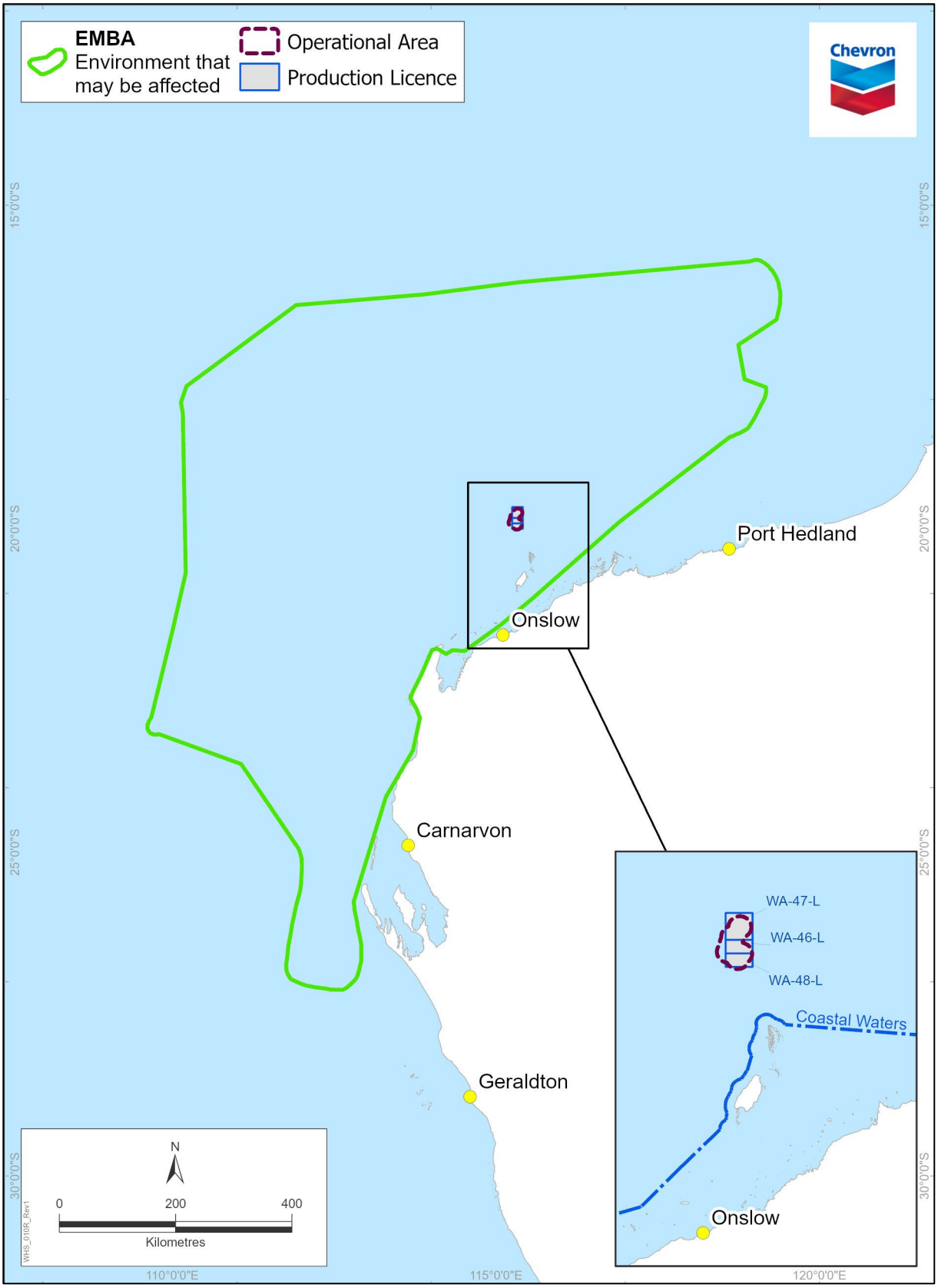


Figure 2. The EMBA

relevant persons information

wheatstone well intervention and infill drilling

Chevron Australia is currently undertaking a 5-yearly revision of the Wheatstone Well Intervention and Infill Drilling Environment Plan.

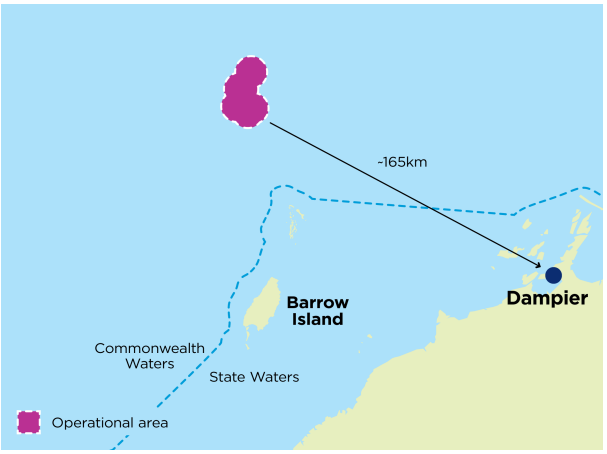
Chevron Australia will conduct infill drilling of seven new wells and well intervention activities on the nine existing production wells in the Wheatstone and Iago fields, to maintain gas supply to the Wheatstone liquefied natural gas facility and domestic gas plant.

location and water depth

The activity is located approximately 165 kilometres northwest of the mainland Western Australian Coast, and 40 kilometres northwest of the Montebello Islands. Nine production wells are operational within production licences WA-46-L, WA-47-L, and WA-48-L with coordinates and approximate water depth shown in table 1.

Chevron Australia proposes to drill up to seven additional production wells as part of an infill drilling campaign within the same production licences. The infill wells will be drilled at locations to be determined but within approximately 2.5 kilometres of centrally located manifolds. Indicative locations for six potential future manifolds are listed in table 2.

All activities will occur within an operational area that extends to a 7.5-kilometre radius around the proposed manifolds.



Jump to detailed maps below

schedule and duration

Drilling is scheduled between 2024 and 2028, subject to approvals and drill rig availability. Each well is expected to take about 65 days.

activity summary

A mobile offshore drilling unit will drill below the seabed. It will be supported by up to three vessels.

Seven infill wells will be drilled.

Based on an assessment, additional work may occur on the nine existing wells, for repairs, maintenance and data acquisition.

EMBA – environment that may be affected

Drilling activities will have the potential for environment interactions, known as 'aspects'.

All planned aspects can result in environmental impacts and changes to the environment and may present environmental risks within the operational area, with the exception of underwater sound emission, which could extend approximately 13 kilometres from the source.

Unplanned releases and events might occur while conducting activities.

Table 3 lists the potential environmental impacts and risks.

The size of the 'environment that may be affected', also known as an 'EMBA' is based on an emergency condition's worst case environmental scenario, which in this case is an unplanned spill 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. Figure 2 shows the EMBA.

Control measures to prevent this event are in place, listed in Table 1, but Chevron Australia is required to assess this highly unlikely scenario.

In this scenario, cultural, ecological and social values and sensitivities may be exposed to hydrocarbons. These are considered environmental risks because they are not planned to occur.

marine exclusion zone

A 500-metre safety exclusion zone will be requested around the drilling unit for the duration of the exploration drilling activities.

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 Environment Plan 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 Chevron Australia to consult with relevant persons whose functions, interests and activities may be affected by the petroleum activity.

The Environment Plan will describe the environment in which the petroleum activity takes place, an assessment of the potential environmental impacts and risks arising from the activity, and the identification of control measures to manage environmental impacts and risks to acceptable levels that are as low as reasonably practicable.

The environment plans outline how Chevron Australia has engaged with 'relevant persons', whose interests, functions, and activities may be affected and how their feedback has been considered and addressed.

impacts, risks and proposed controls

Summary of impacts/risks and key proposed controls – view Table 3.

your feedback

We are committed to engaging with Traditional Owners and Custodians, commercial fishers, recreational groups and other relevant individuals and organisations, as required by regulation.

We are seeking your feedback if you consider your **functions**, **interests** or **activities** may be affected based on the information outlined in Table 3.

Let us know if you consider there are any control measures we could implement to eliminate, reduce or avoid an effect.

You can contact us tollfree at **1800 225 195** or leave feedback online below.

If a relevant person asks that their feedback be treated as confidential, Chevron Australia will make this known to NOPSEMA and the information will be kept confidential.

To begin providing feedback for **Wheatstone Well Intervention and Infill Drilling**, select a feedback category

what's next

Your feedback during the consultation period will be considered and incorporated into the environment plan.

We commit to keeping you informed and providing responses to any relevant person who so requests.

privacy notice

If you choose to provide feedback on this proposal, Chevron Australia will collect your name and contact details, in addition to your comments, for the purposes of maintaining contact with you and inclusion of 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 regarding your submission. Chevron may transfer your information to NOPSEMA, if required and if you do not identify it as sensitive, and to other Chevron affiliates including our head office

based 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

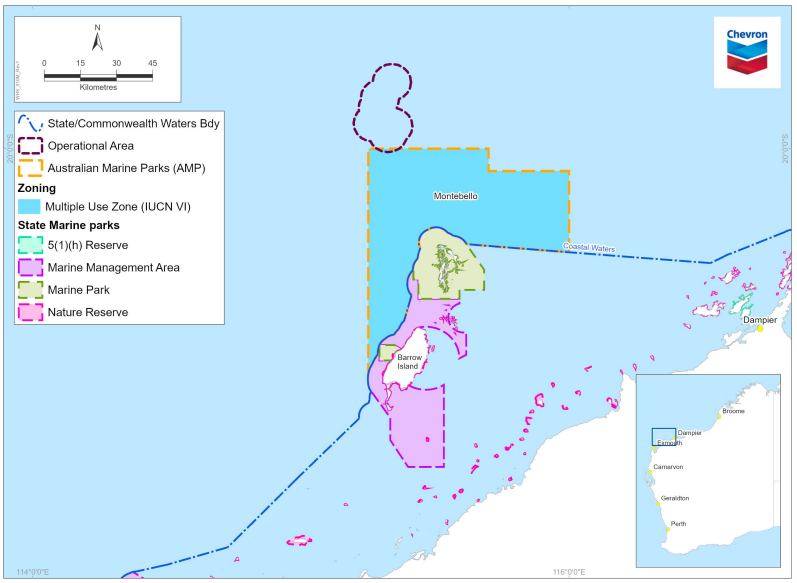


Figure 1. Location of the wells.

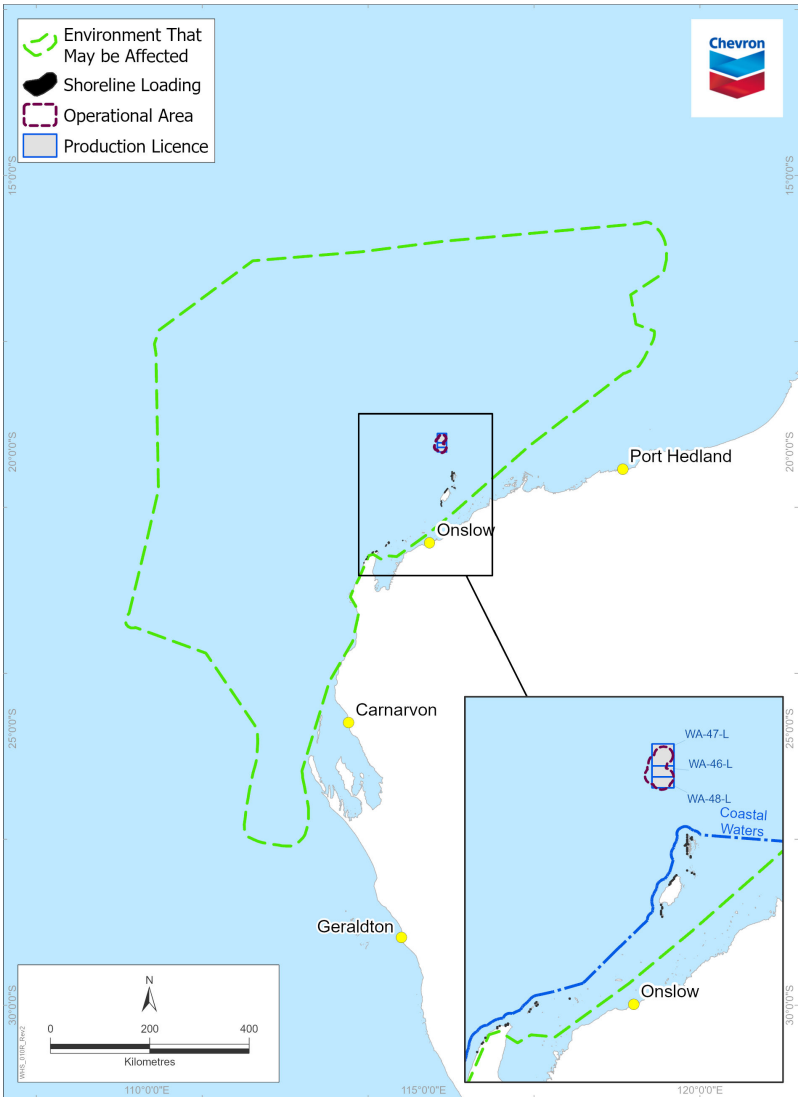


Figure 2: Wheatstone Well Intervention and Infill Drilling EMBA

Table 1: Production well coordinates and approximate water depths – view here.

Table 2: Indicative locations for six potential future manifolds and approximate water depths – view here.

Table 3: Summary of impacts/risks and key proposed controls – view here.

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resources

Consultation in the course of preparing an environment plan – NOPSEMA

Environment plan content requirements – NOPSEMA

Environmental requirements – NOPSEMA

Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations

NOPSEMA Assessment Process Environment Plans

Chevron Operational Excellence Management System (OEMS)

Well	Latitude (WGS 84)	Longitude (WGS 84)	Water depth
WST-1A	-19.905	115.268	184 m
WST-1C	-19.905	115.268	183 m
WST-1D	-19.905	115.268	183 m
WST-3A-ST1	-19.810	115.295	229 m
WST-3C	-19.811	115.295	228 m
WST-3D	-19.811	115.295	228 m
WST-3F	-19.811	115.295	228 m
IAG-1B-ST1	-19.944	115.324	119 m
IAG-1E	-19.945	115.325	118 m

Table 1. Production well coordinates and approximate water depths

Manifold	Latitude (WGS 84)	Longitude (WGS 84)	Water depth
WST North	-19.753	115.339	237 m
WST Central-North	-19.811	115.295	228 m
WST- Central-South	-19.849	115.286	204 m
WST South	-19.905	115.268	183 m
IA North	-19.916	115.344	116 m
IA South	-19.945	115.324	118 m

Table 2. Indicative locations for six potential future manifolds and approximate water depths

Well	Latitude (WGS 84)	Longitude (WGS 84)	Water depth
WST-1A	-19.905	115.268	184 m
WST-1C	-19.905	115.268	183 m
WST-1D	-19.905	115.268	183 m
WST-3A-ST1	-19.810	115.295	229 m
WST-3C	-19.811	115.295	228 m
WST-3D	-19.811	115.295	228 m
WST-3F	-19.811	115.295	228 m
IAG-1B-ST1	-19.944	115.324	119 m
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IA North	-19.916	115.344	116 m
IA South	-19.945	115.324	118 m

Table 2. Indicative locations for six potential future manifolds and approximate water depths

Table 3: 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 support vessels within the Operational Area (OA)	• Presence of MODU, wellhead, other subsea equipment and support vessels within the OA has the potential to interact and disrupt other marine users • Presence of MODU, wellhead, other subsea equipment and support 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 Chevron Australia's Marine, Safety Reliability and Efficiency (MSRE) process. • 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 activities and temporary parking of remotely operated vehicle	• 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 Chevron Australia's MSRE process
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 MSRE process • 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 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, support 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 discharged 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 discharged 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

Aspect	Potential Interaction (impacts/risks)	Proposed control measures
		• 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 Chevron Australia's MSRE process, 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 *Chevron Australia's MSRE process* • 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*

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: 12-Oct-2022

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:	23
Listed Migratory Species:	38

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	67
Whales and Other Cetaceans:	28
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
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:	34
Key Ecological Features (Marine):	2
Biologically Important Areas:	8
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
EEZ and Territorial Sea

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
FISH		

Scientific Name	Threatened Category	Presence Text
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	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 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
SHARK		
[Carcharias taurus (west coast population)](#) Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
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 known 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
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species 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
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat 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
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

Scientific Name	Threatened Category	Presence Text
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 likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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]		Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
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
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat may occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Seasnake [1121]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Chitulia ornata as Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Leioselasma czeblukovi as Hydrophis czeblukovi Fine-spined Seasnake, Geometrical Seasnake [87374]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

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

Current Scientific Name	Status	Type of Presence
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata Pygmy Killer Whale [61]		Species or species habitat may occur within area
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima as Kogia simus Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		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 as Orcaella brevirostris 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

Current Scientific Name	Status	Type of Presence
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 as Sousa chinensis 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 likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
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
Montebello	Multiple Use Zone (IUCN VI)

Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur

Extra Information

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
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	2003/1294	Controlled Action	Post-Approval
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Not controlled action			
Exploration of appraisal wells	2006/3065	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
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
'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
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
Balnaves Condensate Field Development	2011/6188	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
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		(Particular Manner)	
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	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
Osprey and Dionysus Marine Seismic Survey	2011/6215	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
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	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular Manner)	Post-Approval

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-west
Continental Slope Demersal Fish Communities	North-west

Biologically Important Areas

Scientific Name	Behaviour	Presence
Marine Turtles		
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
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]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur

Scientific Name	Behaviour	Presence
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: 17-Nov-2022

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:	3
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	66
Listed Migratory Species:	69

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:	11
Commonwealth Heritage Places:	2
Listed Marine Species:	124
Whales and Other Cetaceans:	34
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	13
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:	4
EPBC Act Referrals:	218
Key Ecological Features (Marine):	8
Biologically Important Areas:	42
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		
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
EEZ and Territorial Sea
Extended Continental Shelf

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Anous tenuirostris melanops		
Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat 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
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Diomedea amsterdamensis Amsterdam Albatross [64405]	Endangered	Species or species habitat likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Malurus leucopterus 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

Scientific Name	Threatened Category	Presence Text
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Papasula abbotti Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
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
CRUSTACEAN		
Kumonga exleyi		
Cape Range Remipede [86875]	Vulnerable	Species or species habitat known 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
Thunnus maccoyii		
Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
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
Bettongia lesueur lesueur		
Burrowing Bettong (Shark Bay), Boodie [66659]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
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 known 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	Species or species habitat 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
Osphranter robustus isabellinus Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Perameles bougainville listed as Perameles bougainville bougainville		
Shark Bay Bandicoot [278]	Endangered	Species or species habitat known 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
Pseudomys fieldi		
Shark Bay Mouse, Djoongari, Alice Springs Mouse [113]	Vulnerable	Species or species habitat likely 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 Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus foliosquama		
Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat 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
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 known to occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Centrophorus zeehaani Southern Dogfish, Endeavour Dogfish, Little Gulper Shark [82679]	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
Migratory Marine Birds		

Scientific Name	Threatened Category	Presence Text
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 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
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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]		Breeding known to occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
Sterna dougallii Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons Little Tern [82849]		Congregation or aggregation 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
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Dugong dugon Dugong [28]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
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
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
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

Scientific Name	Threatened Category	Presence Text
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		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to occur within area
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]		Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat 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]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State
Defence	
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50129]	WA
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50126]	WA
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50128]	WA
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50127]	WA
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50125]	WA
Defence - EXMOUTH ADMIN & HF TRANSMITTING [50124]	WA
Defence - EXMOUTH VLF TRANSMITTER STATION [50123]	WA
Defence - EXMOUTH VLF TRANSMITTER STATION [50122]	WA
Defence - LEARMONTH - AIR WEAPONS RANGE [50193]	WA
Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]	WA
Unknown	
Commonwealth Land - [52236]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
Learmonth Air Weapons Range Facility	WA	Listed place
Ningaloo Marine Area - Commonwealth Waters	WA	Listed place

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Anous stolidus Common Noddy [825]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Anous tenuirostris melanops Australian Lesser Noddy [26000]	Vulnerable	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
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
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]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area 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 likely 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 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 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
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 known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
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]		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
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
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

Scientific Name	Threatened Category	Presence Text
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]		Breeding 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
Phaethon rubricauda Red-tailed Tropicbird [994]		Breeding known to occur within area
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
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 skua as Catharacta skua Great Skua [823]		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]		Congregation or aggregation known to occur within area

Scientific Name	Threatened Category	Presence Text
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
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 nebularia Common Greenshank, Greenshank [832]		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
Bhanotia fasciolata Corrugated Pipefish, Barbed Pipefish [66188]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys galei Gale's Pipefish [66191]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys amplexus Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Corythoichthys intestinalis Australian Messmate Pipefish, Banded Pipefish [66202]		Species or species habitat may occur within area
Corythoichthys schultzi Schultz's Pipefish [66205]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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
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 spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
Lissocampus fatiloquus Prophet's Pipefish [66250]		Species or species habitat may occur within area
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Nannocampus subosseus Bonyhead Pipefish, Bony-headed Pipefish [66264]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon Dugong [28]		Breeding known to occur within area
Reptile		
Acalyptophis peronii Horned Seasnake [1114]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus apraefrontalis Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus duboisii Dubois' Seasnake [1116]		Species or species habitat may occur within area
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat known to occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Aipysurus pooleorum Shark Bay Seasnake [66061]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Seasnake [1121]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Chitulia ornata as Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis Black-ringed Seasnake [1100]		Species or species habitat may occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Hydrophis macdowelli as Hydrophis mcdowelli Small-headed Seasnake [75601]		Species or species habitat may occur within area
Leioselasma czeblukovi as Hydrophis czeblukovi Fine-spined Seasnake, Geometrical Seasnake [87374]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus Fin Whale [37]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat likely to 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
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 as Kogia simus Dwarf Sperm Whale [85043]		Species or species habitat may occur within area
Lagenodelphis hosei Fraser's Dolphin, Sarawak Dolphin [41]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Mesoplodon grayi Gray's Beaked Whale, Scamperdown Whale [75]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Orcaella heinsohni as Orcaella brevirostris 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 as Sousa chinensis 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
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

Current Scientific Name	Status	Type of Presence
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
Carnarvon Canyon	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Habitat Protection Zone (IUCN IV)
Argo-Rowley Terrace	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)
Gascoyne	National Park Zone (IUCN II)
Ningaloo	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)
Ningaloo	Recreational Use Zone (IUCN IV)
Argo-Rowley Terrace	Special Purpose Zone (Trawl) (IUCN VI)

Habitat Critical to the Survival of Marine Turtles

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-Feb		
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 Management Area	WA
Barrow Island	Marine Park	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
Dirk Hartog Island	National Park	WA
Great Sandy Island	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
Koks Island	Nature Reserve	WA
Locker Island	Nature Reserve	WA

Protected Area Name	Reserve Type	State
Lowendal Islands	Nature Reserve	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA
Muiron Islands	Nature Reserve	WA
Muiron Islands	Marine Management Area	WA
Ningaloo	Marine Park	WA
North Sandy Island	Nature Reserve	WA
Rocky Island	Nature Reserve	WA
Round Island	Nature Reserve	WA
Rowley Shoals	Marine Park	WA
Serrurier Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA
Unnamed WA37383	5(1)(h) Reserve	WA
Unnamed WA37500	5(1)(g) Reserve	WA
Unnamed WA40322	5(1)(h) Reserve	WA
Unnamed WA40828	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
Bundera Sinkhole	WA
Cape Range Subterranean Waterways	WA
Exmouth Gulf East	WA

Wetland Name	State
Learmonth Air Weapons Range - Saline Coastal Flats	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
Project Highclere Cable Lay and Operation	2022/09203		Completed
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
Ashburton Infrastructure Project	2021/9064	Controlled Action	Guidelines Issued
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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development	2003/1294	Controlled Action	Post-Approval
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval
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
Mardie Project, 80 km south west of Karratha, WA	2018/8236	Controlled Action	Post-Approval
Mauds Landing Marina	2000/98	Controlled Action	Completed
Nava-1 Cable System	2001/510	Controlled Action	Completed
Ningaloo Lighthouse Development, 17km north west Exmouth, Western Australia	2020/8693	Controlled Action	Assessment Approach
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 Development	2000/59	Controlled Action	Completed
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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
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
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	2003/1033	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
production, Permit			
Differential Global Positioning System (DGPS)	2001/445	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
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
Extension of Simpson Oil Platforms & Wells	2002/685	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Searipple gas and condensate field development	2000/89	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)			

Title of referral	Reference	Referral Outcome	Assessment Status
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
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	2003/1271	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
and WA-268-P		Manner)	
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 Manner)	Post-Approval
3D seismic survey	2006/2715	Not Controlled Action (Particular Manner)	Post-Approval
3D Seismic Survey, WA	2008/4428	Not Controlled Action (Particular Manner)	Post-Approval
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	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2009/4968	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
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
Cerberus exploration drilling campaign, Carnarvon Basin, WA	2016/7645	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
Consturction & operation of the Varanus Island kitchen & mess cyclone refuge building, compression p	2013/6952	Not Controlled Action (Particular Manner)	Post-Approval
Coverack Marine Seismic Survey	2001/399	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 Manner)	Post-Approval
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
Earthworks for kitchen/mess, cyclone refuge building & Compression Plant, Varanus Island	2013/6900	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 Manner)	Post-Approval
Huzzas phase 2 marine seismic survey, Exmouth Plateau, Northern Carnarvon Basin, WA	2013/7093	Not Controlled Action (Particular Manner)	Post-Approval
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval
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	2008/4630	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 Manner)	Post-Approval
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
Phoenix 3D Seismic Survey, Bedout Sub-Basin	2010/5360	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
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
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
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 Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a 3D marine seismic survey	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
Vampire 2D Non Exclusive Seismic Survey, WA	2010/5543	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
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
Varanus Island Compression Project	2012/6698	Referral Decision	Completed

Key Ecological Features [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Ancient coastline at 125 m depth contour	North-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
Exmouth Plateau	North-west
Glomar Shoals	North-west
Mermaid Reef and Commonwealth waters surrounding Rowley Shoals	North-west
Western demersal slope and associated fish communities	South-west

Biologically Important Areas

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 (high density seagrass beds)	Known to occur

Scientific Name	Behaviour	Presence
Dugong dugon Dugong [28]	Nursing	Known to occur
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
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

Scientific Name	Behaviour	Presence
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
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		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Ardenna pacifica Wedge-tailed Shearwater [84292]	Foraging (in high numbers)	Known to occur
Fregata ariel Lesser Frigatebird [1012]	Breeding	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

Scientific Name	Behaviour	Presence
Phaethon lepturus White-tailed Tropicbird [1014]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula albifrons sinensis Little Tern [82850]	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]	Distribution	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Foraging	Known to occur
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration (north and south)	Known to occur
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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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: 30-May-2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	1
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	24
Listed Migratory Species:	38

Other Matters Protected by the EPBC Act

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

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	68
Whales and Other Cetaceans:	28
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
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:	40
Key Ecological Features (Marine):	2
Biologically Important Areas:	8
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

Approval is required for a proposed activity that is located within the Commonwealth Marine Area which has, will have, or is likely to have a significant impact on the environment. Approval may be required for a proposed action taken outside a Commonwealth Marine Area but which has, may have or is likely to have a significant impact on the environment in the Commonwealth Marine Area.

Feature Name
EEZ and Territorial Sea

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
FISH		

Scientific Name	Threatened Category	Presence Text
[Thunnus maccoyii](#) Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	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 Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
[Aipysurus foliosquama](#) Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
[Caretta caretta](#) Loggerhead Turtle [1763]	Endangered	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
SHARK		

Scientific Name	Threatened Category	Presence Text
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 known 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
Fregata minor		
Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species 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
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
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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]		Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
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
Corythoichthys flavofasciatus Reticulate Pipefish, Yellow-banded Pipefish, Network Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Seadragon [66226]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Micrognathus micronotopterus		
Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri		
Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii		
Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis		
Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area
Solenostomus cyanopterus		
Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus		
Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus		
Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris		
Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
Acalyptophis peronii		
Horned Seasnake [1114]		Species or species habitat may occur within area
Aipysurus apraefrontalis		
Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus duboisii		
Dubois' Seasnake [1116]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus eydouxii Spine-tailed Seasnake [1117]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus laevis Olive Seasnake [1120]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Seasnake [1121]		Species or species habitat may occur within area
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Chitulia ornata as Hydrophis ornatus Spotted Seasnake, Ornate Reef Seasnake [87377]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Disteira kingii Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major Olive-headed Seasnake [1124]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Ephalophis greyi North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hydrophis elegans Elegant Seasnake [1104]		Species or species habitat may occur within area
Leioselasma czeblukovi as Hydrophis czeblukovi Fine-spined Seasnake, Geometrical Seasnake [87374]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area
Pelamis platurus Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

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

Current Scientific Name	Status	Type of Presence
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Delphinus delphis](#) Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
[Feresa attenuata](#) Pygmy Killer Whale [61]		Species or species habitat may occur within area
[Globicephala macrorhynchus](#) Short-finned Pilot Whale [62]		Species or species habitat may occur within area
[Grampus griseus](#) Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
[Kogia breviceps](#) Pygmy Sperm Whale [57]		Species or species habitat may occur within area
[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

Current Scientific Name	Status	Type of Presence
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 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 likely to occur within area

Current Scientific Name	Status	Type of Presence
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks [Resource Information]

Park Name	Zone & IUCN Categories
Montebello	Multiple Use Zone (IUCN VI)

Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur

Extra Information

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Project Highclere Cable Lay and Operation	2022/09203		Completed
Controlled action			
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development	2003/1294	Controlled Action	Post-Approval
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Not controlled action			
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Telstra North Rankin Spur Fibre Optic Cable	2016/7836	Not Controlled Action	Completed
To construct and operate an offshore submarine fibre optic cable, WA	2014/7373	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)			
'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
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
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	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
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
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	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
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	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
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

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

Scientific Name	Behaviour	Presence
Marine Turtles		
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur

Scientific Name	Behaviour	Presence
[Eretmochelys imbricata](#) Hawksbill Turtle [1766]	Internesting buffer	Known to occur
[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]	Distribution	Known to occur
[Balaenoptera musculus brevicauda](#) Pygmy Blue Whale [81317]	Migration	Known to occur
[Megaptera novaeangliae](#) Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

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

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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

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Appendix D summary of relevant persons consultation

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
Apache Fishing Charters	04/05/2023	CN-000383	Email	CAPL advised the Apache Fishing Charters 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 notified the Apache Fishing Charters that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Apache Fishing Charters functions, interests or activities. No changes required.
Aquaculture Council of WA	10/01/2023	CN-000106	Email	CAPL advised the Aquaculture Council of Western Australia (ACWA) had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL suggested they coordinate a phone call to discuss and agree on the communication protocols and to consult on the current Environment Plans. ACWA would be pleased to meet with CAPL, and a meeting was organised.	In consultation in the course of preparing the EP, Aquaculture Council of WA has provided no objection or claim in response to the proposed activity CAPL reached out to the additional contacts provided by Aquaculture Council of WA. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Aquaculture Council of WA's functions, interests or activities. No changes required.
	09/02/2023	OC-000296	Virtual Meeting	CAPL spoke with a representative from the Aquaculture Council of WA (ACWA) to provide an overview of CAPL's new approach to consultation along with an update on CAPL's Environment Plans. CAPL were asked to present the same information to the ACWA board.		
	21/04/2023	OC-000307	Face-to-face	CAPL presented on the current activities and consultation process to the Aquaculture Council of WA (ACWA) board. ACWA mentioned various areas that their members may be interested and concerned about. The ACWA was appreciative of CAPL's approach and will revert back to CAPL with any questions they may have.		
	01/05/2023	OC-000424	Email	CAPL thanked the Aquaculture Council of WA (ACWA) for their support and engagement in the preparation of the Environment Plan. CAPL		

				advised that if the ACWA had any objections or questions about the activity before CAPL submitted the Environment Plan to NOPSEMA, CAPL welcomed them. ACWA confirmed CAPL's activity information was presented at the board meeting and there were no concerns raised but noted there are some operators in the vicinity that may be relevant and asked what licences CAPL has engaged directly. CAPL confirmed they have engaged WAFIC and asked ACWA to identify additional contacts CAPL should contact.		
	04/05/2023	OC-000455	Email	ACWA identified additional relevant persons CAPL should engage with regarding their Environment Plans. ACWA thanked CAPL for getting in touch. CAPL engaged with ACWA and acknowledged their intentions to contact the referenced relevant persons and thanked ACWA for their assistance. ACWA shared CAPLs written notice on the activity to Maxima Pearling on CAPL's behalf for introduction.		
Archipelago Adventures	04/05/2023	CN-000384	Email	CAPL advised the Archipelago Adventures 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 notified Archipelago Adventures that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Archipelago Adventure's functions, interests or activities. No changes required.
Ashburton Anglers	08/05/2023	CN-000400	Email	CAPL engaged with Ashburton Anglers as a relevant person with functions, interests or activities that may be affected by the activity.	No objection or claim raised regarding the activity impacts or risks.	CAPL considers the measures and controls in the EP address

				CAPL provided an overview of the activity through a written notice factsheet and provided a link to their website for further information regarding the activity. CAPL notified Ashburton Anglers that they welcome meaningful feedback.	CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	Ashburton Angler's functions, interests or activities. No changes required.
Australian Communications and Media Authority (ACMA)	08/05/2023	CN-000402	Email	CAPL re-advised the Australian Communications and Media Authority (ACMA) that 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 notified ACMA that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address ACMA's functions, interests or activities. No changes required.
Australian Conservation Foundation (ACF)	31/03/2023	CN-000163	Email	CAPL used webform to request the contact email in order to supply Environment Plan information to the Australian Conservation Foundation (ACF). CAPL responded to the email sent by ACF and advised that the ACF 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 notified ACF that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address ACF's functions, interests or activities. No changes required.
Australian Council of Prawn Fisheries (ACPF) Ltd.	04/05/2023	CN-000388	Email	CAPL advised the Australian Council of Prawn Fisheries (ACPF) 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 notified	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent	CAPL considers the measures and controls in the EP address ACPF's functions, interests or activities. No changes required.

				the ACPF that they welcome meaningful feedback.	with CAPL's intended outcome of consultation (see Section 6). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	
Australian Fisheries Management Authority (AFMA)	15/02/2023	CN-000214	Email	CAPL advised the AFMA 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 notified AFMA that they welcome meaningful feedback. AFMA provided other relevant industry associations CAPL should consult with, CAPL confirmed they have been engaging with WAFIC closely and subsequently have reach out to the Northern Prawn Fishery and Commonwealth Fishery Association (CFA).	In consultation in the course of preparing the EP, AFMA has provided no objection or claim in response to the proposed activity CAPL reached out to the additional contacts provided by AFMA. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (Section 8.3.4.1)	CAPL considers the measures and controls in the EP address AFMA's functions, interests or activities. No changes required.
Australian Hydrographic Office (AHO)	08/05/2023	CN-000416	Email	CAPL advised the Australian Hydrographic Office (AHO) 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 notified the AHO that they welcome meaningful feedback. AHO acknowledged receipt of email and notified CAPL that the data supplied will now be registered, assessed, prioritised and validated in preparation for updating our Navigational Charting products.	In consultation in the course of preparing the EP, AHO has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (Section 8.3.4.1)	As referenced in Section 7.1, CAPL will notify the AHO no less than four weeks before commencing activity. CAPL considers the measures and controls in the EP address AHO's functions, interests or activities. No additional EP controls are required.
Australian Institute of Marine Science (AIMS)	04/05/2023	CN-000387	Email	CAPL advised the Australian Institute of Marine Science (AIMS) 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 notified AIMS that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of	CAPL considers the measures and controls in the EP address AIMS's functions, interests or activities. No changes required.

					consultation (see Section 6). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	
Australian Marine Conservation Society (AMCS)	10/02/2023	CN-000226	Email	CAPL advised the Australian Marine Conservation Society (AMCS) 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 notified the AMCS that they welcome meaningful feedback. CAPL followed up with AMCS to ensure they received the formal notification regarding CAPL's activity.	In consultation in the course of preparing the EP, AMCS has provided no objection or claim in response to the proposed activity CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address AMCS's functions, interests or activities. No changes required.
	27/03/2023	OC-000160	Phone	CAPL called AMCS to confirm receipt of formal notifications for CAPL's Environment Plan and proposed activity. AMCS confirmed they will reach out to CAPL if they have any comments or concerns.		
Australian Marine Oil Spill Response Centre (AMOSC)	04/05/2023	CN-000385	Email	CAPL advised the Australian Maine Oil Spill Response Centre (AMOSC) 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 notified AMOSC that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1) CAPL will notify AMOSC in the event of an emergency as per their request (see and Section 8.3.4.2)	CAPL considers the measures and controls in the EP address AMOSC's functions, interests or activities. No additional EP controls are required.

Australian Maritime Safety Authority (AMSA)	15/02/2023	CN-000537	Email	CAPL advised AMSA that 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 notified AMSA that they welcome meaningful feedback. AMSA requested the ArcGIS shapefiles of the activity so AMSA GIS team can map the area and overlay their AIS data. CAPL provided the requested data.	In consultation in the course of preparing the EP, AMSA has provided no objection or claim in response to the proposed activity. AMSA have requested to be included in ongoing consultation. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will notify the AMSA and AHO no less than four weeks before commencing activity. CAPL considers the measures and controls in the EP address AMSA functions, interests or activities. No additional EP controls are required.
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	19/05/2022	OC-000071	Email	CAPL requested information as to who the correct person is to send information to at Australian Southern Bluefin Tuna Association (ASBTIA). ASBTIA requested they be removed from the ongoing consultation due to them not having a direct interest in the location of the activity. ASBTIA expect that all activities are done in a responsible manner so as to prevent accidental discharge of hydrocarbons or chemicals into the marine environment and that any potential oil spill or loss of well control be appropriately and rapidly dealt with.	In consultation in the course of preparing the EP, ASBTIA has provided no objection or claim in response to the proposed activity ASBTIA has requested to be removed from CAPL's ongoing consultation. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address ASBTIA's functions, interests or activities. No additional EP controls are required.
	10/03/2023	CN-000404	Email	CAPL re-engaged ASBTIA with the updated and additional information regarding the activity and sought confirmation that ASBTIA would still like to be removed from the consultation list. No response was received.		
Baiyungu Aboriginal Corporation (BAC)	09/02/2023	CN-000321	Email	CAPL advised that the Baiyungu Aboriginal Corporation (BAC) 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 notified BAC that they welcome meaningful feedback.	In consultation in the course of preparing the EP, BAC has provided no objection or claim in response to the proposed activity.	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide BAC ongoing consultation of the activity milestones as per their request. CAPL will also notify BAC in the event of an emergency

	22/02/2023	OC-000323	Email	CAPL advised BAC that they had been identified and that. CAPL representatives are interested in speaking to a representative of BAC about CAPL's activities.	BAC have requested to be included in ongoing consultation and in the event of an emergency they be included in the notification to relevant persons. CAPL is committed to ongoing consultation including working with traditional owners on a broader understanding of sea country and underwater cultural heritage. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	as per their request (see and Section 8.3.4.2) CAPL considers the measures and controls in the EP address BAC's functions, interests or activities. No additional EP controls are required.
	13/03/2023	OC-000322	Email	CAPL engaged with BAC to express their gratitude for BACs time and continued partnership. CAPL also confirmed attendance to present to the Directors of Baiyungu.		
	15/03/2023	OC-000232	Email	CAPL and BAC organised a meeting for CAPL to present on the upcoming activities along with explore possible opportunities for the Traditional Owners in regards to ranger programs, protection areas and other programs that may have impacts on country. A meeting was organised.		
	30/03/2023	OC-000245	Face-to-face	CAPL met with the BAC Board of Directors at Cardabia Station to present the details of CAPL's upcoming offshore activities and the identified risks and impacts. CAPL requested advice as to whether additional relevant persons not present at the meeting should be informed and consulted with. CAPL sought feedback on areas of significance and cultural values including sea country and underwater cultural heritage. Protecting land and sea country is a significant focus of the BAC and they are interested in collaborating with CAPL to protect it.		

	04/04/2023	OC-000242	Phone	BAC enquired if CAPL have engaged Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC), CAPL confirmed they have a meeting with NTGAC organised for September. CAPL reiterated their interest to meet with Baiyungu board again and to maintain momentum on discussions.		
	02/05/2023	OC-000357	Email	CAPL contacted BAC to confirm they have no specific objections and claims regarding the activity. CAPL reiterated with BAC that this has not just been a one-off engagement and CAPL are committed to ongoing consultation.		
	09/05/2023	OC-000421	Phone	CAPL contacted BAC to confirm they have no specific objections and claims regarding the activity. BAC confirmed that there were no issues or objections with respect to the Environment Plan and look forward to ongoing consultations and discussions.		
	10/05/2023	OC-000525	Email	CAPL advised BAC of the completion of the consultation timeframe regarding CAPL Environment Plans, and provided the following summary: The Baiyungu coastal area, sea country, and adjacent islands are highly valuable to the Baiyungu people. Impact on these areas from a planned or unplanned event may cause harm to the cultural landscape, individuals, and the community. Based on the current activity proposal, BAC, as representatives for the Baiyungu people has not expressed objections to the planned activities discussed in the consultation process. BAC requests CAPL to formalise continued engagement and support in relation to the Environment Plans and related activities to assist in properly performing its duties in advocating for and protecting rights and interests on Baiyungu country, including to inform		

				emergency response planning. CAPL sent through a summary of engagements with BAC for confirmation. BAC advised CAPL that it is not their role to provide a formal response and advised CAPL to engage with NTGAC.		
	21/06/2023	OC-000562	Virtual Meeting	CAPL met with BAC to discuss ongoing consulting and relationship. BAC advised that they support opportunities to continue to build the relationship between CAPL and BAC and were grateful for receipt of information on the Chevron Community Spirit Grant. BAC advised CAPL that they may wish to also engage with the DBCA who are in partnership with Baiyungu people and have joint management of the Ningaloo Coast. BAC supported CAPLs approach of continuing to engage with NTGAC and BAC on Engagement Plan. CAPL introduced the OPP for future consultation.		
Blue Horizon Charters	04/05/2023	CN-000386	Email	CAPL advised the Blue Horizon Charters 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 notified Blue Horizon Charters that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Blue Horizon Charters functions, interests or activities. No changes required.

Blue Juice Charters	04/05/2023	CN-000389	Email	CAPL advised the Blue Juice Charters 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 notified Blue Juice Charters that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Blue Juice Charters functions, interests or activities. No changes required.
Blue Lightning Fishing Charters	04/05/2023	CN-000390	Email	CAPL advised that Blue Lightning Fishing Charters 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 notified Blue Lightning Fishing Charters that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Blue Lightning Fishing Charters functions, interests or activities. No changes required.
Bluesun2 Boat Charters	04/05/2023	CN-000391	Email	CAPL advised the Bluesun 2 Boat Charters 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 notified Bluesun 2 Boat Charters that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Bluesun 2 Boat Charters functions, interests or activities. No changes required.

Boating Industry Association WA	04/05/2023	CN-000392	Email	CAPL advised the Boating Industry Association WA 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 notified Boating Industry Association WA that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Boating Industry Association WA's functions, interests or activities. No changes required.
British Petroleum (BP)	17/02/2023	CN-000209	Email	CAPL advised that British Petroleum (BP) 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 notified BP that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address BP's functions, interests or activities. No changes required.
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	07/09/2022	OC-000477	Phone	CAPL provided an initial conversation about the new Environment Plan consultation requirements. Buurabalayji Thalanyji Aboriginal Corporation (BTAC) agreed to meet when CAPL had further information to share.	In consultation in the course of preparing the EP, BTAC has provided no objection or claim in response to the proposed activity. BTAC have requested to be included in ongoing consultation and in the event of an emergency they be included in the notification to relevant persons. CAPL is committed to ongoing consultation including working with traditional owners on a broader	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide BTAC ongoing consultation of the activity milestones as per their request. CAPL will also notify BTAC in the event of an emergency as per their request (see and Section 8.3.4.2) CAPL considers the measures and controls in the EP address BTAC's functions, interests or activities. No additional EP controls are required.
	11/11/2022	OC-000478	Email	CAPL emailed BTAC to request a meeting to discuss the upcoming activities CAPL have and the environmental plan consultation requirement and develop a mutually agreed consultation process. A meeting was organised.		
	17/11/2022	OC-000479	Email	BTAC provided survey results to CAPL that were undertaken. CAPL sent a follow-up email to BTAC requesting a meeting to discuss the upcoming offshore activities and environmental plan consultation requirements along with to map a path forward		

				in regard to co-design consultation. A meeting was confirmed.	understanding of sea country and underwater cultural heritage. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	
	13/12/2022	OC-000480	Face-to-face	CAPL met with BTAC to discuss cultural heritage planning for 2023. During the meeting CAPL raised the need to meet and develop a consultation approach for environmental plans. All parties agreed to meet in January 2023 to discuss further.		
	13/01/2023	OC-000249	Face-to-face	CAPL met with the Chair of the BTAC to present an overview of the consultation process for CAPL's upcoming offshore activities. CAPL sought feedback on areas of significance and cultural values including sea country and underwater cultural heritage. CAPL requested advice as to whether additional relevant persons not present at the meeting should be informed and consulted with. BTAC provided details of other relevant persons in neighbouring PBCs.		
	03/02/2023	OC-000481	Face-to-face	CAPL and BTAC held a meeting to discuss the environmental planning consultation requirements of the Commonwealth. During the meeting CAPL provided an overview of the proposed activities and directed BTAC to CAPL's public website for detailed information, including project overviews, potential impacts, and risks. CAPL requested to work with BTAC to co-design the consultation process.		
		CN-000484	Email	CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. CAPL notified BTAC that they welcome meaningful feedback. Correspondence between CAPL and RFF Australia (representing BTAC) in relation to the CAPLs environmental plan consultation process. RFF and CAPL agreed to develop a 'consultation agreement' and both parties began drafting the agreement in parallel. CAPL provided details on how they have been		

				engaging with other PBCs by engaging with the CEO, then the board. CAPL reiterated they would like to organise a meeting with BTAC for CAPL to present an overview of the upcoming activity.		
	27/02/2023	OB-000482	Email	Response from BTAC stating Thalanyji people consider themselves Relevant Persons in relation to CAPL's planned activities. The letter requests further engagement with CAPL to understand the projects in order to protect Thalanyji interests and in ongoing consultation through an agreed framework. BTAC also requests support from CAPL, to enable BTAC to work with its members and supporting anthropological / ethnographic team to define and articulate Thalanyji values on Sea Country in a manner that could be more clearly understood by the offshore sector, government, and the community.		
	30/03/2023	OC-000538	Email	RFF Australia reached out to CAPL to discuss CAPL's upcoming activities and to organise a meeting.		
	12/04/2023	OC-000483	Face-to-face	CAPL and RFF - representing BTACs interests, met up to discuss the next steps in relation to BTAC providing feedback on CAPLs Environment Plan consultation. BTAC requested the draft statements or principles specifically tailored to BTAC or the Thalanyji people, which CAPL proposes to include in its Environment Plans and a summary of consultation.		
	13/04/2023	OC-000486	Email	Correspondence between CAPL and RFF Australia (representing BTAC) summarising the points of consultation and engagement between CAPL and BTAC, as well as feedback provided by BTAC, that CAPL propose to include in the Environment Plans submission to NOPSEMA. • CAPL first engaged BTAC in November 2022, on the new Commonwealth Environment Plan consultation requirements. CAPL shared the draft consultation process and timeline for feedback. CAPL had several subsequent conversations with BTAC staff and the BTAC		

				Chair in January 2023, to understand their view on the new requirements, and requested the opportunity to co-design the consultation process. • On 3 February 2023, CAPL notified BTAC of the commencement of the consultation period and provided information on our upcoming offshore activities which may intersect with Thalanyji interests. The twelve-week consultation period is due to conclude on 5 May 2023. • A letter was sent to CAPL from BTAC on Monday 27 February confirming the Thalanyji community holds interests and values within the Environmental Area that might be affected (EMBA). The letter sought ongoing consultation with BTAC, and support by CAPL to that end, in relation to the above Environment Plans and related activities – and requested formalisation of ongoing consultation under a framework to be jointly developed and agreed. • CAPL provided a written response on 10 March 2023 that provided in-principle support for a consultation framework with BTAC. CAPL's response recommended that ongoing consultation under a formalised framework occur in parallel with immediate consultation specific to approval of proposed Environment Plans. • On the 3 March 2023, CAPL and BTAC met to further discuss the Commonwealth Environmental Plan consultation process. During the meeting, the parties discussed CAPL's approach to consultation where BTAC was again invited to provide input on the consultation method and timeline. CAPL representatives also provided an overview of where information can be found about the proposed activities, including the activities overview, risk, and impact assessments. Based on these discussions, CAPL understand that:		

				• The Thalanyji coastal area, sea country, and adjacent islands are highly valuable to the Thalanyji people. Impact on these areas from a planned or unplanned event may cause harm to the cultural landscape, individuals, and the community. • BTAC requests CAPL to formalise continued engagement and support in relation to the Environment Plans and related activities to assist it properly perform its duties in advocating for and protecting rights and interests in Thalanyji country, including so emergency response plans are well informed. • BTAC expects that CAPL will provide an annual update, or as otherwise requested, to the BTAC board or common law holders of CAPL's activities in the EMBA. • BTAC can at any time make direct representations to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) about the nature of BTAC's interests and values and how they may be affected by CAPL's activities.		
	24/05/2023	OC-000555	Face-to-Face	CAPL met with BTAC to finalise BTAC's formal response to consultation. BTAC agreed to suggested changes by CAPL and requested final copy.		
	26/05/2023	OC-000556	Email	CAPL sent email to BTAC with the final copy of the engagement summary.		
Cape Conservation Group	10/02/2023	CN-000158	Email	CAPL advised the Cape Conservation Group 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 notified Cape Conservation Group that they welcome meaningful feedback.	Cape Conservation Group has expressed their views of not willing to participate in CAPL's consultation process regarding the activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Cape Conservation Group's functions, interests or activities. No changes required.
	17/02/2023	OC-000306	Phone	CAPL spoke with Cape Conservation Group about CAPL's want to engage with them in Exmouth and discuss preferred methods of		

				communication. Cape Conservation group confirmed they would share CAPL's details.		
	11/05/2023	OC-000527	Email	CAPL reached out to the Cape Conservation Group to see if they had any feedback they may have on the activity and confirmed that the Cape Conservation Group has not expressed specific concerns or objections to the planned activity. The Cape Conservation Group advised CAPL of their views and informed CAPL of their decision not to participate in the consultation process. CAPL responded to Cape Conservation Group acknowledging their views and that CAPL would be happy to discuss CAPL's activities at any time should they change their minds.		
Cape Immersion Tours	20/02/2023	CN-000208	Email	CAPL advised that Cape Immersion Tours 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 notified Cape Immersion Tours that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Cape Immersion Tour's functions, interests or activities. No changes required.
Care For Hedland Environmental Association	08/02/2023	OC-000140	Email	Care for Hedland identified themselves to CAPL as a relevant person with functions, interests or activities that may be affected by the activity. CAPL organised a meeting with Care for Hedland to provide an overview of their activity and consultation process.	In consultation in the course of preparing the EP, Care For Hedland Environmental Association has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Care For Hedland Environmental Association's functions, interests or activities. No changes required.
		CN-000100	Email	Upon Care for Hedland self-identifying themselves, CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. CAPL notified Care for Hedland that they welcome meaningful feedback. Care for Hedland requested to be included in the consultation process.		

	22/02/2023	OC-000259	Virtual Meeting	CAPL spoke with Care for Hedland and provided an overview of their current consultation hub and update on their Environment Plan. Care for Hedland nominated themselves as Relevant Person. Care for Hedland have been undergoing a turtle monitoring program over the past 20 years, Care for Hedland would be interested in a collaboration with CAPL with marine turtles being their primary interest. Care for Hedland confirmed they will meet with the committee and revert back with any additional questions they may have for CAPL.		
	11/05/2023	OC-000508	Email	CAPL thanked Care for Hedland for their engagement and support in 2023. CAPL asked if there had been any comments or feedback from the community with respect to CAPL activities. Care for Hedland responded with no specific concerns around CAPL activities, but specified the need to mitigate impacts to marine turtles.		
Carnarvon Chamber of Commerce Inc.	08/02/2023	CN-000229	Email	CAPL advised the Carnarvon Chamber of Commerce 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 notified the Carnarvon Chamber of Commerce that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Carnarvon Chamber of Commerce's functions, interests or activities. No changes required.
Carnarvon Energy	14/02/2023	CN-000217	Email	CAPL advised that Carnarvon Energy 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 notified Carnarvon Energy that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Carnarvon Energy's functions, interests or activities. No changes required.

Centre for Whale Research Western Australia (CWR)	10/02/2023	CN-000409	Email	CAPL advised the Centre for Whale Research 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 notified the Centre for Whale Research that they welcome meaningful feedback. CAPL followed up to ensure they received the formal notification regarding CAPL's activity.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address CWR's functions, interests or activities. No changes required.
City of Karratha (Pilbara)	19/12/2022	OC-000131	Email	CAPL advised the City of Karratha had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL suggested they coordinate a phone call to discuss and agree on the communication protocols and to consult on the current Environment Plans.	In consultation in the course of preparing the EP, City of Karratha has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address City of Karratha's functions, interests or activities. No changes required.
	31/01/2023	OC-000290	Face-to-face	CAPL met with the City of Karratha to provide an overview of their new approach to consultation along with an update on their Environment Plans. CAPL requested time to speak to the City of Karratha council on their Environment Plans.		
	01/02/2023	OC-000130	Email	CAPL thanked the City of Karratha for their time and participation regarding CAPL's consultation process. CAPL confirmed they would like the opportunity to present to the Council Briefing. CAPL provided a list of other organisations they are currently consulting and asked if the City of Karratha could provide relevant eNGOs CAPL should proactively engage.		
	06/02/2023	CN-000369	Email	CAPL advised the City of Karratha 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 notified City of Karratha that they welcome meaningful feedback.		

	15/02/2023	OC-000135	Email	CAPL engaged with the City of Karratha to discuss the most efficient method to inform the community of CAPL's activities.		
	20/02/2023	OC-000258	Virtual Meeting	CAPL met with the City of Karratha Council. CAPL provided an overview of their new online consultation hub and update on their Environment Plans. The City of Karratha Council complemented the level of detail by CAPL and posed a question on well decommissioning and seismic activities. CAPL informed the City of Karratha Council of the preventative measures that are in place as safeguards. CAPL offered to answer any further questions that may arise.		
		OC-000301	Email	CAPL reached out to the City of Karratha to thank them for their hospitality and to communicate their ongoing commitment to consultation.		
	04/05/2023	OC-000454	Email	CAPL reached out to the City of Karratha to provide any feedback they may have on the activity. CAPL confirmed that the City of Karratha has not expressed specific concerns or objections to the planned activity.		
Commonwealth Fisheries Association (CFA)	14/03/2023	CN-000192	Email	CAPL advised the Commonwealth Fisheries Association (CFA) 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 notified the CFA that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address CFA's functions, interests or activities. No changes required.
Conservation Council of WA (CCWA)	10/02/2023	CN-000225	Email	CAPL advised that the Conservation Council of Western Australia (CCWA) 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 notified	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is	CAPL considers the measures and controls in the EP address CCWA's functions, interests or activities. No changes required.

				the CCWA that they welcome meaningful feedback.	committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	
	27/03/2023	CN-000159	Phone	CAPL contacted Conservation Council of WA (CCWA) to confirm receipt of formal notification. CCWA confirmed that they would forward on to the appropriate representatives.		
	11/05/2023	OC-000532	Email	CAPL reached out to the CCWA to provide any feedback they may have on the activity. CAPL confirmed that the CCWA has not expressed specific concerns or objections to the planned activity. CCWA advised CAPL of their intention and interest in providing feedback on the Environment Plans and activities. CAPL informed CCWA that consultation had been finalised but, if they could provide their feedback as soon as possible, CAPL would possibly be able to consider the feedback and include it in the Environment Plans. CAPL welcomed the opportunity to meet with CCWA to discuss ongoing consultation for future activities.		
Coral Bay Progress Association	03/01/2023	OC-000113	Email	The Shire of Carnarvon provided CAPL with a contact at the Coral Bay Progress Association for CAPL to contact. CAPL advised the Coral Bay Progress Association had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL suggested they coordinate a phone call to discuss and agree on the communication protocols and to consult on the current Environment Plans. A meeting was organised.	In consultation in the course of preparing the EP, Coral Bay Progress Association has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Coral Bay Progress Association's functions, interests or activities. No changes required.
	06/02/2023	CN-000114	Email	CAPL advised the Coral Bay Progress Association 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 notified Coral Bay Progress Association that they welcome meaningful feedback.		

	27/02/2023	OC-000265	Phone	CAPL spoke with the representatives from the Coral Bay Progress Association. Coral Bay Progress Association advised that they would discuss the Environment Plans during an internal meeting and revert back to CAPL with any comments or questions.		
	02/03/2023	OC-000292	Virtual Meeting	CAPL met with the Coral Bay Progress Association to provide an overview of their new approach to consultation along with an update on their Environment Plans.		
	16/03/2023	OC-000068	Phone	CAPL called to follow up their recent meeting to understand whether there was interest in meeting up. Coral Bay Progress Association confirmed that CAPL's Environment Plan information had been shared but there has been no interest in engaging further at this point.		
	10/05/2023	OC-000439	Email	CAPL reached out to the Coral Bay Progress Association to provide any feedback they may have on the activity. CAPL confirmed that the Coral Bay Progress Association has not expressed specific concerns or objections to the planned activity.		
Coral Futures Corporation	04/05/2023	CN-000399	Email	CAPL advised that Coral Futures Corporation 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 notified Coral Futures Corporation that they welcome meaningful feedback. Coral Futures Corporation responded to CAPL and wish to be included in the continuing consultation process regarding the activity. Coral Futures has planned an aquaculture project in the zone of the CAPL's planned activity and seek to understand the potential impacts (if any) and risks that may arise and have potential for impact from CAPL's proposed activity, including air and water quality, seabed habitat, and marine fauna. A meeting was organised.	In consultation in the course of preparing the EP, Coral Futures Corporation has provided no objection or claim in response to the proposed activity. Coral Futures Corporation have requested to be included in ongoing consultation and in the event of an emergency they be included in the notification to relevant persons. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide Coral Futures Corporation ongoing consultation of the activity milestones as per their request. CAPL will also notify Coral Futures Corporation in the event of an emergency as per their request (see and Section 8.3.4.2) CAPL considers the measures and controls in the EP address Coral Futures Corporation’s functions, interests or activities. No additional EP controls are required.

	11/05/2023	OC-000428	Virtual Meeting	CAPL presented to Coral Futures Corporation who have an aquaculture license in state waters near Dampier to grow coral. Coral Futures Corporation would like to be advised of ongoing activities from CAPL and be included in emergency notifications.		
Cygnet Bay Pearl Farm	10/05/2023	CN-000441	Email	CAPL advised the Cygnet Bay Pearl Farm 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 notified the Cygnet Bay Pearl Farm that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Cygnet Bay Pearl Farm's functions, interests or activities. No changes required.
Department of Agriculture, Fisheries and Forestry – (DAFF)	15/02/2023	CN-000215	Email	CAPL advised the Department of Agriculture, Fisheries and Forestry (DAFF) 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 notified the DAFF that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Department of Agriculture, Fisheries and Forestry - Fishing impacts functions, interests or activities. No changes required.
Department of Biodiversity, Conservation and Attractions (DBCA)	24/01/2023	OC-000108	Email	The Shire of Carnarvon provided a contact at the DBCA for CAPL to contact to organise a time to discuss the upcoming activity. CAPL advised that the DBCA had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL suggested they coordinate a phone call to discuss and agree on the communication protocols and to consult on the current Environment Plans. DBCA acknowledged that the location of the activity is relevant to the DBCA. The DBCA advised they added CAPL's information on the activity to the	In consultation in the course of preparing the EP, DBCA has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address DBCA's functions, interests or activities. No changes required.

				committee's agenda that is scheduled for 2 May 2023. Post this meeting the DBCA will be in contact with CAPL to address likely impacts (if any) to the outstanding universal value of the Ningaloo Coast World Heritage Area.		
	15/02/2023	CN-000109	Email	CAPL advised the DBCA 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 notified DBCA that they welcome meaningful feedback. Additional contacts within DBCA was provided to CAPL to provide consultation in the area of Ningaloo Coast and Shark Bay World Heritage Areas.		
	24/02/2023	OC-000267	Virtual Meeting	CAPL met with the representatives from the DBCA Exmouth and provided an overview of their new approach to consultation along with an update on their Environment Plans. Discussion focused around EMBA map and shoreline loading queries. DBCA Exmouth advised CAPL of the importance of engagement with the World Heritage Committees and NOPSEMA guidelines and sensitivities relevant to World Heritage Areas.		
	11/05/2023	OC-000456	Email	CAPL reached out to the DBCA to provide any feedback they may have on the activity. CAPL confirmed that DBCA has not expressed specific concerns or objections to the planned activity. DBCA Exmouth contacted CAPL and notified them that all queries regarding Environment Plans and consultation on proposals should be sent to a separate branch of DBCA. CAPL sent the email to the appropriate inbox DBCA Exmouth pointed CAPL to.		
Department of Climate Change, energy, the Environment and Water – DCCEEW Underwater Cultural Heritage (UCH)	16/05/2023	CN-000547	Email	CAPL advised DCCEEW that 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	In consultation in the course of preparing the EP, DCCEEW UCH has provided no objection or claim in response to the proposed activity.	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will notify DCCEEW UCH before commencing the activity.

				activity and advised that they welcome meaningful feedback. DCCEEW advised CAPL of the requirements regarding Underwater Cultural Heritage (UCH) and its importance to Aboriginal Corporations and people. CAPL acknowledged the email and informed DCCEEW that they are aware and understand the importance of UCH and have been engaging according to ensure they meet the requirements and engage with the appropriate corporations.	DCCEEW UCH have requested to be included in ongoing consultation. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address DCCEEW UCH's functions, interests or activities. No additional EP controls are required.
Department of Climate Change, Energy, the Environment and Water - Director of National Parks (DNP)	15/02/2023	CN-000194	Email	CAPL advised the Director of National Parks (DNP) 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 notified the DNP that they welcome meaningful feedback.	In consultation in the course of preparing the EP, DNP has provided no objection or claim in response to the proposed activity. Director of National Parks have requested to be included in ongoing consultation and when the Environment Plan is published on NOPSEMA's website. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide the DNP's ongoing consultation of the activity milestones as per their request. CAPL considers the measures and controls in the EP address DNP's functions, interests or activities. No additional EP controls are required.
	14/03/2023	OB-000403	Email	The Director of National Parks (DNP) has no objections or claims currently. The DNP would, however, recommend that vessel discharges, where practicable, occur outside of the marine park. DNP also requested to be contact in the unlikely event of a spill within 24 hours. The Director of National Parks (DNP) has no objections or claims. The DNP would, however, recommend that vessel discharges, where practicable, occur outside of the marine park. The DNP noted that they should be made aware of oil/gas pollution incidences which occur within a marine park or are likely to impact on a marine park as soon as possible. Notification should be provided to the 24 hour Marine Compliance Duty Officer. CAPL thanked the department for their response and noted the value of Australian Marine Parks (AMPs) and confirmed that CAPL will not make planned discharges within the Montebello		

				Marine Park. CAPL ensured that the Wheatstone Well Intervention and Infill Drilling EP identifies and manages all impacts and risks to AMPs, in particular the Montebello Marine Park values to as low as reasonably practicable, and also ensure that the activity is not inconsistent with the management plan objectives and values. CAPL also confirmed that in the unlikely event CAPL has an unplanned spill release within or likely to impact on a marine park, they will contact the Marine Compliance Duty Officer within 24 hours of the event occurring		
Department of Defence (DoD)	14/02/2023	CN-000220	Email	CAPL advised that The Department of Defence (DoD) 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 notified the DoD that they welcome meaningful feedback.	In consultation in the course of preparing the EP, DoD has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will notify the AHO no less than four weeks before commencing activity. CAPL considers the measures and controls in the EP address DoD's functions, interests or activities. No additional EP controls are required.
	16/03/2023	OC-000368	Email	Department of Defence replied to CAPL's consultation that the activity areas are located in the North-West Exercise Area (NWXA) and restricted airspace. CAPL was advised that unexploded ordnance (UXO) may be present on and in the seafloor. CAPL must, therefore, inform itself as to the risks associated with conducting activities in the area. The DoD requested CAPL continue liaison with the Australian Hydrographic Service (AHS) for Notices to Mariners (NOTMAR) three weeks prior to the actual commencement of activities. CAPL acknowledged receipt of DoD response. CAPL understands that the activity areas are located in the North-West Exercise Area (NWXA) and have checked where known unexploded ordnance (UXO) are using the UXO map UXO Map (whereisuxo.org.au) and there		

				are no known UXOs present within the proposed operational area's for the activities consulted on, however CAPL note that there may be UXOs present on and in the sea floor. CAPL confirmed they will contact the Australian Hydrographic Service 3-weeks prior to any activities occurring. CAPL requested further clarification and understanding of where the restricted airspace is within the vicinity of the activity areas. DoD responded and attached a map of the restricted airspace. The DoD added that should CAPL have any additional questions they shouldn't hesitate to get in touch.		
Department of Mines, Industry Regulation and Safety (WA DMIRS)	09/05/2023	CN-000510	Email	CAPL advised the Department of Mines, Industry Regulation and Safely (DMIRS) they have 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 advised DMIRS that CAPL welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address DMIRS functions, interests or activities. No changes required.
Department of Primary Industries and Regional Development (WA DPIRD): Fisheries	08/05/2023	CN-000453	Email	CAPL advised the Department of Primary Industries and Regional Development (DPIRD) 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 notified DPIRD that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address DPIRD's functions, interests or activities. No changes required.
Department of Transport (DoT) - Maritime Environmental Emergency Response	15/02/2023	CN-000168	Email	CAPL sent a follow up advising the Department of Transport: Maritime Environmental Emergency Response (DoT) had been identified as a relevant person with functions, interests or	In consultation in the course of preparing the EP, DoT - Maritime Environmental Emergency Response has provided no	CAPL will notify Department of Transport (DoT) - Maritime Environmental Emergency Response in the event of an

(MEER) - Marine Pollution (formerly OSRC Unit)				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 notified the Department of Transport that they welcome meaningful feedback. DoT notified CAPL that if there is a risk of a spill impacting State waters from the proposed activities that DoT Oil Spill Response Unit is consulted as outlined in the Department of Transport Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020).	objection or claim in response to the proposed activity. Department of Transport (DoT) - Maritime Environmental Emergency Response have requested to be consulted in the event of an emergency. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	emergency as per their request (see and Section 8.3.4.2). CAPL considers the measures and controls in the EP address DoT Maritime Environmental Emergency Response's functions, interests or activities. No additional EP controls are required.
Department of Transport (DoT) - Navigational Safety	23/03/2023	CN-000127	Email	CAPL advised the Department of Transport (DoT) - Navigational Safety 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 notified the Department of Transport (DoT) -Navigational Safety that they welcome meaningful feedback. Department of Transport (DoT) - Navigational Safety acknowledged receipt of email and would like to be involved in consultation regarding the activity.	In consultation in the course of preparing the EP, DoT – Navigational Safety has provided no objection or claim in response to the proposed activity. Department of Transport (DoT) - Navigational Safety have requested to be included in ongoing consultation. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide Department of Transport (DoT) - Navigational Safety ongoing consultation of the activity milestones as per their request. CAPL considers the measures and controls in the EP address DoT Navigational Safety's functions, interests or activities. No additional EP controls are required. No additional EP controls are required.
Department of Water & Environmental Regulation (DWER)	15/02/2023	CN-000210	Email	CAPL advised the Department of Water & Environmental Regulation (DWER) 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 notified DWER that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address DWER's functions, interests or activities. No changes required.

Ebb and Flow / Glass Bottom Boats	20/02/2023	CN-000206	Email	CAPL advised Glass Bottom Boats 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 notified Glass Bottom Boats that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Glass Bottom Boat's functions, interests or activities. No changes required.
Eni Australia	14/02/2023	CN-000190	Email	CAPL advised that Eni Australia 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 notified Eni Australia that they welcome meaningful feedback. Eni Australia responded that they have received the email and have no concerns regarding the activity.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Eni Australia's functions, interests or activities. No changes required.
Environmental Protection Authority	08/05/2023	CN-000431	Email	CAPL advised that the Environmental Protection Authority (EPA) 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 notified the EPA that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address EPA's functions, interests or activities. No changes required.
Exmouth Chamber of Commerce and Industry (ECCI)	20/12/2022	OC-000174	Email	CAPL advised the Exmouth Chamber of Commerce and Industry (ECCI) had been identified as a relevant person with functions, interests or activities that may be affected by the activity. ECCI were pleased to hear from CAPL for early consultation and relationship building.	In consultation in the course of preparing the EP, ECCI has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further	CAPL considers the measures and controls in the EP address ECCI's functions, interests or activities. No changes required.
	05/01/2023	OC-000542	Virtual Meeting	CAPL discussed the upcoming Environment Plan consultation for the activity and CAPL's		

				membership with Exmouth Chamber of Commerce and Industry (ECCI) had been identified as a relevant person.	feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	
		OC-000172	Email	CAPL thanked the Exmouth Chamber of Commerce and Industry for their time. CAPL requested community engagement group contacts for continued consultation.		
	24/01/2023	OC-000283	Face-to-face	CAPL met with representatives from Exmouth Chamber of Commerce and Industry (ECCI) in Exmouth. ECCI provided advice on local relevant persons that CAPL should be engaging.		
		OC-000171	Email	ECCI in partnership with Tourism WA provided CAPL with contacts for relevant persons within the region as well as sponsorship opportunities to support the community.		
	06/02/2023	CN-000110	Email	CAPL advised that the Exmouth Chamber of Commerce 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 notified the Exmouth Chamber of Commerce and Industry that they welcome meaningful feedback. The Exmouth Chamber of Commerce organised for CAPL's activity information to be sent out via the Exmouth Chamber of Commerce EDM. CAPL notified the Exmouth Chamber of Commerce that they would reach out to St John Ambulance regarding first aid training for local members in preparation for the Eclipse.		
	13/02/2023	OC-000112	Email	CAPL assisted Exmouth Chamber of Commerce with first aid training through CAPL's relationship with St John Ambulance. CAPL passed on the email address and contact details for a local company that can run the first aid classes for ECCI.		
	23/02/2023	OC-000261	Virtual Meeting	CAPL met with the ECCI to understand potential opportunities for engagement and support.		

	27/02/2023	OC-000299	Phone	CAPL spoke with ECCI about possible sponsorship and engagement opportunities.		
Exmouth Dive & Whalesharks Ningaloo	09/01/2023	OC-000173	Email	CAPL identified Exmouth Dive & Whaleshark Ningaloo as a relevant person with functions, interests or activities that may be affected by the activity and CAPL contacted them to confirm their contact details for consultation.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Exmouth Dive & Whaleshark Ningaloo's functions, interests or activities. No changes required.
	20/02/2023	CN-000204	Email	CAPL re-engaged with Exmouth Dive & Whalesharks Ningaloo 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 notified the Exmouth Dive & Whalesharks Ningaloo that they welcome meaningful feedback.		
Exmouth Gulf Task Force - DWER	13/02/2023	CN-000069	Email	CAPL advised that the Exmouth Gulf Task Force 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 notified the Exmouth Gulf Task Force that they welcome meaningful feedback. Exmouth Gulf Task Force acknowledged receipt of email and that the Exmouth Gulf Taskforce will consider this at the next meeting.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Exmouth Gulf Task Force's functions, interests or activities. No changes required.
Exxon Mobil	14/02/2023	CN-000191	Email	CAPL advised that Exxon Mobil 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 notified Exxon Mobil that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Exxon Mobil's functions, interests or activities. No changes required.
Gascoyne Development Commission	10/01/2023	OC-000104	Email	CAPL advised the Gascoyne Development Commission (GDC) had been identified as a relevant person with functions, interests or	In consultation in the course of preparing the EP, Gascoyne Development	CAPL considers the measures and controls in the EP address Gascoyne Development

				activities that may be affected by the activity. CAPL suggested they coordinate a phone call to discuss and agree on the communication protocols and to consult on the current Environment Plans. Gascoyne Development Commission would be pleased to meet with CAPL, and a meeting was organised.	Commission has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	Commission's functions, interests or activities. No changes required.
	09/02/2023	CN-000105	Email	CAPL advised that the GDC 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 notified the Gascoyne Development Commission that they welcome meaningful feedback.		
		OC-000297	Virtual Meeting	CAPL met with a representative from the GDC to provide an overview of their new approach to consultation along with an update on their Environment Plans. The Gascoyne Development Commission provided advice on local relevant persons that CAPL should be engaging.		
	23/02/2023	OC-000262	Virtual Meeting	CAPL spoke with the GDC to understand potential engagement opportunities. CAPL provided an overview of current activities and clarified any questions posed by the GDC regarding the EMBA. The GDC recommended engagement with Recfishwest.		
	10/05/2023	OC-000440	Email	CAPL reached out to the GDC to provide any feedback they may have on the activity. CAPL confirmed that the Gascoyne Development Commission has not expressed specific concerns or objections to the planned activity.		
Gascoyne Junction Community Resource Centre	08/02/2023	CN-000228	Email	CAPL advised that the Gascoyne Junction Community Resource Centre (GJCRC) 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	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is	CAPL considers the measures and controls in the EP address Gascoyne Junction Community Resource Centre's functions, interests or activities. No changes required.

				activity. CAPL notified the GJCRC that they welcome meaningful feedback.	committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	
Greenpeace	10/02/2023	CN-000224	Email	CAPL advised that Greenpeace 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 notified Greenpeace that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Greenpeace's functions, interests or activities. No changes required.
Image Dive and Charters	04/05/2023	CN-000393	Email	CAPL advised that Image Dive and Charters 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 notified Image Dive and Charters that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Image Dive and Charter's functions, interests or activities. No changes required.
International Fund for Animal Welfare (IFAW) - Oceania	10/02/2023	CN-000377	Email	CAPL advised that the International Fund for Animal Welfare 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 notified the International Fund for Animal Welfare that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address IFAW's functions, interests or activities. No changes required.
Jadestone Energy	14/02/2023	CN-000189	Email	CAPL advised that Jadestone Energy 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	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent	CAPL considers the measures and controls in the EP address Jadestone Energy's functions, interests or activities. No changes required.

				further information regarding the activity. CAPL notified Jadestone Energy that they welcome meaningful feedback.	with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	
Karratha & Districts Chamber of Commerce and Industry	22/12/2022	OC-000115	Email	CAPL advised the Karratha and Districts Chamber of Commerce and Industry (KDCCI) had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL suggested they coordinate a phone call to discuss and agree on the communication protocols and to consult on the current Environment Plans. KDCCI acknowledged and appreciated CAPL reaching out and a meeting was organised.	In consultation in the course of preparing the EP, Karratha & Districts Chamber of Commerce and Industry has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Karratha & Districts Chamber of Commerce and Industry's functions, interests or activities. No changes required.
	31/01/2023	OC-000288	Face-to-face	CAPL met with KDCCI in Karratha. CAPL provided an overview of their new approach to consultation along with an update on their Environment Plans. KDCCI offered to share CAPL's information sheet with their members.		
	13/02/2023	CN-000410	Email	CAPL advised that KDCCI 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 notified KDCCI that they welcome meaningful feedback.		
		OC-000304	Phone	CAPL spoke with KDCCI regarding details of CAPL's advert to include in the KDCCI newsletter.		
	22/02/2023	OC-000117	Email	KDCCI advertised CAPL's Environment Plan information sheet in their newsletter.		
	03/03/2023	OC-000520	Email	KDCCI offered the opportunity for CAPL to present to their board regarding the upcoming activities.		
	16/05/2023	OC-000534	Virtual Meeting	CAPL presented to the KDCCI board on CAPL's upcoming activities. The KDDCI board confirmed		

				CAPL's Environment Plan information was shared via email to their membership on CAPL's behalf in February. No feedback, objections or claims were raised.		
Karratha Tourism and Visitor Centre	08/02/2023	CN-000231	Email	CAPL advised that the Karratha Visitor Centre 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 notified the Karratha Visitor Centre that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Karratha Tourism and Visitor Centre's functions, interests or activities. No changes required.
Kato Energy / Kato NWS Pty Ltd	14/02/2023	CN-000216	Email	CAPL advised that Kato Energy 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 notified Kato Energy that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Kato Energy's functions, interests or activities. No changes required.
Kufpec	14/02/2023	CN-000417	Email	CAPL advised that Kufpec 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 notified Kufpec that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Kufpec's functions, interests or activities. No changes required.
Live Ningaloo	09/01/2023	OC-000181	Email	CAPL advised that Live Ningaloo had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL confirmed contact details for future consultation.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent	CAPL considers the measures and controls in the EP address Live Ningaloo's functions, interests or activities. No changes required.

	20/02/2023	CN-000201	Email	CAPL advised Live Ningaloo 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 notified Live Ningaloo that they welcome meaningful feedback.	with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	
	11/05/2023	OC-000444	Email	CAPL reached out to Live Ningaloo to provide any feedback they may have on the activity. CAPL confirmed that Live Ningaloo has not expressed specific concerns or objections to the planned activity.		
Mackerel Islands & Onslow Beach Resort	20/02/2023	CN-000207	Email	CAPL advised the Mackerel Islands 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 notified the Mackerel Islands that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Mackerel Islands and Onslow Beach Resort's functions, interests or activities. No changes required.
Mahi Mahi Charters	04/05/2023	CN-000394	Email	CAPL advised Mahi Mahi Fishing Charters 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 notified Mahi Mahi Fishing Charters that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Mahi Mahi Charters functions, interests or activities. No changes required.
Malgana Aboriginal Corporation	03/02/2023	CN-000315	Email	CAPL advised the Malgana Aboriginal Corporation (MAC) 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 is committed to ongoing consultation including working with traditional owners on a broader understanding of sea country and underwater cultural heritage. CAPL notes that further feedback may be	

				information regarding the activity. CAPL notified MAC that they welcome meaningful feedback.	received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	
	22/02/2023	OC-000303	Email	CAPL contacted MAC to confirm receipt of Environment Plan and activity overview with intention of building a partnership with MAC for future consultation. MAC were happy to engage with CAPL and offered an opportunity for CAPL to present at the Directors meeting and answer any questions. Mac inquired about the possibility of hiring and environmental specialist to provide independent advice regarding CAPL activities. CAPL provided MAC with a list of environmental specialists to refer.		
	03/04/2023	OC-000244	Face-to-face	CAPL presented to the MAC Board of Directors on CAPL's new consultation process in relation to CAPL's Environment Plans. CAPL sought feedback on areas of significance and cultural values including sea country and underwater cultural heritage. The MAC identified Shark Bay Seagrass as significant because it provides a vital food source for the marine fauna that are part of MAC's traditional fishing activities. The MAC are very focused on the marine biology within their traditional sea country and are open to collaborating with CAPL to ensure the ongoing protection of their sea country. CAPL requested advice as to whether additional relevant persons not present at the meeting should be informed and consulted with.		
	04/04/2023	OC-000577	Email	CAPL thanked Mac for their time and opportunity to present to the Board. CAPL shared their notes and actions from the meeting with MAC: • MAC raised significance of Shark Bay SeaGrass, particularly following decimation from heatwave in 2010/11 • MAC is concerned about environmental protection.		

				• Shark Bay is marine biology. MAC see an opportunity to develop their own environmental IP through employing scientists/researchers and producing their own data. • MAC advise that there are at least 4-5 separate scientists or researchers in Shark Bay each week to study the area however there is no consultation or engagement with MAC. • For Chevron to have a partnership with MAC, they need to feel included and have transparency. • MAC would like to initiate a structured communication agreement. CAPL advised of their next steps and if Mac needed anything to get in touch. Plans were made to stay in contact.		
	05/04/2023	OC-000533	Email	CAPL recommended environmental scientists to MAC for independent advice on the risks and impacts identified in CAPL activities. MAC thanked CAPL for the informative meeting and provided CAPL with a list of actions. • Mac rangers program • Will any spills go inside the bay • CAPL will reimburse Mac for independent advice • Mac board would like a long term relationship with CAPL • Timeframe to give advice CAPL responded to each action and provided additional details to MAC regarding these actions. CAPL informed MAC they would be happy to discuss any details further.		
	08/05/2023	OC-000381	Phone	CAPL left a message to call back with MAC regarding an email related to EMBA modelling and next steps for relationship development.		
	18/05/2023	OC-000490	Phone	CAPL spoke to MAC. CAPL reiterated the offer for MAC to come into the office for CAPL to demonstrate the EMBA modelling so that MAC could be confident around non-impact to Shark		

				Bay Seagrass. MAC will speak with the board and will raise it with them.		
Maxima Pearling Company	04/05/2023	CN-000430	Email	CAPL advised that Maxima Pearling Company 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 notified the Maxima Pearling Company that they welcome meaningful feedback. A phone call was organised.	In consultation in the course of preparing the EP, Maxima Pearling Company has provided no objection or claim in response to the proposed activity. Maxima Pearling Company have requested to be consulted in the event of an emergency event. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL will notify Maxima Pearling Company in the event of an emergency as per their request (see and Section 8.3.4.2). No additional EP controls are required.
	09/05/2023	OC-000425	Virtual Meeting	CAPL presented to Maxima Pearling in relation to our upcoming offshore activities. Maxima Pearling have Edible Rock Oyster Aquaculture sites at West Lewis Islands, Flying Foam Passage, Withnell Bay and Cossack. Maxima Pearling have no objections to the activities proposed, but they would like to be notified in the event of an emergency.		
Member for Pilbara	08/02/2023	CN-000122	Email	CAPL advised the Member for Pilbara 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 notified the Member for Pilbara that they welcome meaningful feedback. A meeting was organised.	In consultation in the course of preparing the EP, the Member for Pilbara has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address the Member for Pilbara's functions, interests or activities. No changes required.
	20/02/2023	OC-000257	Virtual Meeting	CAPL met with the Member of the Pilbara. The Member of the Pilbara showed support for CAPL's activities and a keen interest in employment opportunities in the Pilbara.		
	11/05/2023	OC-000506	Email	CAPL thanked the Member of Pilbara for their engagement and support in 2023. CAPL asked if there had been any comments or feedback from the community with respect to CAPL activities and reiterated the opportunity to catch up in the near future to provide the Member of Pilbara with an overview of the extent of CAPL's		

				consultations and how CAPL will continue to build relationships in the Pilbara.		
Member of Legislative Authority - North West Central	08/02/2023	CN-000240	Email	CAPL advised that Member of Legislative Authority (MLA) 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 notified the MLA that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address the Member of Legislative Authority's functions, interests or activities. No changes required.
	10/05/2023	OC-000513	Email	CAPL contacted the Member of Legislative Authority (MLA) regarding CAPL's upcoming activities as a relevant person with interests and functions in the region. No response was received from the MLA, CAPL informed the MLA that if they have any input on the proposed activities to please contact CAPL.		
Member of Mining and Pastoral Region	19/12/2022	OC-000406	Email	CAPL advised the Representative from the Member for Mining and Pastoral Region had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL requested to organise a meeting to discuss the activity and agree on communication protocols for consultation. A meeting was organised.	In consultation in the course of preparing the EP, the Member of Mining and Pastoral Region has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address the Member of Mining and Pastoral Region's functions, interests or activities. No changes required.
	08/02/2023	CN-000408	Email	CAPL advised the Representative from the Member of Mining and Pastoral Region 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 notified the Representative from the Member of Mining and Pastoral Region that they welcome meaningful feedback.		
	09/02/2023	OC-000298	Virtual Meeting	CAPL met with a representative from the Members for Mining and Pastoral Region to provide an overview of CAPL's new approach to consultation along with an update on CAPL's		

				Environment Plans. The Members for Mining and Pastoral Region provided advice on local relevant persons that CAPL should be engaging. CAPL reached out to the additional contacts advised by the representative from the Members for Mining and Pastoral Region.		
	16/02/2023	OC-000407	Email	CAPL thanked the representative from the Member for Mining and Pastoral Region for the opportunity to speak about CAPL's Environment Plans and to contact CAPL if they have additional questions about the information shared.		
	11/05/2023	OC-000507	Email	CAPL thanked the Member of Mining and Pastoral Region for their engagement and support in 2023. CAPL asked if there had been any comments or feedback from the community with respect to CAPL activities and reiterated the opportunity to catch up in the near future to provide the Member of Pilbara with an overview of the extent of CAPL's consultations and how CAPL will continue to build relationships in the Pilbara.		
Member of the Public	24/02/2023	CN-000488	Phone	The member of the public called the CAPL 1800 phone number. CAPL returned the call in the afternoon of the 24th of February 2023. The member of the public said the newspaper ad told her to call CAPL and the member of the public did not have any specific concerns related to CAPL's proposed activities.	In consultation in the course of preparing the EP, the Member of the Public has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address the Member of the Public's functions, interests or activities. No changes required.
Minister for Environment (WA)	13/02/2023	CN-000511	Email	CAPL advised that the Minister for Environment 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 notified the Minister for	In consultation in the course of preparing the EP, Minister for Environment has provided no objection or claim in response to the proposed activity.	As detailed in Section 8.3.4.1 and in Table 8-5, CAPL will provide a pre-start and completion notification to the Department of Water, Environment and Regulation and also Department of Biodiversity, Conservation and Attraction as per

				Environment that they welcome meaningful feedback.	CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	the Minister of Environment's request. CAPL considers the measures and controls in the EP address the Minister for Environment's functions, interests or activities. No additional EP controls are required.
	10/05/2023	OC-000514	Email	CAPL reached out to the Minister of Environment to provide any feedback they may have on the activity. CAPL informed the Minister of Environment that if they have any questions or would like further details on how CAPL has engaged Traditional Owners, Community and Industry through the consultation process to please reach out. The Minister of Environment responded that they request future consultation of planned activities is copied to DWER and DBCA.		
Montebello Island Safaris	04/05/2023	CN-000395	Email	CAPL advised the Montebello Island Safaris 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 notified the Montebello Island Safaris that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Montebello Island Safaris' functions, interests or activities. No changes required.
Nanda Aboriginal Corporation RNTBC	03/02/2023	CN-000326	Email	CAPL advised that the Nanda Aboriginal Corporation (NAC) 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 notified NAC that they welcome meaningful feedback.	In consultation in the course of preparing the EP, NAC RNTBC has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation including working with traditional owners on a broader understanding of sea country and underwater cultural heritage. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide NAC in ongoing consultation of the activity milestones as per their request. CAPL will also notify NAC in the event of an emergency as per their request (see and Section 8.3.4.2) CAPL considers the measures and controls in the EP address NAC's functions, interests or activities. No changes required.
	22/02/2023	OC-000325	Email	CAPL contacted NAC to ensure they received a formal notification of CAPL activities in the coming months and enquire about availability to meet and engage further with the NAC. The NAC informed chevron of their receipt of the email and that they would be happy for CAPL representatives to meet with the NAC Board. CAPL advised NAC of their intention to provide information regarding their Environment Plans		

				and their commitment to ongoing engagement and relationship building with the NAC. A meeting was organised for the 11th of May 2023.		
	14/06/2023	OC-000580	Email	Due to unforeseen circumstances the Board meeting on the 11th of May and 15th of June were cancelled. NAC will inform CAPL when they have rescheduled the meeting.		
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) Nanda Aboriginal Corporation RNTBC	03/02/2023	CN-000319	Email	CAPL advised that the Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) 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 notified NTGAC that they welcome meaningful feedback. A representative for NTGAC contacted CAPL to identify prerequisites to consultation prior to the board meeting with NTGAC. CAPL responded to the request and outlined the overview of CAPL's goals for continued future consultation.	NTGAC representative advised CAPL that the deadline date stated was not communicated to NTGAC and that it would be difficult to give a response on the Environment Plans in three days. NTGAC stated that they are currently under work pressures and deadlines that require substantial attention at this time. NTGAC informed CAPL of their intention to receive environmental advice on the plans for preparation of NTGACs consideration. This will take some time in order to make informed responses to CAPL. NTGAC specified that this response does not mean that NTGAC does not have concerns or objections to the planned activities. NTGAC require further consultation regarding these plans. NTGAC provided CAPL with a proposed summary of consultation for CAPL's activity that has been agreed upon NTGAC's board "CAPL has made an initial presentation to NTGAC and informed it of a list of activities which CAPL requires feedback on. NTGAC is considering CAPL's information for the activities and will provide feedback in due course." CAPL is committed to ongoing consultation including working with	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide Nganhurra Thanardi Garrbu Aboriginal Corporation ongoing consultation of the activity milestones as per their request. CAPL will also notify Nganhurra Thanardi Garrbu Aboriginal Corporation in the event of an emergency as per their request (see and Section 8.3.4.2) CAPL considers the measures and controls in the EP address Nganhurra Thanardi Garrbu Aboriginal Corporation's functions, interests or activities. No changes required.
	28/02/2023	OC-000320	Email	CAPL originally engaged NTGAC regarding the Gorgon and Jansz wellhead decommissioning activity. NTGAC contacted CAPL to request additional information. NTGAC offered CAPL to present an overview of their upcoming activities to their board. CAPL engaged with NTGAC with information responding to NTGACs queries and confirmed that they would present to the NTGAC board of Directors. A confirmation of meeting date and attendance ensued.		
	09/03/2023	OC-000563	Face-to-face	CAPL met with NTGAC Board in Carnarvon to present its Environment Plans and discuss unplanned risks and impacts and identify feedback on areas of significance and cultural values including sea country and underwater cultural heritage.		

				CAPL spent considerable time explaining the approvals process and offered support to NTGAC to engage an independent environmental specialist to review the information sheets for our activities. CAPL requested advice as to whether additional relevant persons not present at the meeting should be informed and consulted with.	traditional owners on a broader understanding of sea country and underwater cultural heritage and will continue to provide further information in consultation with NTGAC. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	
	13/03/2023	OC-000564	Email	CAPL wrote to NTGAC thanking them for their time and opportunity to present at the NTGAC Board Meeting in Carnarvon on the 9th of March 2023. CAPL reiterated NOPSEMA process and key timeframes for submission, as well as information that CAPL required as part of the consultation process.		
	03/04/2023	OC-000317	Email	CAPL contacted NTGAC to discuss if any objections or claims were raised after their presentation to the Board. CAPL welcomed the opportunity to discuss any further queries and attend future board meetings. NTGAC advised that the board were agreeable to future consultation and meetings with CAPL.		
		OC-000318	Email	NTGAC contacted CAPL to request further information about the Environment Plans and upcoming activities. CAPL responded and provided the requested information.		
	04/04/2023	OC-000243	Email	CAPL accepted invitation from the NTGAC board to meet with the board on September 5 in Exmouth.		
	09/05/2023	OC-000419	Phone	CAPL attempted to call Nganhurra Thanardi Garrbu Aboriginal Corporation. There was no answer so CAPL left a message to call back.		
		OB-000541	Email	CAPL advised Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC) that they had tried to contact them by phone and left a voicemail regarding their last communication in April. CAPL informed NTGAC that they are		

				looking to finalise the Environment plans and noted that they had not received any feedback from NTGAC. CAPL acknowledged the heavy workload NTGAC is facing and wanted to reiterate their intentions to develop a communication protocol with NTGAC moving forward at NTGAC's convenience. CAPL acknowledged the importance of coastal areas, sea country and adjacent Islands as highly valuable to the NTGAC and other Aboriginal Corporations and understand the impact on these areas from planned or unplanned events which may cause harm to the cultural landscape, individuals, and community. CAPL informed NTGAC of their commitment to developing a relationship and participating in ongoing consultations with NTGAC about the activities that are completed offshore. CAPL informed NTGAC that no planned activities will impact the Native Title. CAPL confirmed their attendance for the Board meeting scheduled in September and reiterated their intentions to further discuss and update the Board on the status of the submitted Environment Plans and commencement of activities. CAPL offered to discuss any issues further at NTGACs convenience.		
	21/06/2023	OC-000565	Phone	CAPL contacted NTGAC via YMAC Legal Representative, responding to correspondence received from YMAC in relation to the development of a framework for ongoing consultation. CAPL confirmed desire to meet with NTGAC and YMAC to develop a framework for future consultation		

				YMAC requested CAPL provide initial feedback on the draft provided which was received for review.		
Ngarluma Aboriginal Corporation RNTBC	14/12/2022	OC-000342	Email	CAPL engaged with Ngarluma Aboriginal Corporation (NAC) as an opportunity to consult on upcoming activities as a relevant person. NAC and CAPL organised a meeting to discuss and gather a more in depth understanding of the activities.	In consultation in the course of preparing the EP, NAC RNTBC has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation including working with traditional owners on a broader understanding of sea country and underwater cultural heritage. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide NAC in ongoing consultation of the activity milestones as per their request. CAPL will also notify NAC in the event of an emergency as per their request (see and Section 8.3.4.2) CAPL considers the measures and controls in the EP address NAC's functions, interests or activities. No changes required.
	02/02/2023	OC-000340	Face-to-face	CAPL met with NAC as an identified relevant person and provided an overview of their activities. NAC suggested CAPL present to their board in February and to reconnect when they are next back in the region.		
	03/02/2023	CN-000343	Email	CAPL advised that the NAC 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 notified NAC that they welcome meaningful feedback.		
	10/02/2023	OC-000345	Email	CAPL engaged with NAC to set up a meeting to present activities to the NAC board.		
	10/03/2023	OC-000344	Email	CAPL attempted to contact NAC and receive feedback from previous meeting.		
	29/03/2023	OC-000346	Email	CAPL informed NAC of their travel plans and presentation to the board. NAC confirmed time and date and gave CAPL additional information for CAPLs process and procedures.		
	04/04/2023	OC-000241	Phone	CAPL contacted NAC to confirm attendance at the Board Meeting scheduled in April to discuss CAPL's upcoming activity. CAPL requested NAC to provide names of meeting attendees.		
	26/04/2023	OC-000355	Face-to-face	CAPL presented to NAC on upcoming EP development. CAPL sought feedback on areas of significance and cultural values including sea country and underwater cultural heritage.		

				CAPL requested advice as to whether additional relevant persons not present at the meeting should be informed and consulted with.		
	27/04/2023	OC-000530	Email	CAPL contacted Ngarluma RNTBC regarding feedback following the board meeting. CAPL identified the importance of Ngarluma RNTBC values and sensitivities and thanked the board for the opportunity to engage. CAPL listed and outlined the important take aways from the meeting and informed Ngarluma RNTBC to identify any missing information. CAPL requested another meeting to discuss other opportunities.		
Ngarluma Yindjibarndi Foundation Ltd (NYFL)	12/12/2022	OC-000331	Email	CAPL advised that the Ngarluma Yindjibarndi Foundation Ltd (NYFL) 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 activities and NYFL was interested in connecting with CAPL and setting up a meeting.	In consultation in the course of preparing the EP, NYFL has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation including working with traditional owners on a broader understanding of sea country and underwater cultural heritage. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide NYFL in ongoing consultation of the activity milestones as per their request. CAPL will also notify NYFL in the event of an emergency as per their request (see and Section 8.3.4.2) CAPL considers the measures and controls in the EP address NYFL's functions, interests or activities. No changes required.
	11/01/2023	OC-000333	Email	CAPL engaged with NYFL to organise a meeting with the board to discuss CAPLs activities and answer any questions NYFL may have.		
	25/01/2023	OC-000422	Phone	CAPL attempted to call NYFL but received an automated message that the office is unattended.		
		OC-000335	Phone	NYFL advised CAPL that they were interested in CAPL spending time in the region and experience what industry contributions and funding can achieve. NYFL requested or more basic information sheet outlining CAPLs activities for their board meeting.		
	03/02/2023	CN-000332	Email	CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. CAPL notified NYFL that they welcome meaningful feedback.		
	15/02/2023	OC-000334	Email	CAPL communicated their planned agenda for the meeting. NYFL responded with additional		

				requests to be added to the agenda which were included.		
	08/03/2023	OC-000535	Virtual Meeting	CAPL met with NYFL to discuss the upcoming activities and to further understand areas of significance and cultural values including sea country and underwater cultural heritage. CAPL requested advice as to whether additional relevant persons not present at the meeting should be informed and consulted with.		
	06/04/2023	OC-000252	Email	NYFL is pleased to hear CAPL's appetite to strengthen the relationship and likewise NYFL sees the relationship with CAPL as an opportunity to set a new standard for consultation and stakeholder engagement, and in turn, create a more meaningful relationship between CAPL and the NYFL membership, and Ieramugadu community. NYFL confirmed the below - NYFL Directors noted that "People from the land speak for and care about the marine animals", even if they are far out to sea - Discussed the nature of many traditional narratives have origins and connection to the seascape, and that impacts to the seascape can have cultural repercussions. - Discussed that TO communities are rarely able to verify proponent management approaches to the seascape environment, including marine fauna, given it's not an observable environment - Discussed the interconnectedness of the cultural landscape, whereby TOs from the western Pilbara are held to account by other Nyambali (Cultural bosses) when proponents impact land and sea. The cultural responsibilities		

				transcend Native Title and other boundaries.		
	09/05/2023	OC-000420	Phone	CAPL left as message for NYFL to call back in regard to CAPL's Environment Plans.		
	12/05/2023	OC-000429	Phone	CAPL and NYFL discussed opportunities for developing the relationship between the two organisations. NYFL confirmed that there were no further comments to add to their response to CAPL's submission as detailed in interaction log OC-000252.		
	15/05/2023	OC-000524	Email	CAPL thanked NYFL for their time and consultation. CAPL summarised NYFL's feedback that they have shared the last few months for NYFL's information: - Traditional Owner organisations were being inundated with proponents and that many Traditional Owners and TO organisations are experiencing consultation fatigue. NYFL noted that resourcing is required to support consultation. NYFL's position is that it is required to be consulted on EP matters that relate to the relevant environment. NYFL, like other TO organisations, need to be resourced appropriately - Noted that "People from the land speak for and care about the marine animals", even if they are far out to sea - Confirmed the nature of many traditional narratives have origins and connection to the seascape, and that impacts to the seascape can have cultural repercussions. - TO communities are rarely able to verify proponent management approaches to the seascape		

				environment, including marine fauna, given it's not an observable environment. As such, there is still a significant lack of understanding about the industry. - There is an interconnectedness of the cultural landscape, whereby TOs from the western Pilbara are held to account by other Nyambali (Cultural bosses) when proponents impact land and sea. The cultural responsibilities transcend Native Title and other boundaries. - Were concerned about emissions. NYFL thanked CAPL for their time.		
Ningaloo Blue Dive	20/02/2023	CN-000205	Email	CAPL advised that Ningaloo Blue Dive 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 notified Ningaloo Blue Dive that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Ningaloo Blue Dive's functions, interests or activities. No changes required.
	11/05/2023	OC-000446	Email	CAPL reached out to Ningaloo Blue Dive to provide any feedback they may have on the activity. CAPL confirmed that Ningaloo Blue Dive has not expressed specific concerns or objections to the planned activity.		
Ningaloo Coast World Heritage Advisory Committee (NCWHAC)	16/02/2023	CN-000489	Email	CAPL advised the Ningaloo Coast World Heritage Advisory Committee that 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 in a factsheet. CAPL notified the Ningaloo Coast World Heritage Advisory Committee that they welcome meaningful feedback. Ningaloo Coast World Heritage Advisory Committee advised that the information would be shared with the Committee at a meeting in May 2023 and would revert back to CAPL with any feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address NCWHAC's functions, interests or activities. No changes required.

				CAPL contacted The Committee to see whether there was any feedback from the Committee meeting. No response was received.		
Ningaloo Glass Bottom Boat	20/02/2023	CN-000414	Email	CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. CAPL notified Ningaloo Glass Bottom Boats that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Ningaloo Glass Bottom Boat's functions, interests or activities. No changes required.
	11/05/2023	OC-000445	Email	CAPL reached out to Ningaloo Glass Bottom Boats to provide any feedback they may have on the activity. CAPL confirmed that Ningaloo Glass Bottom Boats has not expressed specific concerns or objections to the planned activity.		
Ningaloo Visitor Centre	09/01/2023	OC-000176	Email	CAPL advised that the Ningaloo Visitors centre had been identified as a relevant person with functions, interests or activities that may be affected by the activity and ensure CAPL have the correct contact.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Ningaloo Visitor Centre's functions, interests or activities. No changes required.
	20/02/2023	CN-000179	Email	CAPL advised that the Ningaloo Visitors Centre 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 notified the Ningaloo Visitors Centre that they welcome meaningful feedback.		
	11/05/2023	OC-000447	Email	CAPL reached out to Ningaloo Visitor Centre to provide any feedback they may have on the activity. CAPL confirmed that Ningaloo Visitor Centre has not expressed specific concerns or objections to the planned activity.		
Ningaloo Whaleshark n Dive	20/02/2023	CN-000203	Email	CAPL advised that Ningaloo Whale Shark n Dive 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 notified Ningaloo Whale shark n Dive that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and	CAPL considers the measures and controls in the EP address Ningaloo Whaleshark n Dive's functions, interests or activities. No changes required.

					will consider any feedback if they provide in the future (see Section 8.3.4.1)	
Ningaloo Whaleshark Swim	20/02/2023	CN-000202	Email	CAPL advised that Ningaloo Whaleshark Swim 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 notified Ningaloo Whaleshark Swim that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Ningaloo Whaleshark Swim's functions, interests or activities. No changes required.
Northern Prawn Fishery	14/03/2023	CN-000193	Email	CAPL advised that the Northern Prawn Fishery (NPF) 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 notified the NPF that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Northern Prawn Fishery's functions, interests or activities. No changes required.
Oil Spill Response Limited (OSRL)	15/02/2023	CN-000211	Email	CAPL advised that the OSRL 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 notified the OSRL that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL will notify OSRL in the event of an emergency as per their request (see and Section 8.3.4.2) CAPL considers the measures and controls in the EP address OSRL's functions, interests or activities. No additional EP controls are required.

Onslow Chamber of Commerce and Industry - OCCI	17/01/2023	OC-000092	Email	CAPL advised the Onslow Chamber of Commerce and Industry had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL suggested they coordinate a phone call to discuss and agree on the communication protocols and to consult on the current Environment Plans.	In consultation in the course of preparing the EP, OCCI has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address OCCI's functions, interests or activities. No changes required.
	23/01/2023	OC-000286	Virtual Meeting	CAPL met with the Onslow Chamber of Commerce & Industry (OCCI) to provide an overview of their new approach to consultation along with an update on their Environment Plans.		
	07/02/2023	OC-000295	Virtual Meeting	CAPL spoke with a representative from the Onslow Chamber of Commerce and Industry (OCCI) to provide an overview of their new approach to consultation along with an update on their Environment Plans. CAPL provided guidance on how to find information regarding risks associated with the activities in CAPL's online consultation hub for upcoming activities.		
	08/02/2023	CN-000093	Email	CAPL notified the Onslow Chamber of Commerce and Industry that the Environment Plans site on CAPL's website was live and CAPL had published in local, state and national newspaper to help identify additional relevant persons. CAPL also requested that the Onslow Chamber of Commerce and Industry share the advert internally via their EDM to their members.		
	16/02/2023	OC-000094	Email	CAPL reached out to the Onslow Chamber of Commerce and Industry (OCCI) to see if there were any questions that came through after the presentation and requested that if there were any questions, CAPL would be happy to have a chat.		
	02/03/2023	OC-000147	Email	Onslow Chamber of Commerce and Industry advised their community of CAPL's information briefing on their proposed offshore activities.		
	18/03/2023	OC-000095	Email	Onslow Chamber of Commerce and Industry sent through their newsletter that had an advert		

				from CAPL seeking relevant persons engagement.		
Paspaley Pearls	10/05/2023	CN-000442	Email	CAPL advised that Paspaley Pearls 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 notified that Paspaley Pearls that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Pasaley Pearls functions, interests or activities. No changes required.
Pearl Producers Association (PPA)	08/02/2023	CN-000234	Email	CAPL advised that the Pearl Producers Association (PPA) 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 notified the PPA that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Pearl Producers Association's functions, interests or activities. No changes required.
PGS Australia Pty Ltd	15/02/2023	CN-000213	Email	CAPL advised that PGS 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 notified PGS that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address PGS's functions, interests or activities. No changes required.
	10/05/2023	OC-000436	Email	CAPL reached out to PGS to provide any feedback they may have on the activity. CAPL confirmed that PGS has not expressed specific concerns or objections to the planned activity.		
Pilbara Development Commission	19/12/2022	OC-000101	Email	CAPL advised the Pilbara Development Commission had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL suggested they coordinate a phone call to discuss and agree on the communication protocols and to	In consultation in the course of preparing the EP, Pilbara Development Commission has provided no objection	CAPL considers the measures and controls in the EP address Pilbara Development Commission's functions, interests or activities. No changes required.

				consult on the current Environment Plans. Pilbara Development Commission responded they would be pleased to meet with CAPL. A meeting was organised.	or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	
	01/02/2023	OC-000289	Face-to-face	CAPL met with the Pilbara Development Commission to provide an overview of their new approach to consultation along with an update on CAPL's Environment Plans.		
	08/02/2023	CN-000102	Email	CAPL advised the Pilbara Development Commission 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 notified Pilbara Development Commission that they welcome meaningful feedback.		
	17/02/2023	OC-000103	Email	Chevron Australia shared the contact details with the Pilbara Development Commission to discuss the new Hostel in Newman for Martu kids that are travelling down for School.		
Pilbara Ports Authority	08/02/2023	CN-000236	Email	CAPL advised that the Pilbara Port Authority (PPA) 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 notified the PPA that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Pilbara Ports Authority's functions, interests or activities. No changes required.
Protect Ningaloo	10/02/2023	CN-000223	Email	CAPL advised that Protect Ningaloo 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 notified Protect Ningaloo that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they	CAPL considers the measures and controls in the EP address Protect Ningaloo's functions, interests or activities. No changes required.

					provide in the future (see Section 8.3.4.1)	
Recfishwest (WA)	24/02/2023	CN-000125	Email	CAPL sent out formal notice advising that Recfishwest 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 notified Recfishwest that they welcome meaningful feedback. Recfishwest acknowledged receipt of email and requested to be included in consultations and advised the appropriate contact for all correspondence in the future.	In consultation in the course of preparing the EP, Recfishwest had no objection or claim raised regarding the activity impacts or risks. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address WAFIC's functions, interests or activities. No changes required.
	28/02/2023	OC-000264	Virtual Meeting	CAPL spoke with representatives from Recfishwest. CAPL provided an overview of their new online interaction hub and update on their Environment Plans. Recfishwest advised that continued consultation is encouraged. CAPL offered to present current activities to the board and provided an EDM for Recfishwest.		
	10/03/2023	OC-000185	Email	CAPL provided details of the activity and discussed the best method to circulate information about activities with Recfishwest and their members.		
	23/03/2023	OC-000165	Phone	CAPL contacted Recfishwest to request that CAPL's EP identification information be published in the Recfishwest EDM. Recfishwest advised that the content is inappropriate for the newsletter.		
	03/04/2023	OC-000366	Email	Recfishwest responded to CAPL's notification of the proposed activity and noted that proposed activity is located approximately 165 kilometers northwest of Dampier and 40 kilometers northwest of the Montebello Islands, the area is still accessed by the charter industry and recreational fishers in larger vessels.		

				Recfishwest asked that they be kept informed as activity dates are confirmed so that we are able to communicate relevant details with the recreational fishing community.		
Sail Ningaloo	20/02/2023	CN-000199	Email	CAPL advised that Sail Ningaloo 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 notified Sail Ningaloo that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Sail Ningaloo's functions, interests or activities. No changes required.
	10/05/2023	OC-000434	Email	Chevron Australia reached out to Sail Ningaloo to provide any feedback they may have on the activity. Chevron Australia confirmed that Sail Ningaloo has not expressed specific concerns or objections to the planned activity.		
Santos	20/03/2023	CN-000186	Email	CAPL advised that Santos 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 notified Santos that they welcome meaningful feedback.	In consultation in the course of preparing the EP, Santos has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Santos' functions, interests or activities. No changes required.
	10/05/2023	OC-000432	Email	CAPL reached out to Santos to provide any feedback they may have on the activity. CAPL confirmed that Santos has not expressed specific concerns or objections to the planned activity.		
SapuraOMVUpstream	14/02/2023	CN-000218	Email	CAPL advised that Sapura OMV 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 notified Sapura OMV that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address SapuraOMVUpstream's functions, interests or activities. No changes required.

Shark Bay Prawn Trawler Operators Association	10/01/2023	OC-000081	Email	CAPL engaged Shark Bay Prawn Trawler Operators Association to ensure they have the correct contact details for future correspondence. Shark Bay Prawn Trawler Operators Association confirmed the email address to be used for all correspondence.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Shark Bay Prawn Trawler Operators Association functions, interests or activities. No changes required.
	08/02/2023	CN-000082	Email	CAPL advised that Shark Bay Prawn Trawler Operators Association 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 notified Shark Bay Prawn Trawler Operators Association that they welcome meaningful feedback.		
Shark Bay World Heritage Committee (SBWHC)	08/02/2023	CN-000180	Email	CAPL advised that the Shark Bay World Heritage Committee (SBWHC) 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 provided an overview of how the EMBA is created and emphasised that it is the worst case scenario. CAPL notified the SBWHC that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address SBWHC functions, interests or activities. No changes required.
		OC-000294	Virtual Meeting	CAPL met with the Shark Bay World Heritage Committee to provide an overview of their new approach to consultation along with an update on CAPL's Environment Plans. The Shark Bay World Heritage Committee provided advice on local relevant persons that we should be engaging.		
	10/05/2023	OC-000435	Email	CAPL reached out to the SBWHC to provide any feedback they may have on the activity. CAPL confirmed that the SBWHC has not expressed specific concerns or objections to the planned activity.		

Shire of Ashburton (Pilbara)	17/01/2023	OC-000096	Email	CAPL advised that the Shire of Ashburton had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL requested that at the next meeting to provide an overview of the activity. Shire of Ashburton advised that previously CAPL has firstly presented to council their activity and then to the community.	In consultation in the course of preparing the EP, Shire of Ashburton has provided no objection or claim in response to the proposed activity. CAPL reached out to the additional contacts provided by the Shire of Ashburton. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Shire of Ashburton's functions, interests or activities. No changes required.
	25/01/2023	OC-000285	Phone	CAPL provided a follow up phone call regarding a email CAPL sent on the Environment Plan consultation process. CAPL provided an overview of their new approach to consultation along with an update on their Environment Plans.		
	07/02/2023	CN-000097	Email	CAPL advised that the Shire of Ashburton 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 notified the Shire of Ashburton that they welcome meaningful feedback.		
		OC-000293	Virtual Meeting	The Shire of Ashburton shared their concerns regarding impacts on recreation and fishing and suggested CAPL present at an information session in Onslow.		
	14/02/2023	OC-000098	Email	Shire of Ashburton thanked CAPL for presenting on their upcoming activities. The Shire of Ashburton noted that other titleholders have spoken to them about risk protocols in Commonwealth and State waters and possible contingencies in place for accidents in relation to a hydrocarbon incident. The Shire of Ashburton provided contact names and details for people within the Shire of Ashburton that assist in emergency management.		
	01/03/2023	OC-000128	Email	Shire of Ashburton thanked CAPL for presenting on their upcoming activities.		

				CAPL provided the Shire of Ashburton with an overview of their new online consultation Hub and activities. The Shire of Ashburton was informed that if they had any further queries to contact CAPL.		
		OC-000269	Virtual Meeting	CAPL met with representatives from Shire of Ashburton. CAPL provided an overview of their new online interaction hub. CAPL answered and discussed relevant questions and queries from the Shire of Ashburton and defined contacts and procedures in the event an emergency occurs. The Shire of Ashburton invited CAPL to attend the next oil spill response exercise at Wheatstone and local Emergency Management Committee in Onslow.		
	10/05/2023	OC-000438	Email	CAPL reached out to the Shire of Ashburton to provide any feedback they may have on the activity. CAPL confirmed that the Shire of Ashburton has not expressed specific concerns or objections to the planned activity.		
Shire of Carnarvon (Gascoyne)	20/12/2022	OC-000178	Email	CAPL advised that the Shire of Carnarvon had been identified as a relevant person with functions, interests or activities that may be affected by the activity. Chevron confirmed contact details for future consultation.	In consultation in the course of preparing the EP, the Shire of Carnarvon has provided no objection or claim in response to the proposed activity. CAPL reached out to the additional contacts provided by the Shire of Carnarvon. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address the Shire of Carnarvon's functions, interests or activities. No changes required.
	03/01/2023	OC-000083	Email	CAPL engaged the Shire of Carnarvon to provide an overview of the activity and consultation. CAPL showed their gratitude in support from the Shire of Carnarvon to begin engagement with relevant persons in the Shire of Carnarvon. The Shire of Carnarvon identified additional Relevant Persons CAPL should have engagements with.		
		OC-000248	Phone	CAPL spoke to the Shire of Carnarvon and established initial contact and provided an update on the EP process. The Shire of Carnarvon agreed to discuss internally who the primary relevant persons are within the Shire		

				that would be the central points of dissemination and provide these contacts back to CAPL.		
	27/01/2023	OC-000287	Phone	CAPL met with representatives from the Shire of Carnarvon in Exmouth. The Shire of Carnarvon provided advice on local relevant persons and traditional owners that we should be engaging.		
	06/02/2023	CN-000177	Email	CAPL advised that the Shire of Carnarvon 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 notified the Shire of Carnarvon that they welcome meaningful feedback.		
	10/03/2023	OC-000169	Email	CAPL provided a summary of consultation actions and expectations with continued engagement with the Shire of Carnarvon.		
	04/05/2023	OC-000398	Email	CAPL reached out to the Shire of Carnarvon to provide any feedback they may have on the activity. CAPL confirmed that the Shire of Carnarvon has not expressed specific concerns or objections to the planned activity. The Shire of Carnarvon confirmed that they have no concerns or objections to CAPL's Environment Plans		
Shire of Exmouth (Gascoyne)	17/01/2023	OC-000279	Phone	CAPL attempted to make first initial contact with the Shire of Exmouth.	In consultation in the course of preparing the EP, Shire of Exmouth has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Shire of Exmouth's functions, interests or activities. No changes required.
	18/01/2023	OC-000107	Email	CAPL advised that the Shire of Exmouth had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL suggested they coordinate a phone call to discuss and agree on the communication protocols and to consult on the current Environment Plans. Shire of Exmouth would be pleased to meet with CAPL and a meeting was organised.		
	24/01/2023	OC-000284	Face-to-face	CAPL met with representatives from Shire of Exmouth in Exmouth. The Shire of Exmouth provided advice on local relevant persons that we should be engaging. CAPL provided an		

				overview of their new approach to consultation along with an update on their Environment Plans. The Shire of Exmouth invited CAPL to present at the Council meeting.		
	01/02/2023	OC-000170	Email	CAPL reached out to the Shire of Exmouth to understand who they should contact locally from an environment/conservation perspective. The Shire of Exmouth provided CAPL with relevant persons to contact who may be affected by their activities.		
	08/02/2023	CN-000540	Email	CAPL advised that the Shire of Exmouth 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 notified the Shire of Exmouth that they welcome meaningful feedback.		
	24/02/2023	OC-000268	Virtual Meeting	CAPL met with representatives from the Shire of Exmouth. The Shire of Exmouth provided feedback from the Council and the current need for a waste management master plan due to high volumes of land fill or transport per week. CAPL provided possible alternatives and identified the Shire of Exmouth's main priorities.		
	01/03/2023	OC-000276	Phone	The Shire of Exmouth advised that it would be good for CAPL to become a member of the Chamber and get involved with the community reference groups that will be able to support CAPL's consultation process. The Shire of Exmouth spoke to various issues that they are currently dealing with.		
	02/05/2023	OC-000356	Email	CAPL contacted Shire of Exmouth to confirm that there were no objections or further input required on our upcoming Offshore activities.		
Shire of Shark Bay	10/01/2023	OC-000080	Email	CAPL contacted the Shire of Shark Bay to confirm contact details for future consultation. CAPL organised a meeting with the Shire of Shark Bay to begin introductions to discuss and		

				agree on how to communicate and engage on the future CAPL activities.		
	19/01/2023	OC-000281	Phone	CAPL spoke to the Shire of Shark Bay to establish initial contact. The Shire of Shark Bay advised that Shark Bay is independent of smaller tourism businesses. Shire of Shark Bay provided advice on local relevant persons that CAPL should be engaging.		
	06/02/2023	CN-000166	Email	CAPL advised that the Shire of Shark Bay 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 notified the Shire of Shark Bay that they welcome meaningful feedback.		
	23/03/2023	OC-000148	Phone	CAPL followed up with Shire of Shark Bay to seek their assistance in sharing CAPL's Environment Plan Activity information on the relevant community discussion boards in the Shire of Shark Bay on CAPL's behalf.		
Terrafirma Offshore PTY LTD	09/01/2023	OC-000175	Email	CAPL advised that the Terrafirma Offshore had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL contacted Terrafirma to confirm contact details for future consultation.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Terrafirma Offshore's functions, interests or activities. No changes required.
	01/05/2023	CN-000405	Email	CAPL advised Terrafirma Offshore that 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 notified Terrafirma Offshore that they welcome meaningful feedback.		
	15/05/2023	OC-000448	Email	CAPL reached out to Terrafirma Offshore to provide any feedback they may have on the activity. CAPL confirmed that Terrafirma Offshore has not expressed specific concerns or objections to the planned activity.		

TGS NOPEC Geophysical Company Pty Ltd	15/02/2023	CN-000212	Email	CAPL advised that TGS NOPEC 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 notified TGS NOPEC that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address TGS's functions, interests or activities. No changes required.
	10/05/2023	OC-000437	Email	CAPL reached out to TGS to provide any feedback they may have on the activity. CAPL confirmed that TGS has not expressed specific concerns or objections to the planned activity.		
Top Gun Charters	04/05/2023	CN-000396	Email	CAPL advised that Top Gun Charters 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 notified Top Gun Charters that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Top Gun Charter's functions, interests or activities. No changes required.
Tourism Western Australia	09/01/2023	OC-000230	Email	CAPL advised that Tourism WA had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL suggested they coordinate a phone call to discuss and agree on the communication protocols and to consult on the current Environment Plans. Tourism Western Australia would be pleased to meet with CAPL and a meeting was organised.	In consultation in the course of preparing the EP, Tourism Western Australia has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Tourism Western Australia's functions, interests or activities. No changes required.
	27/02/2023	CN-000370	Email	CAPL advised that Tourism Western Australia 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 notified Tourism Western Australia that they welcome meaningful feedback.		

		OC-000266	Virtual Meeting	CAPL spoke with Tourism WA and provided relevant persons CAPL should speak with. Tourism WA provided advice on potential investment opportunities with local tourism operators and showed interested in partnering with CAPL to develop tourism capacity.		
Vermilion Oil & Gas	14/02/2023	CN-000187	Email	CAPL advised that Vermillion 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 notified Vermillion that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Vermillion Oil and Gas' functions, interests or activities. No changes required.
View Ningaloo	20/02/2023	CN-000200	Email	CAPL advised that the View Ningaloo 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 notified the View Ningaloo that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address View Ningaloo's functions, interests or activities. No changes required.
	11/05/2023	OC-000449	Email	CAPL reached out to View Ningaloo to provide any feedback they may have on the activity. CAPL confirmed that View Ningaloo has not expressed specific concerns or objections to the planned activity.		
Vocus Communications	04/05/2023	CN-000397	Email	CAPL advised that Vocus Communications 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 notified Vocus Communications that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Vocus Communications' functions, interests or activities. No changes required.

WA Coastal and Marine Community Network	10/02/2023	CN-000222	Email	CAPL advised the WA Coastal and Marine Community Network 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 notified WA Coastal and Marine Community network that they welcome meaningful feedback.	In consultation in the course of preparing the EP, WA Coastal and Marine Community Network has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address WA Coastal and Marine Community Network's functions, interests or activities. No changes required.
	21/03/2023	OC-000119	Virtual Meeting	CAPL provided WA Coastal and Marine Community Network information on upcoming activities via the Interaction Hub during a Teams meeting.		
	22/03/2023	OC-000120	Email	CAPL followed up with WA Coastal and Marine Community Network email after their Teams Meeting with links to CAPL's Interaction Hub.		
WA Marine Science Institute	01/03/2023	CN-000196	Email	CAPL advised that WA Marine Science Institute (WAMSI) 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 notified WAMSI that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address WA Marine Science Institute's functions, interests or activities. No changes required.
Western Australian Fishing Industry Council (WAFIC)	10/01/2023	OC-000085	Email	CAPL reached out to WAFIC and a meeting was organised to discuss and agree the communication protocols for consultation.	In consultation in the course of preparing the EP, WAFIC requested further information regarding the 4D seismic Activity. WAFIC had no further objections or claims raised regarding the activity impacts or risks and WAFIC also confirmed that no feedback, objections or claims had been received from the fishers.	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide WAFIC ongoing consultation of the activity milestones or if there is a material change to the proposed activity. CAPL will also notify WAFIC in the event of an emergency as per their request (see and Section 8.3.4.2) CAPL considers the measures and controls in the EP address WAFIC's functions, interests or activities.
	12/01/2023	OC-000278	Phone	CAPL established contact with WAFIC to organise a time to provide an overview of upcoming projects. WAFIC spoke to some concerns they are currently facing and would be very eager to come together and work out the best model to communicate to fishers.		
	03/02/2023	CN-000086	Email	CAPL thanked WAFIC for their time and providing further information for CAPL to understand more about their challenges as an industry and organisation. CAPL provided an		

				overview of the activity and provided a link to their website for further information regarding the activity. CAPL notified the WAFIC that they welcome meaningful feedback. CAPL noted down all of WAFICs challenges that they shared in respect to dealing with large volumes of proponent activity and the burdens that this places on them as an organisation. CAPL notified WAFIC that they will discuss some options internally with our leadership first and revert back. In the interim, if WAFIC have some ideas on how CAPL can engage directly with their industry CAPL requested WAFIC let us know.	CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	No changes required.
		OC-000087	Email	WAFIC thanked CAPL for meaningful discussions and provided a link to their consultation approach along with WAFIC included a post in their February newsletter advising their members of CAPL's new online interaction hub for feedback.		
	07/02/2023	CN-000090	Email	CAPL engaged WAFIC to re-send out the Wheatstone 4D seismic survey activity information. WAFIC confirmed they sent out the information sheet to the identified fishers on 15 March 2023 to the following fishers for feedback: o Pilbara Line Fishery o Pilbara Trap Fishery o Mackerel Managed Fishery – Area 2 o West Coast Deep Sea Crustacean o Pilbara Crab Fishery		
	10/02/2023	OC-000549	Email	Western Australian Fishing Industry Council (WAFIC) provided a link to CAPL's consultation hub in their monthly newsletter for the activity that was sent out to WAFIC's email list including the below identified fishery groups within the Operational Area: - Mackerel Managed Fishery - Pilbara Crab Managed Fishery - Pilbara Line Fishery - Pilbara Trap Managed Fishery		

				- Marine Aquarium Fish Managed Fishery - Specimen Shell Managed Fishery		
	28/02/2023	OC-000263	Virtual Meeting	CAPL spoke with representative from WAFIC. WAFIC responded with positive feedback on CAPL's consultation process and advised relevant persons to contact in regard to Bluefin Tuna spawning area.		
	02/03/2023	OC-000291	Face-to-face	CAPL met with WAFIC at their office to provide an overview of their new approach to consultation along with an update on their Environment Plans. WAFIC provided an overview of their current concerns and there was discussions on how CAPL could support/assist with these concerns.		
	01/05/2023	OC-000358	Email	CAPL contacted WAFIC to confirm that there were no concerns or objections to the planned activities discussed in the consultation process. CAPL acknowledged that they would like to develop a framework with WAFIC for ongoing consultation and engagement. CAPL confirmed they will advise of any material changes to the proposed activities and provide reasonable time for WAFIC to reassess potential impacts and risks on values and sensitivities. CAPL look forward to our ongoing consultations and continuing to explore new opportunities with WAFIC.		
	07/06/2023	OC-000570	Email	CAPL and WAFIC organised a time to catch up to discuss their ongoing relationship and CAPL engaged early to discuss future approvals. WAFIC provided their draft Consultation Guideline and welcomed any feedback from CAPL.		
	19/06/2023	Oc-000560	Face-to-face	CAPL met with WAFIC representatives to discuss their continued relationship and the development of OPP and the opportunity for WAFIC's involvement in the process. WAFIC		

				appreciated the opportunity provided by CAPL to be involved in the early stages of development of the OPP so that it can best represent the WA Fishing Industry. WAFIC advised that they are a significant and important stakeholder given the growing demands on the industry, particularly the increase in expanse of the offshore renewables sector. WAFIC also provided CAPL with a draft consultation framework.		
Western Australian Museum	24/04/2023	CN-000382	Email	CAPL advised that the Western Australian Museum 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 notified the Western Australian Museum that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Western Australian Museum's functions, interests or activities. No changes required.
Western Gas	14/02/2023	CN-000219	Email	CAPL advised that Western Gas 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 notified Western Gas that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Western Gas' functions, interests or activities. No changes required.
Western Rock Lobster Council	19/01/2023	OC-000280	Phone	CAPL established contact with Western Rock Lobster Council to organise a time to provide an overview of upcoming projects. Western Rock Lobster Council confirmed their fishing areas and also shared their concerns about seismic impacts on lobsters. CAPL agreed to providing further information regarding the operational areas and providing the information sheet.	In consultation in the course of preparing the EP, The Western Rock Lobster Council requested further information regarding Wheatstone Well Intervention Infill Drilling and 4D Seismic Activity which were addressed. The Western Rock Lobster Council had no further objections or claims raised regarding the activity impacts or risks	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide Western Rock Lobster Council ongoing consultation of the activity milestones or if there is a material change to the proposed activity. CAPL will also notify the Western Rock Lobster Council in the event of an emergency as per their request (see and Section 8.3.4.2)
	08/02/2023	CN-000411	Email	CAPL sent out formal notice advising that the Western Rock Lobster Council 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 notified the Western Rock Lobster Council that they welcome meaningful feedback.	post-consultation. Confirmation that no further feedback, objections or claims had been received from the Western Rock Lobster Council. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Western Rock Lobster Council's functions, interests or activities. No changes required.
	27/03/2023	OB-000164	Email	CAPL responded to Western Rock Lobsters queries with regard to the proposed Wheatstone Well Intervention Infill Drilling and 4D Seismic Activity, confirming that the Wheatstone Well Intervention Infill Drilling will only take place in the prescribed operational area and that further information on the modelling developed for Wheatstone 4D Seismic Activity was available on the NOPSEMA website. CAPL confirmed that impacts to crustaceans are not expected outside of the operational area.		
Whale and Dolphin Conservation Society	10/03/2023	CN-000221	Email	CAPL advised that Whale and Dolphin Conservation Society 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 notified Whale and Dolphin Conservation Society that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Whale and Dolphin Conservation Society's functions, interests or activities. No changes required.
	27/03/2023	OC-000161	Phone	CAPL contacted Whale and Dolphin Conservation Society to confirm receipt of EP information using the number listed on their website however the number was not connected.		
Wilderness Island	23/02/2023	CN-000198	Email	CAPL advised that Wilderness Island 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 notified Wilderness Island that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and	CAPL considers the measures and controls in the EP address Wilderness Island's functions, interests or activities. No changes required.

	11/05/2023	OC-000443	Email	CAPL reached out to Wilderness Island to provide any feedback they may have on the activity. CAPL confirmed that Wilderness Island has not expressed specific concerns or objections to the planned activity.	will consider any feedback if they provide in the future (see Section 8.3.4.1)	
Wilderness Society	10/02/2023	CN-000197	Email	CAPL advised that Wilderness Society 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 notified Wilderness Society that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is consistent with CAPL's intended outcome of consultation (see Section 6.2). CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Wilderness Society's functions, interests or activities. No changes required.
Wirrawandi Aboriginal Corporation RNTBC (WAC)	24/11/2022	OC-000371	Email	CAPL contacted the Wirrawandi Aboriginal Corporation (WAC) to provide an overview of their current approach to consultation and Environment Plans for upcoming activities. CAPL informed WAC of their commitment to consultation.	In consultation in the course of preparing the EP, Wirrawandi Aboriginal Corporation has provided no objection or claim in response to the proposed activity. Wirrawandi Aboriginal Corporation have requested to be included in ongoing consultation and in the event of an emergency they be included in the notification to relevant persons. CAPL is committed to ongoing consultation including working with traditional owners on a broader understanding of sea country and underwater cultural heritage. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Wirrawandi Aboriginal Corporation functions, interests or activities. No changes required.
	30/11/2022	OC-000372	Virtual Meeting	CAPL advised WAC of the new NOPSEMA consultation requirements, CAPL's environmental plans and what the best course of action is to consult with the WAC members and community. WAC suggested the best course of action was to focus on developing a communication plan between CAPL and WAC to commence rebuilding the relationship prior to discussions around CAPL's upcoming project activities (environmental plans). Both parties agreed to identify a suitable meeting date before the end of the year via email correspondence.		

	06/12/2022	OC-000546	Email	CAPL engaged with WAC to confirm possible dates to meet the WAC board and elders and develop a relationship. CAPL presented WAC with some questions regarding expectations to discuss when CAPL meet with the WAC board and elders including co-design and drafting up of a consultation agreement and the CAPL representation WAC would expect to see. WAC and CAPL organised to have an informal meeting prior to the Board meeting.		
	22/12/2022	OC-000476	Face-to-face	A CAPL representative and the WAC General Manager met to discuss the draft agenda for the upcoming meeting between CAPL and the WAC Board and Elders, scheduled in January 2023.		
	30/12/2022	OC-000374	Email	CAPL and WAC exchanged Emails looking at a proposal from WAC on future partnership opportunities.		
	05/01/2023	OC-000375	Email	CAPL and WAC exchanged emails discussing meeting quotes, agenda, and scheduling a meeting to socialise the agenda with the WAC Board prior to the meeting in January.		
	10/01/2023	OC-000376	Face-to-face	CAPL met with WAC to discuss the upcoming WAC/CAPL meeting planned for the 17th and 18th of January. A discussion about the CAPL and WAC relationship, past, present and future was had; and the agenda for the upcoming WAC/CAPL meeting.		
	17/01/2023	OC-000274	Face-to-face	CAPL met with the board of directors, elders' council and staff of the WAC to present an overview of their upcoming offshore activities and to discuss the re-building of the relationship between CAPL and WAC. CAPL sought		

				feedback on areas of significance and cultural values including sea country and underwater cultural heritage. The key items discussed; CAPL explained its facilities and projects, and activities covered by upcoming Environment Plans and answered questions from WAC regarding seismic, whales and environmental monitoring on Barrow Island. CAPL requested advice as to whether additional relevant persons not present at the meeting should be informed and consulted with.		
	03/02/2023	CN-000426	Email	CAPL sent out formal notice advising WAC that 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 notified WAC that they welcome meaningful feedback.		
	15/02/2023	OC-000338	Face-to-face	CAPL met with WAC rangers. WAC informed CAPL of their connection and history to country and shared their history and story.		
	16/02/2023	OC-000349	Email	CAPL informed WAC of their travel plans to Karratha and confirmed time and date to meet with CEO and Chair of the Board of Directors while in Karratha.		
	22/02/2023	OC-000347	Face-to-face	CAPL engaged with representatives from WAC and continued discussions from previous board meeting in January.		
	16/03/2023	OC-000350	Email	CAPL advised WAC of the proposed agenda for the board meeting in Perth. • Recap of the initial meeting between CAPL and WAC from January 20223. • Feedback on CAPL projects, CAPL will provide an overview of the upcoming projects and using a map highlight significant area(s) of		

				concerns for WAC that surrounds the EMBA. • Re-build the relationship between WAC and CAPL by developing a guideline and structure for WAC and CAPL relationship and working group.		
	22/03/2023	OC-000273	Face-to-face	CAPL met with the board of directors, elders council and staff of the WAC to provide a follow up presentation of their upcoming offshore activities and to review draft terms of reference for joint working group to further develop governance of relationship.		
	06/04/2023	OC-000351	Email	CAPL sent through minutes of previous meeting with the WAC board of directors which occurred on the 22nd of March and additional documents requested during the meeting. The key discissions from the meeting was: The drafted terms of reference were reviewed by the group: • Purpose of terms of reference to be edited based on discussions which included Heritage Agreement and Process for Negotiation • Terms of reference to be the same between WAC and BTAC • Minimum of 4 meetings to occur throughout the year and additional meeting will occur if needed. • Informal check in meetings to occur with the extended membership once or twice a year e.g., BBQ's • WAC staff member to be included in the working group. • Include a co-chair or vice-chair. • This working group is to the lead communication group, when needed, guest or advisors to attend meetings to support initiatives. • Protocols for meeting discussion and engagement to be replaced with WAC code conduct.		

				CAPL also requested permission of WAC members to display pictures in internal presentation for educational purposes.		
	12/04/2023	OC-000275	Face-to-face	CAPL met with representative of WAC to discuss actions arising from the initial meeting in January with the board of directors and elders council of WAC.		
	26/04/2023	OC-000354	Face-to-face	CAPL met WAC representatives to discuss and agree on ongoing communications between CAPL and WAC and provide a summary of CAPL's consultations with WAC in respect to CAPL's current Environment Plans in development for WAC's approval.		
	01/05/2023	OC-000348	Email	CAPL confirmed time and date of meeting with the CEO of WAC.		
	15/05/2023	OC-000528	Email	CAPL advised WAC of the draft documents they have prepared in preparation for the board meeting in the following week. CAPL informed WAC that they would be happy to discuss any of the documents. Draft Consultation Response and Statement: - captures the consultation and engagements with WAC over the last 6 months and summarises the information that CAPL will include in our upcoming EP's. WAC presented and discussed with the board. Draft Engagement Plan: - capture all the possible engagement and interactions that may occur between CAPL and WAC going forward. From consultation with WAC, CAPL understands that: - The coastal area, sea country, and adjacent islands are highly valuable to the Yaburara & Mardudhunera people. Impact on these areas from a planned or unplanned event may cause harm to the cultural landscape, individuals, and the community.		

				- Based on the current activity proposal, WAC, as representatives for the Yaburara and Mardudhunera people, has not expressed specific concerns or objections to the planned activities discussed in the consultation process. WAC has not advised CAPL of any individual Yaburara and Mardudhunera persons that has a function, interest or activity in the EMBA that we should consult with separately. - WAC requests CAPL continues engaging to gain a deeper understanding of the values and sensitivities, so emergency response plans are well informed. CAPL has committed to continue engagement with WAC to ensure emergency response plans are well informed.		
Woodside	14/02/2023	CN-000118	Email	CAPL advised that Woodside had been identified as a relevant organisation 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 notified Woodside that they welcome meaningful feedback. Woodside acknowledged receipt of email.	In consultation in the course of preparing the EP, Woodside has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	CAPL considers the measures and controls in the EP address Woodside's functions, interests or activities. No changes required.
	10/05/2023	OC-000433	Email	CAPL reached out to Woodside to provide any feedback they may have on the activity. CAPL confirmed that Woodside has not expressed specific concerns or objections to the planned activity. Woodside confirmed receipt of email and forwarded the email onto appropriate representatives that will reach out to CAPL if they have any feedback. Woodside responded stating they had no feedback regarding the activities.		

Yinggarda Aboriginal Corporation (YAC)	03/02/2023	CN-000324	Email	CAPL advised that the Yinggarda Aboriginal Corporation (YAC) had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL advised that they are interested in speaking to a representative of YAC about CAPLs activities. CAPL advised that they welcome meaningful feedback. CAPL acknowledged the workloads and pressures Traditional Owner Corporations are under and advised they would be available to discuss further at YAC's convenience.	In consultation in the course of preparing the EP, Yinggarda Aboriginal Corporation has provided no objection or claim in response to the proposed activity. CAPL is committed to ongoing consultation including working with traditional owners on a broader understanding of sea country and underwater cultural heritage. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	As referenced in EPS Section 7.1 and detailed in Table 8-5, CAPL will provide Yinggarda Aboriginal Corporation ongoing consultation of the activity milestones. CAPL will also notify Yinggarda Aboriginal Corporation in the event of an emergency (see and Section 8.3.4.2) CAPL considers the measures and controls in the EP address Yinggarda Aboriginal Corporation functions, interests or activities.
	07/03/2023	OC-000327	Email	Yinggarda Aboriginal Corporation (YAC) contacted CAPL to identify themselves as a relevant person and to welcome consultation with CAPL. YAC requested some additional information on the Environment plans outlined in CAPL's previous correspondence as they were of a highly technical nature. YAC expressed that to ensure fully informed engagement and consultation CAPL should attend a half or full day Board meeting to present the activities and if necessary assist in engaging an environmental scientist to advise the Board about the impact of proposed activities. This will allow the Board to draft an appropriate response to include in CAPL's EP. CAPL and YAC confirmed a meeting with its members for CAPL to present upcoming activities and answer any queries. CAPL also suggested an initial phone call to discuss details.		
		OC-000337	Phone	CAPL spoke with representatives of Yinggarda Aboriginal Corporation (YAC) and were advised of a meeting time and date.		
	23/03/2023	OC-000149	Face-to-face	CAPL presented to the Board of the Yinggarda Aboriginal Corporation (YAC) on the upcoming offshore activities and sought feedback on areas of significance and cultural values including sea country and underwater cultural heritage.		

				CAPL provided clarification on the EP and OPP processes and advised YAC that they would be consulting with them soon regarding other activities. CAPL requested advice as to whether additional relevant persons not present at the meeting should be informed and consulted with.		
		OC-000379	Email	CAPL contacted YAC to thank them for their time and to discuss the possibility of organising another meeting in May or June to answer any follow up queries. CAPL also mentioned their intention to expand their social investment framework beyond Onslow. CAPL requested any feedback YAC may have. CAPL followed up with YAC's representative to ask if there had been any comments or feedback from the community with respect to CAPL's activities YMAC representative for Yinggarda Aboriginal Corporation contacted CAPL to advise that YMAC is no longer acting on behalf of Yinggarda. CAPL Thanked the YMAC representative for the new contact representative and their assistance.		
	04/05/2023	OC-000517	Email	CAPL contacted the new YAC representative to request any feedback about the upcoming activities from the previous board meeting. CAPL acknowledged the current changes at YAC and expressed their appreciation for YACs time and consideration. Following a call with the new YAC representative, CAPL inquired whether any of the YAC Board had any feedback from their meeting earlier in the year. CAPL informed YAC that they require any feedback formally to include in the Environment plans. CAPL also reiterated their desire to meet with the Board again to discuss any further queries.		

				CAPL asked if YAC had any time to catch up on the phone. YAC thanked CAPL for their email and apologised for the delay in response. YAC advised CAPL that they had forwarded the information to the relevant person and would be in touch in early June following the Board meeting.		
	08/05/2023	OC-000544	Phone	Gumala advised CAPL that Yinggarda's Executive services were being transferred from YMAC to Gumala which includes Gumala being responsible for governance and cultural heritage. Gumala provided CAPL with the updated contact details for consultation with Yinggarda.		
	08/06/2023	OC-000548	Email	YAC requested further information from CAPL regarding CAPL's activity so it can be presented to the YAC board: 1. Has an environmental consultant been engaged to provide independent advice to the YAC Board on what is proposed? - It will be difficult for YAC to provide any useful feedback on environmental and cultural concerns, in the absence of obtaining that advice, particularly in respect of the EP submissions. 2. What does CAPL have in mind regarding Engagement framework and Potential partnership opportunities? - Can you please provide us with an understanding on what might be on the table for a sustainable future partnership with CAPL? CAPL responded: 1. It had been raised by YMAC as to whether we would provide support to YAC via YMAC for an independent environment specialist to review our information sheets. The role of the environmental specialist was not to reassess our environment assessment but to help the board understand the		

				potential risks and impacts to their values and sensitivities. We also offered at this meeting to return to answer any questions that the board. We have received no further direction or requests from YAC in relation to this. CAPL will continue to improve the environmental management of our activities post submission of our Environment Plans to NOPSEMA and our plans will benefit from the ongoing consultations and discussions with YAC as well as all Traditional Owner groups and other Relevant Persons. This includes any specific information on values and sensitivities that are nominated from a potential review by the Environmental Consultant. 2. In terms of an engagement framework, CAPL would welcome the opportunity, based on interest from YAC, to codesign how we can share information about our activities going forward, acknowledging the burdens on people's time. We are currently investigating how we can be supporting PBC's, particularly with respect to emergency response and this was something we discussed with the Yinggarda board when we met.		