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gorgon gas development

pipeline and subsea infrastructure installation and pre-commissioning environment plan

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1 environment plan summary

This *Gorgon Gas Development Pipeline and Subsea Infrastructure Installation and Pre-Commissioning Environment Plan Summary* (Table 1-1) has been prepared from material provided in this Environment Plan (EP), and as required by regulation 11(4) of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (OPGGS(E)R) (Commonwealth [Cth]).

Table 1-1: Environment Plan summary

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

2 introduction

2.1 Overview

On behalf of the Gorgon Joint Venturers, Chevron Australia Pty Ltd (CAPL) is developing and operating the Gorgon Gas Development. To date, the Gorgon Gas Development hydrocarbon system includes infrastructure and activities associated with the Gorgon Foundation Project (GFP) and Gorgon Stage 2 (GS2). Existing infrastructure includes offshore production wells within the Gorgon and Jansz–Io gas fields, and the Feed Gas Pipelines. The Feed Gas Pipelines gather and transport gas to the Gorgon Gas Treatment Plant (GTP) on Barrow Island.

To maintain gas supply to the Gorgon GTP, and sustain current production rates, CAPL plans to install a Subsea Compression Station (SCSt) and associated infrastructure at the Jansz–Io fields. Jansz–Io Compression (J-IC) involves the installation of a SCSt, Subsea Compression Manifold Station (SCMS), a floating Field Control Station (FCS) at the Jansz-Io field, medium voltage (MV) power and communication umbilicals between the FCS and SCSt, an MV power and communications umbilical between the FCS and the existing Jansz Central Distribution Unit (CDU), and a High Voltage Submarine Cable (HVSC) between Barrow Island and the FCS.

This EP documents the assessment and management of potential environmental impacts and risks associated with the installation and pre-commissioning of the J-IC infrastructure in Commonwealth waters.

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

2.2 Location

The Jansz–Io gas fields are within production licenses WA-36-L, WA-39-L, and WA-40-L, ~200 km off the north-west coast of Western Australia (WA), and in water depths of ~1,350 m (Figure 2-1). The infrastructure to be installed under this EP will be located in geographical areas within the footprints of WA-19-PL and WA-39-L.

Detailed information regarding the location and layout of infrastructure is included in Section 3.

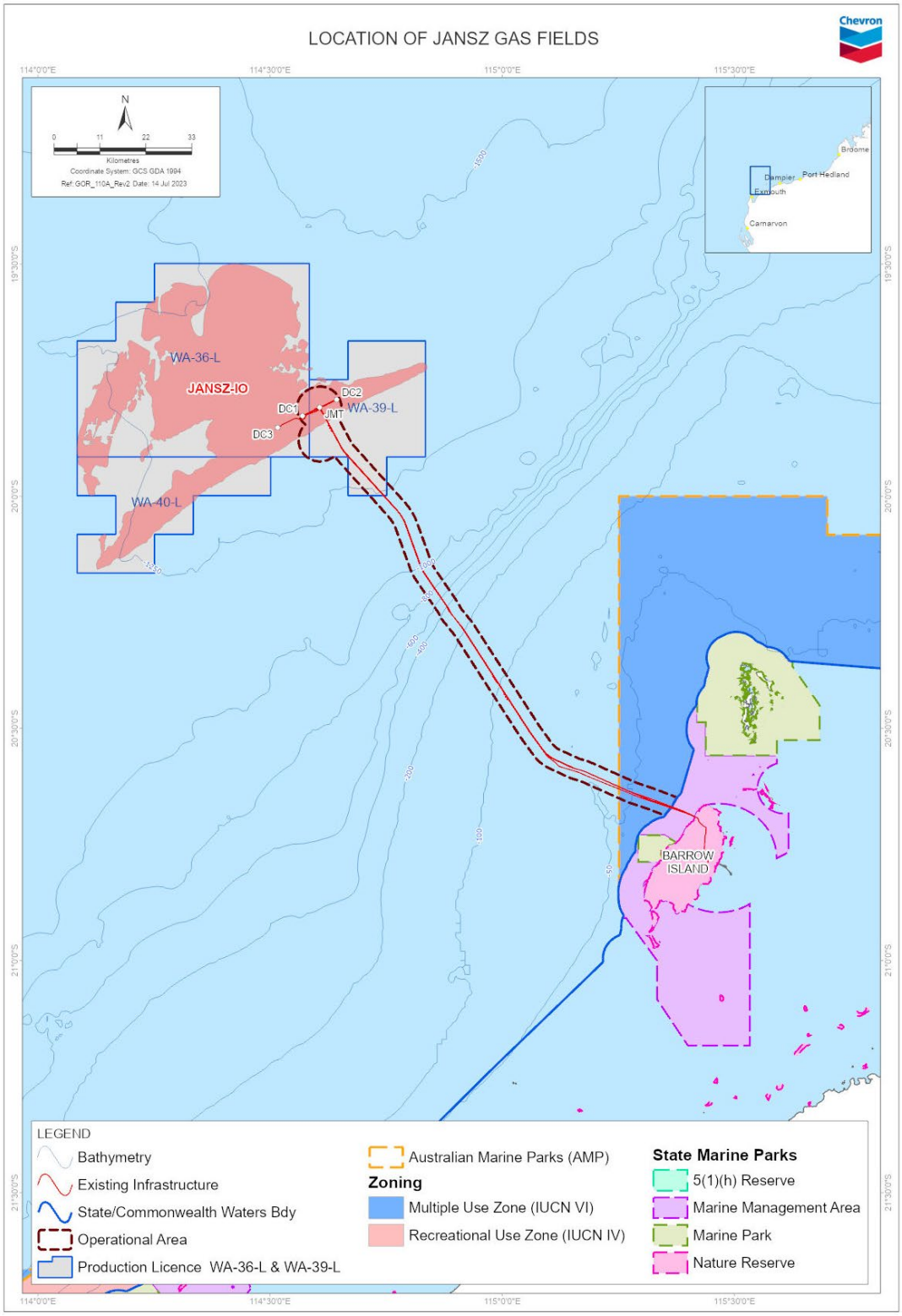


Figure 2-1: Location of Jansz–Io gas fields

2.3 Scope

2.3.1 In scope

This EP addresses activities in Commonwealth waters associated with the modification of the Gorgon Gas Development though the installation of J-IC infrastructure (the 'petroleum activity'). Specifically, this EP addressed the following activities:

- installation and offshore hook-up of the FCS, HVSC, SCSt, SCMS, and MV umbilicals
- pre-commissioning, commissioning, and start-up of the FCS—includes testing and start-up of the HVSC, MV umbilicals, and FCS equipment and systems
- pre-commissioning of the SCSt—includes pressurisation, and testing of the SCSt, SCMS, and associated subsea equipment
- IMR required prior to operations commencing
- use of vessels, helicopters, and remotely operated vehicles (ROVs) or autonomous underwater vehicles (AUVs) as required in support of the above activities.

2.3.2 Out of scope

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

- installation and pre-commissioning activities associated with the GFP, completed in accordance with the NOPSEMA-accepted *Offshore Feed Gas Pipeline System Installation Management Plan*[1] (Ref. 3)
- installation and pre-commissioning activities associated with GS2, completed in accordance with the previous revision (Rev 3.0) of the NOPSEMA-accepted *Pipeline and Subsea Infrastructure Installation and Pre-commissioning Environment Plan* (Ref. 4)
- installation and pre-commissioning activities associated with J-IC within State waters, which are covered under the DMIRS-accepted *Gorgon and Jansz Feed Gas Pipeline Umbilicals Installation Environment Plan* (Ref. 5)
- commissioning, start-up, and operation of the SCSt, SCMS and associated subsea equipment, which will be covered under a revision to the existing NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations Environment Plan* (Ref. 6)
- commissioning, start-up, and operation activities within State waters which are covered under the DMIRS-accepted *Gorgon and Jansz Feed Gas Pipeline Operations Environment Plan (State)* (Ref. 7)
- vessels (including emergency response vessels) transiting to or from the operational area (OA) (i.e. transiting outside of the OA); these vessels are deemed to be operating under the *Navigation Act 2012 (Cth)* and not performing the petroleum activity

[1] Activities under this EP have been completed and the notification of completion has been accepted by NOPSEMA as per the requirements of regulation 25A of the OPGGS(E)R.

- helicopters transiting to or from the OA (i.e. transiting outside of the OA); these aircraft are subject to the *Air Navigation Act 1920* (Cth), *Civil Aviation Act 1988* (Cth), and associated regulations, and not performing the petroleum activity
- end of facility life (EOFL) decommissioning and removal of infrastructure under section 572(3) of the OPGGS Act; these activities are not scheduled to occur within the 5-year in-force period of this EP[2].

2.4 Titleholder details

CAPL is the nominated titleholder of WA-19-PL and WA-39-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 titleholders 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: Titleholder details

Title	Details	Titleholders	Nominated Titleholder	Address
WA-19-PL	Pipeline Licence	Chevron Australia Pty Ltd Mobil Australia Resources Company Pty Limited Shell Australia Pty Ltd Osaka Gas Gorgon Pty Ltd Tokyo Gas Gorgon Pty Ltd JERA Gorgon Pty Ltd	Chevron Australia Pty Ltd (ACN: 086 197 757)	1 The Esplanade Perth, WA, 6000
WA-39-L	Production Licence	Chevron Australia Pty Ltd Mobil Australia Resources Company Pty Limited Shell Australia Pty Ltd Osaka Gas Gorgon Pty Ltd Tokyo Gas Gorgon Pty Ltd JERA Gorgon Pty Ltd	Chevron Australia Pty Ltd (ACN: 086 197 757)	1 The Esplanade Perth, WA, 6000

Table 2-2: Nominated liaison person

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

[2] The approach to decommissioning for the Gorgon Gas Development is described in Section 3.6 of the NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations Environment Plan* (Ref. 6).

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 its operations is documented in Chevron Corporation's 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. 1)
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	Section 7.8
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	Sections 4, and 7
		EPBC Regulations 2000 – Part 8 Division 8.1	Sections 7.2, 7.6, and 7.7

Legislation	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met
		Interacting with cetaceans	
		Injury or fatality caused to EPBC listed fauna shall be reported	Section 8.4.2
Navigation Act 2012	Provides standards regarding collision prevention for vessels. The Navigation Act provides the legislative power for Australia to implement several international conventions, including the *Convention on the International Regulations for Preventing Collisions at Sea* (COLREGS).	Notice to Mariners	Sections 7.1, and 7.15
Navigation Act 2012 *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006* Various marine orders	Gives effect to the requirements under the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) in Australia.	Marine Order 30—Prevention of collisions	Section 7.15
		Marine Order 91—Marine Pollution Prevention—Oil	Sections 7.9, 7.14, 7.15, and 7.16
		Marine Order 95—Marine Pollution Prevention—Garbage	Sections 7.9, and 7.13
		Marine Order 96—Marine Pollution Prevention—Sewage	Section 7.9
		Marine Order 97—Marine Pollution Prevention—Air Pollution	Section 7.4
		Marine Order 98—Marine Pollution Prevention—Anti-Fouling Systems	Section 7.8
OPGGS Act OPGGS(E)R	The OPGGS(E)R under the OPGGS Act requires a titleholder to have an accepted EP in place prior to the commencement of a petroleum activity. The regulations ensure the petroleum activity is undertaken in an ecologically sustainable manner	An EP for a petroleum activity must be accepted by NOPSEMA before activities commence	This EP, including the OPEP (Ref. 1), and Operational and Scientific Monitoring Plan (OSMP) (Ref. 2)

Legislation	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met
	and in accordance with an EP.		
Underwater Cultural Heritage Act 2018 (UCH Act)	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	Sections 4, and 7

Table 2-4: Standards and guidelines relevant to this activity

Standard / guideline	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met in this EP
Australian Ballast Water Management Requirements (Ref. 8)	Provides guidance on how vessel operators should manage ballast water when operating within Australian seas in order to comply with the *Biosecurity Act 2015* (Cth). They also align to the International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004 (the Ballast Water Management Convention).	Ballast water management requirements for vessels, including having a ballast water management plan and certificate (unless an exemption applies).	Section 7.8
Australian Biofouling Management Requirements (Ref. 9)	Sets out vessel operator obligations for the management of biofouling when operating vessels under biosecurity control within Australian territorial seas.	Biofouling management for vessels, including PAR, and having biofouling management plans.	Section 7.8
Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Ref. 10)	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. 11)	Commonwealth guidance document has been developed to assist industry manage the risk of marine pest translocation and	Requires biofouling risk assessments to be completed	Section 7.8

Standard / guideline	Description	Requirements relevant to the risks associated with the petroleum activity	Demonstration of how requirements are met in this EP
	introduction via biofouling.		
National Light Pollution Guidelines for Wildlife (Ref. 12)	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 7.5

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:

- installation and offshore hook-up of the FCS, HVSC, SCSt, SCMS, and MV umbilicals (Section 3.2)
- pre-commissioning, commissioning, and start-up of the FCS—includes testing and start-up of the HVSC, MV umbilicals, and FCS equipment and systems (Section 3.3.1)
- pre-commissioning of the SCSt—includes pressurisation, and testing of the SCSt, SCMS, and associated subsea equipment (Section 3.3.2)
- IMR required prior to operations commencing (Section 3.4)
- use of vessels, helicopters, and ROVs or AUVs as required in support of the above activities (Section 3.5).

3.1.1 Operational area

The location of the Jansz–Io gas fields and the Feed Gas Pipeline system is described in Section 2.2 and shown in Figure 2-1.

The OA for the petroleum activity (Figure 3-1) is defined as:

- a 5 km corridor centred over the Jansz–Io pipeline within Commonwealth waters (i.e. 2.5 km either side of pipeline) terminating at the Jansz Midline Pipeline Termination Structure (MPTS)
- a 5 km radius buffer around the indicative location of each of the SCSt, SCMS, and FCS.

It is within this OA that the petroleum activity, defined within Section 3 of this EP, will be undertaken.

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

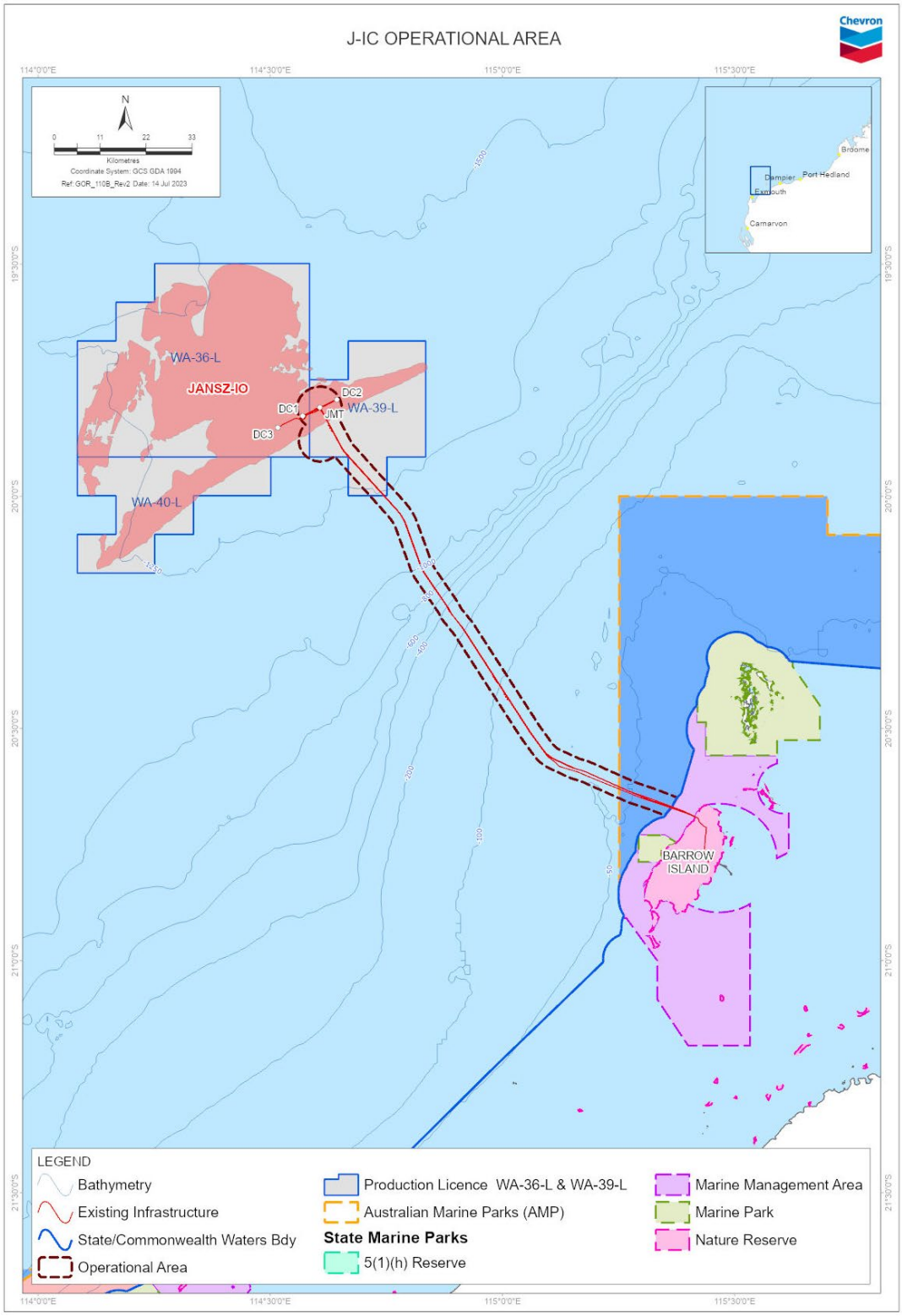


Figure 3-1: Operational area for the J-IC installation EP

3.1.2 Timing

The petroleum activity is scheduled to occur from mid-2024 to mid-2026. This timing is indicative and subject to potential delays caused by weather events, vessel and/or equipment availability, regulatory approvals, and other unforeseen factors. Activities covered by this EP may be conducted 24 hours a day, 7 days a week.

3.1.3 Infrastructure

An overview of the J-IC field layout is provided in Figure 3-2, with indicative locations of key infrastructure summarised in Table 3-1. J-IC comprises of the following key components:

- a SCSt to separate, compress, and pump the production fluids
- a SCMS and subsea tie in spools to allow connection of the SCSt to the existing Jansz MPTS and accommodate potential future tie-ins
- a barrier fluid flying lead (BFFL) to supply barrier fluids[3] to the SCSt from the existing Jansz CDU.
- a floating FCS to support the power and control requirements of the SCSt along with some provision for potential future tie-ins
- a HVSC to transmit power and communications from Barrow Island to the FCS
- MV umbilicals to transmit MV power and communications between the FCS and SCSt
- MV umbilical to transmit MV power and communications between the FCS and the existing Jansz CDU.

Table 3-1: Indicative infrastructure locations and indicative water depths

Infrastructure	Latitude^	Longitude^	Approximate dimensions*	Approximate water depth
SCSt	19°48'35.00" S	114°36'20.84" E	w: 61 m l: 67 m h: 20.7 m	1,345 m
SCMS	19°48'32.44" S	114°36'20.24" E	w: 30.0 m l: 40.0 m h: 8.4 m	1,345 m
FCS	19°52'43.67"S	114°36'28.91"E	w: 83.3 m l: 83.3 m h: 51.0 m	1,290 m
HVSC	From State waters boundary to FCS (refer to Figure 3-2)		l: 130,000 m d: 0.2 m	~25–1,290 m
MV umbilicals	From FCS to SCSt (refer to Figure 3-2)		l: 10,200 m d: 0.2 m	1,290–1,345 m
MV umbilical	From FCS to Jansz CDU		l: 13,300 m d: 0.2m	1,290–1,350 m

^ *Coordinates provided in GDA94.*
* *Dimensions (w–width; l–length; h–height; d–diameter)*

[3] Barrier fluids used will be a water-based hydraulic fluid.

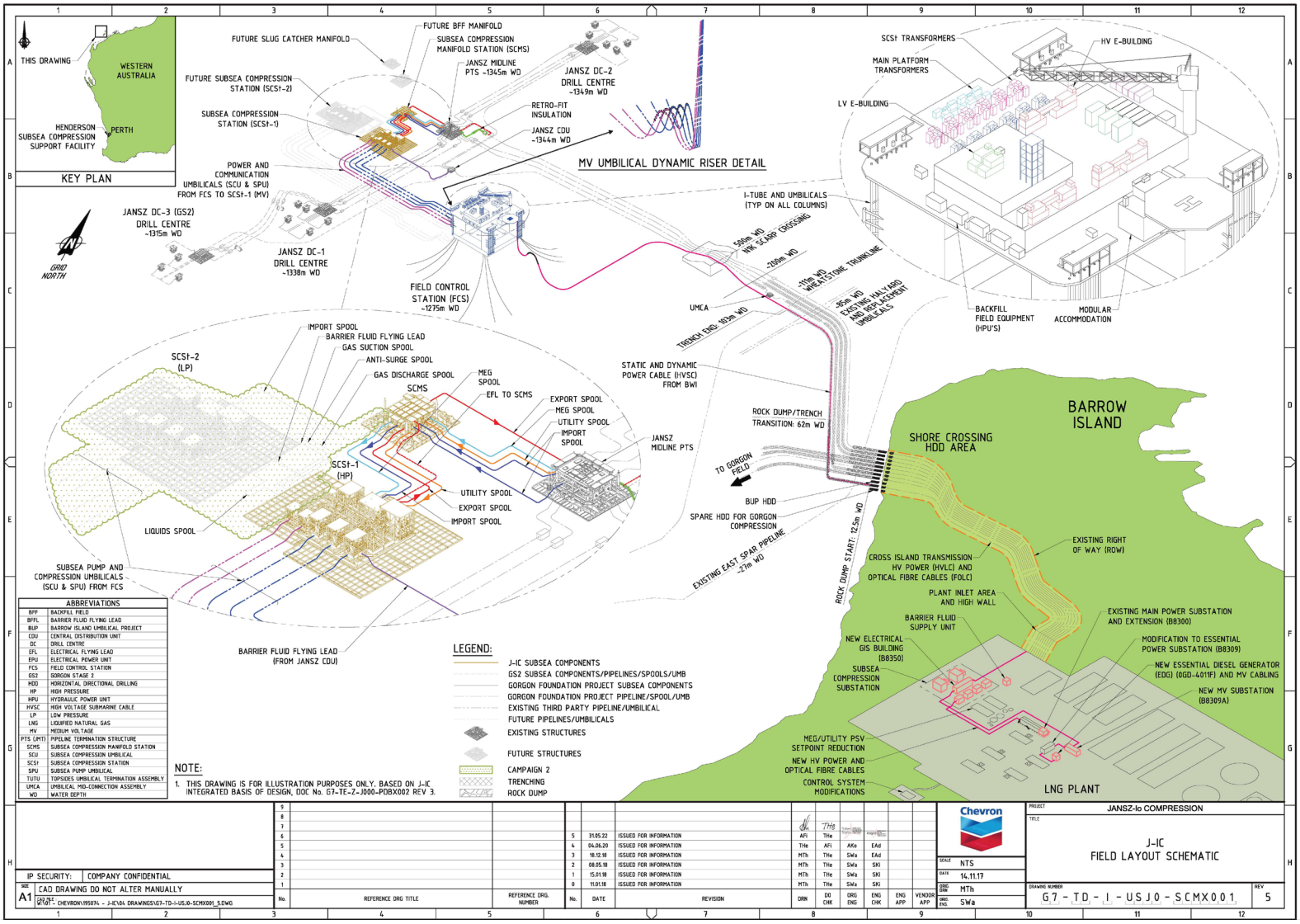


Figure 3-2: Schematic of J–IC field layout

3.2 Installation

3.2.1 Field control station

The FCS will be located ~7 km southwest of the existing Jansz MPTS in a water depth of ~1,290 m, and will host electrical and control equipment to support operation of the SCSt. The FCS also includes provision for future chemical injection, electrohydraulic control and power for potential future tie-ins. The FCS is designed as a normally unattended installation, however accommodation for campaign maintenance will be available.

The FCS includes:

- topside electrical equipment including high voltage (HV) main transformers and MV and low voltage (LV) distribution transformers
- HV/LV electrical buildings on the FCS, housing variable speed drives for compressors and pumps, electrical distribution equipment, control and telecommunication equipment
- MV power transmission and control system which connects the FCS to the SCSt via umbilicals containing MV cores and fibre optics
- MV power transmission and control system which connects the FCS to the existing Jansz CDU via an umbilical containing MV cores and fibre optics
- temporary diesel storage and diesel generators (i.e. for power use prior to start-up of the HVSC)
- permanent diesel storage and diesel generator for back-up power (e.g. during emergencies)
- an electrical crane.

Power and communications are transmitted from BWI via a HVSC (Section 3.2.2).

The FCS is not a hydrocarbon facility, and as such hydrocarbons will not flow to or from the FCS, or be processed onboard the FCS.

Sewage (macerated, but untreated) and grey water may be discharged while the FCS is attended during pre-commissioning, commissioning, and start-up (Section 3.3.1), as well as during any campaign maintenance (Section 3.4). Any other discharges, such as deck integrated fire fighting system (DIFFS) water and foam, or deck wash-water will drain direct to the ocean.

Once installed, a 500 m petroleum safety zone (under the OPGGS Act) will be requested for the FCS, which will remain in place while the FCS is within the offshore area.

3.2.1.1 Pre-installation survey

A pre-installation survey of the FCS mooring locations will be undertaken to confirm the bathymetric profile and identify any debris for removal.

If a significant obstruction is encountered at the proposed mooring locations, these may be amended around the obstruction if practicable (but still within the OA as described in this EP).

The pre-installation survey may involve visual inspections and/or use of acoustic survey techniques (such as multibeam echo sounder [MBES], side scan sonar [SSS] etc.) via an ROV. MBES use multiple acoustic signals to detect the seabed

to measure bathymetry and water depth. SSS uses acoustic pulses that are reflected off the sea floor to create an image of seabed topography and differences in seabed texture.

3.2.1.2 Metocean data

Wave rider buoys equipped with metocean data acquisition, processing, and transmission systems may also be deployed to support installation activities. This equipment will be retrieved following the completion of installation activities under this EP.

3.2.1.3 Acoustic positioning

An array of long baseline (LBL) transponders that provide accurate positioning information may be installed on the seabed (as required) to support FCS mooring installation activities.

LBL systems work by emitting short pulses of medium to high frequency sound. Transmissions are not continuous but consist of short 'chirps' when active and do not emit any sound when on standby.

This equipment will be retrieved following the completion of installation activities under this EP.

3.2.1.4 Suction piles

The FCS will be permanently moored in place with a polyester and chain mooring system fastened to suction piles.

Twelve suction piles will be installed from a construction vessel with heavy lift capability. The estimated footprint of each suction pile is ~50 m^2. Installation of the suction piles is expected to occur at least 6 months prior to FCS hook-up to allow for settlement / consolidation of the piles in-line with design requirements.

If there is any rejection of the piles during the suction aided penetration process, the affected suction pile may be extracted and re-installed at an adjacent contingency location.

Suction pile mooring installation is expected to take ~ 4 weeks.

3.2.1.5 Mooring lines

Mooring lines will be clustered in groups; four clusters with three mooring lines in each (i.e. 12 mooring lines in total). Each mooring line consists of a platform top chain, connection chain, multiple polyester rope segments, multiple bottom chain segments and associated mooring connectors connecting the segments. The mooring system is secured to the seafloor with suction piles (Section 3.2.1.4).

Mooring line installation may occur either at the same time as the suction piles or at another time prior to the arrival of the FCS to the field. If they are installed with the suction piles, the mooring lines will be wet-stored on the seabed until required for hook-up to the FCS. The wet stored mooring lines may require temporary stabilisation There may also be a requirement for deployment of additional temporary stabilisation to assist with achieving the required mooring line lay route. All stabilisation will be removed during hook-up operations.

3.2.1.6 FCS

The FCS has a semi-submersible hull comprising four columns and a ring pontoon.

The FCS will be wet towed to location and mooring lines will be connected and tensioned. The tensioning system consists of four temporary movable chain jacks with underwater fairlead chain stoppers, with one jack and one associated hydraulic power unit at each column.

The FCS will be ballasted to operational draft prior to the commencement of wet tow; however, ballast water exchange may be required once the FCS is on location within the OA.

Installation of the FCS (including mooring lines) is expected to take ~8 weeks. Installation activities will be supported by tug vessels, an installation vessel, and an accommodation support vessel (ASV) with a walk-to-work (WTW) link to the FCS.

3.2.2 High voltage submarine cable

The HVSC contains three high voltage (~115 kV) electrical cores and three fiber-optic elements. The HVSC has steel armour wire with a HDPE outer sheath; with an outer diameter of ~200 mm. Within scope of this EP, the HVSC extends ~130 km between the State waters boundary (~25 m water depth) to the FCS (~1,290 m water depth).

The HVSC will be installed to the south of, and broadly parallel to, the proposed additional Gorgon umbilical, at a nominal separation distance of ~35 m. The route crosses over the East Spar pipeline (Section 3.2.2.1) and continues in a north-westerly direction past the inner and outer reef regions which are characterized by higher relief cemented features. Once the route is beyond ~60 m water depth, the seabed becomes relatively flat and featureless and minimal deviations are necessary. At ~72 m water depth, the route crosses the Gorgon pipeline, and thereafter continues in a north-northwesterly direction broadly in parallel to the existing Jansz umbilical until it reaches the FCS location.

3.2.2.1 Shallow water crossing

The route for the HVSC crosses eight existing and one proposed pipelines or umbilicals (Table 3-2). Shallow water crossings will be constructed with either concrete mattresses, concrete bridges, modular protection assemblies attached to the cable, and/or grout bags around this existing infrastructure.

Installation of the shallow water crossings is expected to take ~3–4 weeks using a light construction vessel (LCV). An ROV may be used by the vessel during installation for visual inspections and/or placement assistance.

Table 3-2: JHVSC route crossings

Name	Easting^	Northing^	Kilometre point (KP)*	Water depth (m LAT)#
East Spar pipeline	327 926	7 713 841	120.9	~26
Proposed additional Gorgon umbilical	303 248	7 723 255	94.38	~72
Existing Gorgon umbilical	303 239	7 723 292	94.33	~72

Name	Easting^	Northing^	Kilometre point (KP)*	Water depth (m LAT)#
Gorgon production trunkline	303 163	7 723 611	94.0	~72
Gorgon MEG pipeline	303 138	7 723 714	93.9	~72
Gorgon utility pipeline	303 125	7 723 770	93.83	~72
Halyard umbilical	296 944	7 732 028	83.4	~83
Halyard replacement umbilical (RU-1)	297 072	7 731 824	83.7	~83
Wheatstone trunkline	289 019	7 744 351	68.7	~111

^ *Coordinates provided in GDA94 for nominal locations to nearest metre.*
** For the HVSC KP 0 is taken from the FCS End Riser Interface point. The offshore HDD exit is at ~ KP 128.*

LAT = Lowest Astronomical Tide

3.2.2.2 Pre-lay survey

A pre-lay survey of the HVSC route (or selected parts of the route) may be undertaken prior to cable lay commencing to confirm the bathymetric profile and identify any debris.

If a significant obstruction is encountered along the HVSC route, the alignment may be amended around the obstruction if practicable (but still within the OA as described in this EP).

The pre-lay survey may involve visual inspection and/or use of acoustic survey techniques (such as MBES, SSS etc.) via an ROV.

3.2.2.3 Cable lay

The HVSC will be laid directly on the seabed by the cable lay vessel (CLV). Touch down monitoring via an ROV will be used throughout the cable lay. The HVSC may be installed either toward or from the FCS location.

While not planned, if operational or technical issues occur for works associated with the State waters and onshore cable installation scope (Ref. 5), a contingency allowance for temporary wet storage of ~5 km of the HVSC at the State water boundary is being carried within this EP. This contingency lay-down would likely occur by forming a loop along the route seaward of the State waters boundary, within the OA. Similarly, if the FCS is delayed, whilst not planned, the HVSC would be laid in a ~2 km temporary loop near the FCS location, outside the mooring laydown area and the planned cable route. The HVSC end would then be recovered and tied into the FCS utilising a different construction vessel following FCS mooring hookup.

If adverse weather beyond the CLVs operation limits is encountered, normal cable laying will be stopped. The vessel will head towards the weather and slowly pay out the HVSC to hinder fatigue damage. This has the potential to result in the laying of the cable outside of the planned route; however, it is expected that this could still occur within the OA. Once adverse weather conditions have passed, the cable will be recovered to the vessel to the point where it deviated from the lay route. At this point the CLV will restart lay along the planned route and complete installation.

Installation of the HVSC and associated activities (including pre- and post-lay surveys [Sections 3.2.2.2 and 3.2.2.8]) is expected to take ~4–5 weeks; of which the expected laying duration is ~2–3 weeks.

3.2.2.4 Secondary stabilisation (trenching)

The HSVC will be stabilised by trenching (via water jetting) to a target burial depth of ~1 m (to top of cable), between ~KP 70.6 and ~KP 99.6. Where the HVSC route occurs over rock outcrops, trenching via jetting is not expected to achieve target burial depth. In these areas rock stabilization and/or concrete mattresses may be used.

Trenching will be undertaken by the CLVs/LCVs onboard jetting system. Trenching stabilisation is expected to take ~2–3 weeks.

3.2.2.5 As-trenched survey

The as-trenched survey may be conducted concurrently with trenching activities (Section 3.2.2.4) or as a separate survey pass using the ROV. A cable tracking survey sensor, acoustic survey equipment (such as MBES or SSS) and multiple cameras will be utilised on the jetting system and/or the ROV to complete the as-trenched survey of the HVSC. An electrical voltage will be passed through the HVSC to assist cable depth sensing in a process called “toning”. A tone generator will be located onshore and a temporary cable may be deployed in State Waters to establish a circuit (out of the scope of this EP).

3.2.2.6 Secondary stabilisation (rock dumping)

Rock dumping is planned between the State waters boundary and ~KP 99.6, and may also be used at the shallow water crossings (Section 3.2.2.1) and other areas that were unable to be stabilised via trenching (Section 3.2.2.4). Concrete mattresses may also be used at the crossings for stabilisation as required.

The nearshore rock berms are expected to have a height above the seabed of ~1.5 m and width of ~9 m. The offshore rock berms for pipeline and umbilical crossings are estimated at ~3 m height and ~16 m width.

A pre- and post-rock dumping survey will be undertaken; this may involve visual inspection and acoustic survey techniques (such as MBES) via an ROV. The MBES on the ROV will also be used during the rock installation for monitoring purposes.

Rock-dumping stabilisation is expected to take ~10–12 weeks using a specialised subsea rock installation vessel, noting that this duration accounts for multiple trips to and from site (with infield activities within the OA typically only lasting for ~2 days at a time).

On fall-pipe vessels, the rocks are loaded into a pipe running through the water column (‘fall-pipe’) to contain the rock and to control the rock placement footprint. The quantity of rocks placed is controlled by varying the speed of the conveyor belt used to transport the rocks from the vessel into the fall-pipe and the tracking speed of the vessel distributing the rocks over the HVSC. The rock installation vessel may make several passes over the HVSC to achieve the desired berm profile.

In shallower water depths, side-cast vessels may be used for rock placement. On the side-cast vessel, the rocks are loaded onto the deck holds. Each vessel typically has a mechanical system that releases the rocks over the side of the

vessel, above the waterline. On site, the vessel will be positioned with the side of the vessel parallel to the HVSC to be covered. The rocks will be released from a single point over the side of the vessel and will freefall to the seabed. The quantity of rocks placed is controlled by the amount pushed over the side at any one time. In between drops, the vessel will be repositioned at the next section of HVSC to be covered.

3.2.2.7 Hook-up to FCS

The HVSC will be tied into the FCS in a “Lazy-Wave” formation with buoyancy modules. The HVSC will be hauled into an I-Tube on the FCS using a pull-in winch located on the FCS. The HVSC will be transferred from the CLV (or other construction vessel) via a handshake to the pull-in winch. After pull-through, the HVSC will be jointed and terminated (spliced) to the FCS cable. Offshore hook-up to the FCS is expected to take ~1–2 weeks.

3.2.2.8 Post-lay survey

A post-lay survey may be conducted as required. Similar to the pre-lay survey (Section 3.2.2.2), this may involve visual inspection and acoustic survey techniques (such as MBES or SSS) via an ROV.

3.2.3 Subsea compression station and subsea compression manifold station

The SCSt comprises multiple equipment modules positioned onto a module support frame (MSF), which rests on three foundation mudmats. Each of the modules are tied together via sliding spools. Power, control, and preservation is handled by electrical flying leads (EFLs), optical flying leads (OFLs) and hydraulic flying leads (HFLs).

The SCSt will be installed to separate, compress, and pump the production fluids. The SCSt functionality includes:

- inlet gas/liquid separation and cooling
- gas compression and aftercooling
- liquids pumping and export
- utilities including controls, electrical transformers, MEG and barrier fluid handling
- foundation and support structures.

The SCMS is a simple (no control system) manifold located between the SCSt and existing Jansz infrastructure The SCMS is based on components from the GFP MPTS. The SCMS contains piping, EFLs, corrosion probe sensor, structural steel, connection systems and ROV operable valves.

The SCMS functionality includes provision for:

- pigging of the existing Jansz pipeline, MEG pipeline, and utility pipeline
- connection of the SCSt production import and export headers to the existing Jansz MPTS
- connection of the SCSt MEG and utility headers to the existing Jansz MPTS
- connection points for potential future tie-ins
- manifold and subsea slug catcher.

The SCSt and SCMS will be in water depths of ~1,345 m.

The campaign incorporating the installation of the mudmats and foundations, SCMS, and infield crossings is estimated at ~8 weeks.

The campaign incorporating the installation of the SCSt process modules, sliding and seabed spools, infield crossings, BFFL, and MV umbilicals (between FCS and the SCSt), and pre-commissioning of the SCSt is estimated at ~21 weeks.

3.2.3.1 Pre-installation survey

A pre-installation survey will be undertaken to confirm the bathymetric profile and identify any debris for removal. The pre-installation survey may involve visual inspection and/or use of acoustic survey techniques (such as MBES or SSS) via an ROV.

3.2.3.2 Acoustic positioning

An array of long baseline (LBL) transponders that provide accurate positioning information may be installed on the seabed (as required) to support subsea structure installation activities.

LBL systems work by emitting short pulses of medium to high frequency sound. Transmissions are not continuous but consist of short ‘chirps’ when active and do not emit any sound when on standby.

This equipment will be retrieved following the completion of installation activities under this EP.

3.2.3.3 Mudmats and foundations

The foundation of the SCSt is made up of three mudmats and the MSF. Other separate mudmat foundations will also be installed for the SCMS, the SCSt wet parking structure, and an umbilical termination assembly (UTA). An estimated <0.01 km^2 seabed footprint will be required during mudmats and foundations installation.

Installation of the mudmats and foundations will be undertaken from a construction vessel with heavy lift capability.

The mudmats are designed to be self-penetrating and will not require any form of post landing intervention. The MSF will be lifted from the vessel and lowered onto the mudmats. Initial guiding is done by guidepost mounted on the mudmats and fine alignment is done by a pin and knife system. If required, shims will be used to compensate for level variations between the different support foundations.

3.2.3.4 SCSt process modules and SCMS

Process modules to be installed onto the SCSt MSF include:

- compressor interface module (CIM)
- compressor transformers, and compressor transformer umbilical termination assemblies (UTAs)
- pump and control UTAs
- control power distribution units (CPDU)
- CPDU transformers
- pump modules

- scrubber module
- inlet cooler module
- compressor modules
- discharge cooler module.

Each module will be lifted from the vessel and lowered onto the MSF. All modules will use a common guiding/landing philosophy. Initial guiding will be performed using temporary guideposts. Fine alignment will be handled by a pin and knife system to handle both horizontal position and rotation.

The SCMS will be installed using a similar method onto its manifold and foundation supporting structure.

Prior to installation the process modules (except the pump modules) are preserved with nitrogen to avoid air ingress; the pump modules are installed filled with barrier fluid. Piping between closed isolation valves towards hubs, sliding spools, and seabed spools are MEG filled prior to installation.

A UTA (located near the existing Jansz CDU) will also be installed onto its mudmat.

3.2.3.5 Sliding spools

Process modules are connected using sliding spools. The sliding spool is installed with the sliding arrangement attached. Sliding spools are MEG filled prior to installation. MEG contained within the spools may be partly or totally displaced with seawater when protection caps are removed. Upon completion of the installation, the sliding mechanism can be released and spool stroked in place. All tie-ins are performed by ROV operated tie-in tools.

All sliding spools are planned to be installed as separate units, but some may be installed as part of the connected module if they do not exceed the weight limits. As such, sliding spools can either be installed with each module, or at the end when all modules are installed.

3.2.3.6 Flying leads

There will be four types of flying leads:

- EFLs which have combinations of controls power and controls signals
- power flying leads (PFLs) which will have voltage or current above what the EFL can handle
- OFLs which will distribute the fiber communication from the control modules to the fibers in the dynamic umbilicals
- HFLs which will be used for barrier fluid for the pump module.

Over 250 flying leads will be installed. The majority of flying leads will be pre-installed, pre-routed and integrated on SCSt.

Two EFLs will be installed between the Jansz MPTS and Jansz export tie-in spool, and one EFL will be installed between the SCSt and SCMS. One BFFL will be installed between the existing Jansz CDU and the SCSt.

For the MV power and communications umbilical between the FCS and the existing Jansz CDU, two EFLs and up to four OFLs will be installed between the UTA and the existing Jansz CDU infrastructure.

3.2.3.7 Seabed spools

Four seabed spools will be installed between the SCSt and SCMS, and five between the SCMS and Jansz MPTS. Installation activities may include: pre- and post- installation surveys (typically via ROV). Spools will be lowered to the seabed from the vessel, using guide posts and ROV to move into position on the seabed.

Seabed spools are MEG filled prior to installation. MEG contained within the spools may be partly or totally displaced with seawater when protection caps are removed.

During tie-in of the spools to the Jansz MPTS removal of caps may result in in the release of a small volume of production fluids.

Installation and tie-in of seabed spools is expected to take ~8 weeks.

3.2.3.8 Infield crossings

The route for the infield MV umbilicals crosses existing Jansz umbilicals and pipelines. Infield crossings will be constructed with concrete mattresses and/or grout bags around this existing infrastructure. Installation activities may include pre- and post- installation surveys (typically via ROV).

3.2.3.9 Infield MV umbilicals

Two subsea pump (SPU) and three subsea compressor (SCU) MV power and communication umbilicals will be installed between the FCS and SCSt. A single MV power and communications umbilical will also be installed between the FCS and the existing Jansz CDU.

Installation activities may include pre- and post- installation surveys (typically via ROV) and post-lay stabilisation (concrete mattresses, grout bags, or similar). The umbilical routes between the FCS and SCSt are schematically represented in (Figure 3-2).

The MV umbilicals will be tied into the FCS in a “Lazy-Wave” formation with buoyancy modules. The MV umbilicals will be hauled into an I-Tube on the FCS using a pull-in winch located on the FCS. The MV umbilical will be transferred from the CLV (or other construction vessel) via a handshake to the pull-in winch. After pull-through, the MV umbilicals will be jointed and terminated (spliced) to the FCS cable.

3.2.3.10 Retrofit insulation

As part of the J-IC subsea installation, the following activities associated with existing Jansz subsea infrastructure will also be undertaken:

- cleaning (and excavation if required) of Jansz export spool
- decommissioning of the existing Ring Pair Corrosion Monitor (RPCM) and removal of two EFLs
- installation of new insulation clamps to required sections of the Jansz export spool
- installation of corrosion monitoring equipment, temperature monitoring sensors, junction box, and associated EFLs.

These activities are expected to be undertaken by a construction vessel and take ~4 weeks.

3.2.3.11 Post-installation survey

Post-installation surveys will be undertaken at the end of each set of activities (if required). Surveys may involve visual and/or acoustic (such as MBES or SSS) techniques.

3.3 Pre-commissioning

Pre-commissioning is a group of energized and static tests that constitute verification that the equipment or component is tested and functioning in accordance with the design and ready for commissioning.

3.3.1 FCS pre-commissioning, commissioning, and start-up

In order to pre-commission the SCSt, the FCS, HVSC and MV umbilicals need to be commissioned and started up.

Prior to offshore pre-commissioning and commissioning, activities include the sequential de-preservation and restart of the FCS utility systems. Then, the main activities include transformer and other equipment checks, filling transformers with oil. Testing for the FCS also includes a full function test of the on-board DIFFS; and as described in Section 3.2.1 any discharges from this test will drain direct to the ocean.

Once the HVSC has been jointed and terminated to the FCS cable (see Section 3.2.2.7), testing of HVSC electrical cores will be undertaken. This testing generates an electromagnetic field at nominal operational voltage for a cumulative duration of ~24 hours. The HVSC optic connections will also be tested.

Temporary power (diesel generators) will be utilised on the FCS until the HVSC is commissioned and started-up. Once the HVSC has completed testing, this cable will remain operational and will supply power to the FCS. The temporary diesel generators will be shut-down and removed from the FCS at the completion of commissioning and start-up activities.

Once the HVSC is operational, the MV umbilcals (Section 3.2.3.9) will also undergo testing at nominal operational voltage. The optic connections will also be tested. Once the MV umbilicals have completed testing, these umbilicals will remain operational and will supply power and communications from the FCS to the SCSt.

The pre-commissioning, commissioning, and start-up process is expected to take ~8 weeks for the FCS. Pre-commissioning, commissioning, and start-up activities may be supported by an ASV with a WTW link to the FCS. If an ASV is not selected for use, crew transfers will be via helicopter and the temporary accommodation on the FCS will be used.

3.3.2 SCSt pre-commissioning

The main pre-commissioning activities for the SCSt include:

- nitrogen pressurisation
- barrier testing
- seawater displacement and leak testing of spools.

Other activities may include ROV valve positioning, control system energisation, communications tuning, and actuated valve stroking to make the system ready for commissioning.

Pre-commissioning for the SCSt will begin after all the modules have been installed, the umbilicals have been installed and tested, and the flying leads have been installed leading to mechanical completion.

Pre commissioning is expected to take ~12 weeks for the SCSt.

3.3.2.1 Nitrogen pressurisation of process modules

Prior to installation the process modules (except the pump modules) are preserved with nitrogen to avoid air ingress; the pump modules are installed filled with barrier fluid. Once lowered onto the MSF, the nitrogen-filled module sections are pressurised further to prevent seawater ingress. Nitrogen will be introduced into the piping of each module via a coiled tubing or composite downline deployed from a vessel.

3.3.2.2 Barrier testing

Barrier testing or leak testing of infrastructure (such as process modules, internal pipework, BFFL) will be undertaken. Barrier testing ensures the valves and caps hold pressure and demonstrates the integrity of the barriers. Testing will be done using either the downline from the vessel or a ROV-mounted fluid injection skid. Barrier testing may result in small volumes of MEG or barrier fluid being discharged into the environment.

3.3.2.3 Seawater displacement and leak testing for spools

Depending on layout, MEG contained within the module piping and spools will be partly or totally displaced with seawater when protection caps are removed.

After the sliding and seabed spools are connected, dyed MEG will be injected through a service hub on the CIM, and the seawater/MEG will be displaced to the marine environment through the subsea flushing and pressure testing unit.

After seawater displacement, spool hub connections, isolation valves used as temporary (single) and permanent (double) barriers, and pressure caps on service hubs will be leak tested by increasing MEG pressure within the spool. The subsea flushing and pressure testing unit shall externally monitor pressures and visual inspections (via ROV) will be conducted to detect leakage of newly made connections.

Some pump barrier fluid will be discharged to the marine environment during seawater displacement of the pump module spools.

3.3.2.4 Isolation

Isolation of the J-IC compression system will be in place to provide a barrier to the existing Jansz hydrocarbon production system. Isolation is maintained through the existing subsea infrastructure barriers.

3.4 Inspection, maintenance, and repair

Section 572(2) of the OPGGS Act requires a titleholder to maintain in good condition and repair all structures, equipment, and other property (hereafter collectively referred to as ‘property’) that is within the title area and is used in connection with the operations authorised by the title.

IMR of subsea infrastructure may be undertaken to ensure that the asset integrity is being maintained to acceptable standards while this EP is in-force. IMR activities may occur at any time once the infrastructure is installed, and before

commissioning, start-up, and operation of the SCSt, SCMS, and associated subsea infrastructure commences (i.e. activities that will be within the scope of the revised *Gorgon and Jansz Feed Gas Pipeline and Wells Operations (Commonwealth Waters) Environment Plan* [Ref. 6]). IMR activities (including inspections) are contingent activities that are not planned to occur as part of installation or pre-commissioning activities, however they have been provided for in this EP in the unlikely event that they are required.

3.4.1 Inspections

Inspections provide assurance that asset integrity is being maintained and assets are being operated according to design. They also proactively identify maintenance or repair activities that may be required. Inspection generally involves the use of a vessel travelling along the route, or at the site, of the subsea infrastructure with an AUV or ROV (or in some cases, divers).

Inspections will be undertaken with a frequency determined using a risk-based approach. Events such as cyclones or seismic activity that could affect the subsea infrastructure may also trigger inspections. Inspection techniques may include:

- visual inspections—may involve ROVs or AUVs deployed from a vessel; may also involve divers and a dive support vessel
- marine acoustic surveys—may include the use of SSS and MBES, and are typically done from a vessel using towed acoustic instruments, ROVs, or AUVs
- non-destructive testing—may include ultrasonic testing and electrical resistance testing, which are typically undertaken using an ROV or AUV deployed from a vessel
- cathodic protection measurements—are completed using ROVs or AUVs and conductivity probes or by making visual assessments of anode wastage
- fatigue monitoring/inspection—where required, fatigue monitoring equipment will be installed, inspected, and/or retrieved by a ROV deployed from a vessel
- fatigue monitoring/inspection—where required, fatigue monitoring equipment will be installed, inspected, and/or retrieved by a ROV deployed from a vessel.

3.4.2 Maintenance and repairs

Maintenance and repair activities, including equipment change-out, will be conducted during the operational life of the infrastructure to:

- prevent deterioration and/or failure of infrastructure
- maintain reliability and performance of infrastructure
- ensure infrastructure is adequately maintained to enable the potential for future removal.

The exact frequency of maintenance and repair activities will be dependent on the results of inspections. Maintenance and minor repairs (and any associated testing) may include, but are not limited to:

- module/component change-out (including back testing of seals)—may include, but is not limited to, the replacement of subsea infrastructure such as flying leads or equipment modules
- installation of foundations and/or mudmats to support equipment and facilitate maintenance and repair activities

- stabilisation/span correction—may involve activities such as installation of grout bags or concrete mattresses
- subsea excavation—excavation alongside infrastructure may be required to gain access to, or enable minor repairs of, infrastructure
- maintenance of cathodic protection systems / additional anodes—cathodic protection equipment may be added to, or placed adjacent to, production pipelines using a vessel and ROV spread
- removal of marine biological growth and calcareous deposits—may be undertaken by water jetting from an ROV or by divers, generally with potable water or sea water, although items exhibiting calcareous deposit accumulation may require acid washing or soaking (typically using water-soluble sulfamic acid or similar)
  - this task generally precedes pigging or equipment change-out activities, where operation of or access to the equipment is hindered by marine growth or calcareous deposits and as such is estimated to have the same frequency as these activities
- MV umbilical and HVSC repair—may involve activities such as pre- and post-surveys, removal and reinstatement of stabilisation, removal, installation, and testing of umbilical replacement.

3.5 Field support

3.5.1 Vessel operations

The activities covered by this EP, will be supported by various vessel types, including (but not limited to):

- LCV
- CLV
- rock installation vessel
- heavy construction vessel
- accommodation support vessel
- anchor handling tugs
- IMR vessel
- general support vessels.

Vessels will typically use dynamic positioning (DP) to maintain position when stationary. Vessel anchoring within the OA is not intended for planned activities but may occur during emergencies (if required).

Up to ten vessels may be on site within the OA at any time, noting that vessel presence will vary during different stages of the activity. A 500 m safety exclusion zone around vessels undertaking installation activities will be requested for the duration of activities.

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 bunker at sea if required. Bunkering for transfer of diesel from a supply vessel to the temporary storage on the FCS will be regularly required (prior to the HVSC being started up). Bunkering for transfer of

diesel to storage on the FCS following start-up of the HVSC is likely to be infrequent.

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

3.5.2 Helicopters

Where required, helicopters may be used for crew transfers or freight/goods transfers to/from the vessels undertaking longer duration campaigns. Helicopters will typically operate from Barrow Island or Karratha.

During pre-commissioning, commissioning, and start-up for the FCS, daily helicopter flights for personnel transfer may be required for the duration of this activity (~8 weeks)[4].

3.5.3 ROVs and AUVs

Underwater ROVs or AUVs may be deployed and controlled from the vessels, to support or undertake:

- visual observations or surveys
- positioning of subsea infrastructure
- installing, connecting, or testing of subsea infrastructure
- marine growth removal
- IMR activities.

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.

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

[4] If an accommodation vessel is selected for use, daily personnel transfers via helicopter to the FCS may not be required.

4 description of the environment

4.1 Environment that may be affected

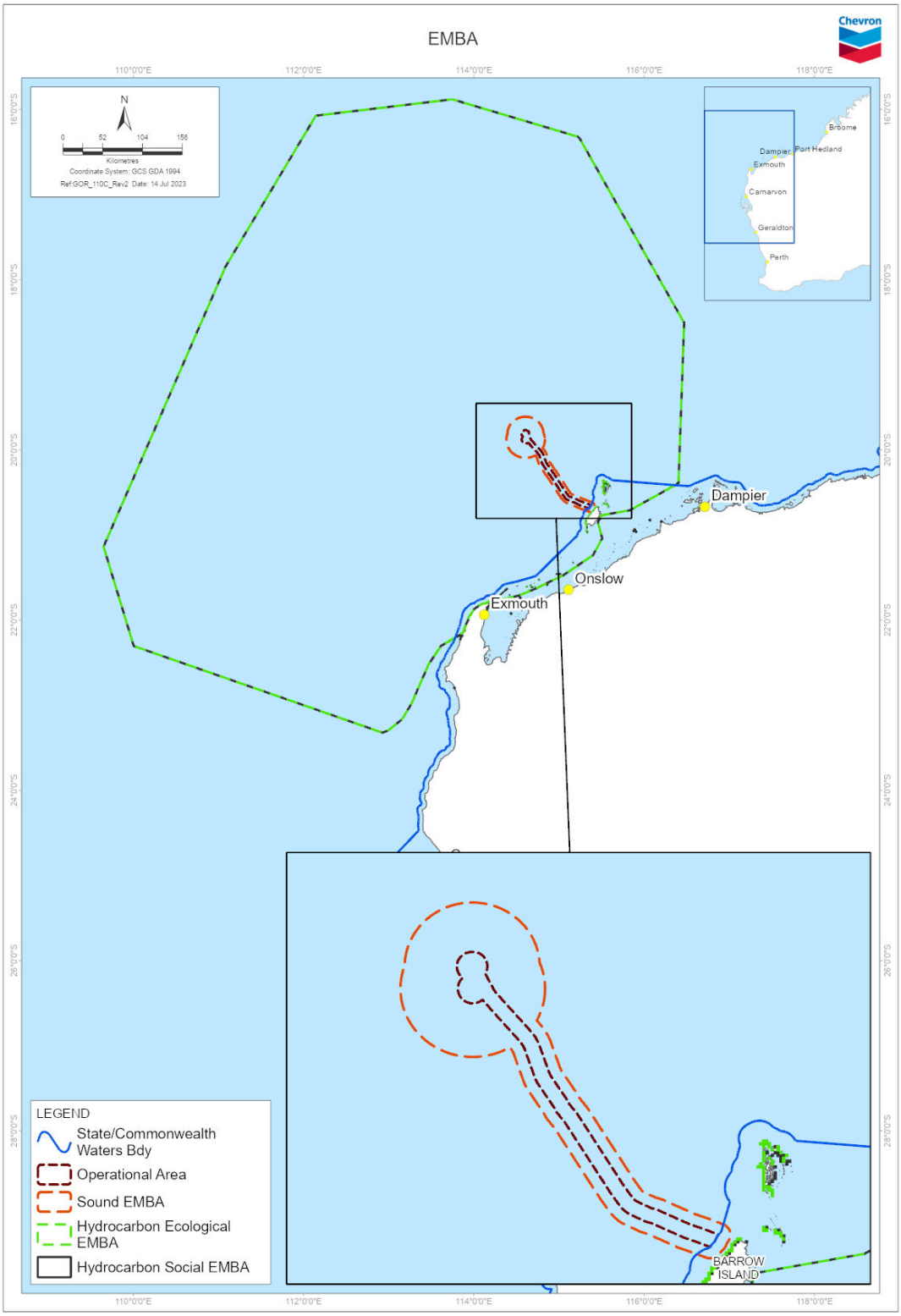
The environment that may be affected (EMBA) by the petroleum activity within scope of this EP has been defined as the area where a change to environmental receptors may potentially occur as a result of planned activities or unplanned events.

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 the 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 J-IC

EMBA sub-area	Description and purpose
OA	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 (Sections 7.6 and 7.7), and determined by the predicted spatial extent of acoustic exposure at the relevant thresholds.
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 7.16), and determined by the predicted spatial extent of hydrocarbon exposure at the relevant thresholds for surface, entrained, dissolved, and shoreline components (Table 7-14).
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 7.16), and determined by the predicted spatial extent of hydrocarbon exposure at the relevant thresholds for surface, entrained, dissolved, and shoreline components (Table 7-14). The 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.



Note: The Hydrocarbon EMBAs are shown as separate in-water (surface, entrained, dissolved) and shoreline components. Shorelines are only part of a Hydrocarbon EMBA where stochastic spill modelling predicts that shoreline loading above the relevant threshold occurs.

Figure 4-1: EMBA for J-IC installation and pre-commissioning

4.2 Matters 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. 52). Table 4-2 summarises the presence of relevant marine and/or coastal MNES within the EMBA; the full PMST reports[5] are included in appendix b.

It should be noted that the EPBC Act PMST is a general database that conservatively identifies areas in which protected species have the potential to occur.

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 important roles 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 by providing structurally complex and diverse habitat, refuge for vulnerable life stages and a varied and increased food supply (Ref. 161).

[5] 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. 87; Ref. 162). The high species richness is thought to be associated with the diversity of habitats available, such as limestone pavement, coral reefs, and pinnacles (Ref. 87). 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 4.3.1.1.

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. 163), the geomorphic features present within the EMBA are shown in Table 4-3. One of the pinnacle features identified within this dataset is Rankin Bank, a known bathymetric feature of regional significance, which occurs within the Hydrocarbon EMBAs (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			✓
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. 164). 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. 165).

Based on CSIRO's marine benthic substrate database (Ref. 166), the predominant seafloor sediment type within the OA and Sound EMBA is "calcareous gravel, sand and silt" with smaller coverage of "calcareous ooze" present in the deeper offshore areas around the existing Jansz CDU. In addition,

the Sound EMBA also intersects with “mud and calcareous clay” in the deeper offshore areas. Within the Hydrocarbon EMBAs several seafloor sediment types were identified: “calcareous gravel, sand and silt”, “calcareous ooze”, “mud and calcareous clay”, and “biosiliceous marl and calcareous clay”.

The Integrated Marine and Coastal Regionalisation of Australia (IMCRA) is a biogeographic regionalisation of oceanic waters within Australia’s EEZ (Ref. 167). The OA and Sound EMBA occur within the Northwest Province and Northwest Shelf Province provincial bioregion. The Hydrocarbon EMBAs also intersect with the Northwest Transition, Central Western Shelf Transition and Central Western Transition provincial bioregions. The geomorphology characteristics and biological communities for each of these bioregions, as described in *The North-west Marine Bioregional Plan: Bioregional Profile (*Ref. 162*),* are summarised in Table 4-4.

Listed threatened ecological communities (TECs) are a MNES under the EPBC Act, and a particular value and sensitivity under the OPGGS(E)R. There are no known TECs within the EMBA.

Table 4-4: Features of provincial bioregions

IMCRA Provincial Bioregion^	OA	Sound EMBA	Hydrocarbon Ecological and Social EMBA
Northwest Shelf Province	✓	✓	✓
Characteristics of the geomorphology and biological communities of the Northwest Shelf Province include: • bioregion occurs almost entirely on the continental shelf, except for a small area 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 Shoal which occurs in ~26–70 m water depth and is distinguished by highly fractured molluscan debris, coralline rubble and coarse carbonate sand – Leveque Rise (large plateau), which is 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 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 and Social 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—Muiron Islands and surrounding waters • ancient coastline at 125 m depth contour • Glomar Shoal. Of these features and areas within the Northwest Shelf Province, the ancient coastline at 125 m depth contour occurs within the OA, Sound EMBA and Hydrocarbon EMBAs. Refer to Section 4.3.6.1 for further descriptions of this feature.			
Northwest Province	✓	✓	✓
Characteristics of the geomorphology and biological communities of the Northwest Province include: • bioregion occurs entirely on the continental slope and is comprised of muddy sediments • distinguished by a number of topographic features, such as the Exmouth Plateau, terraces and canyons (including the Swan and Cape Range canyons), as well as deep holes and valleys on the inner slope (including the Montebello Trough) • the benthic shelf and slope communities of this bioregion comprise both tropical and temperate species with a north-south gradient • the continental slope between North West Cape and the Montebello Trough has been identified as one of the most diverse slope habitats of Australia • the Exmouth Plateau is also likely to be an important area for biodiversity as it provides an extended area offshore for communities adapted to depths of ~1,000 m • information available on sediments in the bioregion indicates: – benthic communities are likely to include filter feeders and other epifauna – soft-bottom environments are likely to support patchy distributions of mobile epibenthos, such as sea cucumbers, ophiuroids, echinoderms, polychaetes and sea pens – biological communities within canyons in the bioregion are poorly understood. Features and areas of ecological importance within the Northwest Province have been identified as: • Exmouth Plateau • canyons on the slope, including the Cape Range Canyon • demersal fish communities associated with the slope. Of these features and areas within the Northwest Province, the demersal fish communities associated with the slope occurs within the OA, Sound EMBA, and Hydrocarbon EMBAs. The Exmouth Plateau and canyons on the slope also occur within the Hydrocarbon EMBAs. Refer to Section 4.3.6.1 for further descriptions of these features.			
Northwest Transition			✓
Characteristics of the geomorphology and biological communities of the Northwest Transition include: • 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			

IMCRA Provincial Bioregion^	OA	Sound EMBA	Hydrocarbon Ecological and Social EMBA
• other topographic features within the bioregion include areas of rise, ridges, canyons and apron/fans • sediments of the slope are dominated by sands, whereas the sediments of the abyssal plain/deep ocean floor are dominated by muds • the bioregion also has reefs such as Mermaid, Clerke, and Imperieuse reefs, which are collectively known as the Rowley Shoals • the benthos of the deep ocean areas are likely to support meiofauna (e.g. nematodes), larger infauna (e.g. polychaete worms, isopods), and sparsely distributed epibenthic communities (e.g. sea pens) • mobile benthic species (e.g. deepwater sea cucumbers, crabs, polychaetes) are likely to be associated with the 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 slope. Of these features and areas within the Northwest Transition, the demersal fish communities associated with the slope occurs within the OA, Sound EMBA, and Hydrocarbon EMBAs. Refer to Section 4.3.6.1 for further descriptions of this feature.			
Central Western Shelf Transition			✓
Characteristics of the geomorphology and biological communities of the Central Western Shelf Transition include: • bioregion is located entirely on the continental shelf and 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[6] 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:			

[6] 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 and Social EMBA
• 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 4.5.2 for further descriptions of this feature.			
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 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 occurs within the Hydrocarbon EMBAs.			

^ *Source: Ref. 162.*

4.3.1.1 Operational Area

In addition to the broad marine habitat description provided for the EMBA, CAPL has conducted surveys within the Janzs-Io pipeline route to understand the nature and composition of habitat and seabed sediments. These surveys comprise geophysical surveys, visual ROV surveys, and seabed sampling.

Data from these surveys were interpreted to characterise the benthic substrate. The benthic substrate within the deeper waters of the OA predominantly comprise soft sediments (clays) (Figure 4-2). These transition to sands, clays, or gravels overlying subcropping cemented sediments in the shallower waters (Figure 4-2).

The benthic substrate within the OA from the State water boundary to water depths of ~50 m predominantly comprises bare sand (Figure 4-3). Sand was the

dominant substrate in most of the observations (~90%). Limestone pavement with a shallow sand veneer was the next most common substrate encountered, dominating the substrate in less than 10% of observations. Reef (low and high profile) was the dominant substrate in less than 5% of observations (Ref. 254).

Coastal and marine baseline and post-development studies undertaken by CAPL for the Feed Gas Pipeline (Ref. 256; Ref. 257) classified the habitat within State waters adjacent to the OA as 'soft sediment with sparse sessile taxa'. This habitat type was predominantly unvegetated sand, with patches of seagrass and macroalgae, and no associated sessile biota. Similar habitat is expected to extend within the shallower waters of the OA.

Further offshore in the gully region along the Jansz pipeline route in ~250 m water depth, previous ROV surveys have indicated that the seabed was found to be dominated by silty mud with little evidence of marine flora or fauna (Figure 4-4) (Ref. 255).

Based on ROV transects taken in the scarp region within water depths of 558–714 m, the most common benthic substrate comprised soft sediments—sand, silt, and mud (Ref. 255; Figure 4-5). These habitat types are widespread in the region and are not considered to be of regional significance due to their ubiquity and the sparseness of biota supported (Ref. 255). The steep scarp face was found to comprise mainly over-consolidated silt materials, mostly devoid of marine growth, with occasional sparse communities of benthic invertebrates including soft corals, bryozoans, and colonial ascidians (Figure 4-5). These over-consolidated silt sediments provide structural diversity to an otherwise flat benthos. They are of higher conservation significance than the soft sediment habitats found in the area as they are less widespread and support more abundant biota (Ref. 255). However, based on the high-resolution bathymetry data from the area (Ref. 255), these hard scarp features probably stretch at least 10 km to the north and 5 km the south of the Jansz pipeline.

Recent (2022) surveys of benthic habitat along parts of the Jansz pipeline route (Ref. 261) are consistent with previous surveys. The recent surveys showed the predominant benthic habitat was bare substrate, with either a smooth (mostly flat) or irregular (mostly flat with minor features) surface (Ref. 261). The only area identified as a high likelihood of biota being present was some patches over the scarp (Ref. 261).

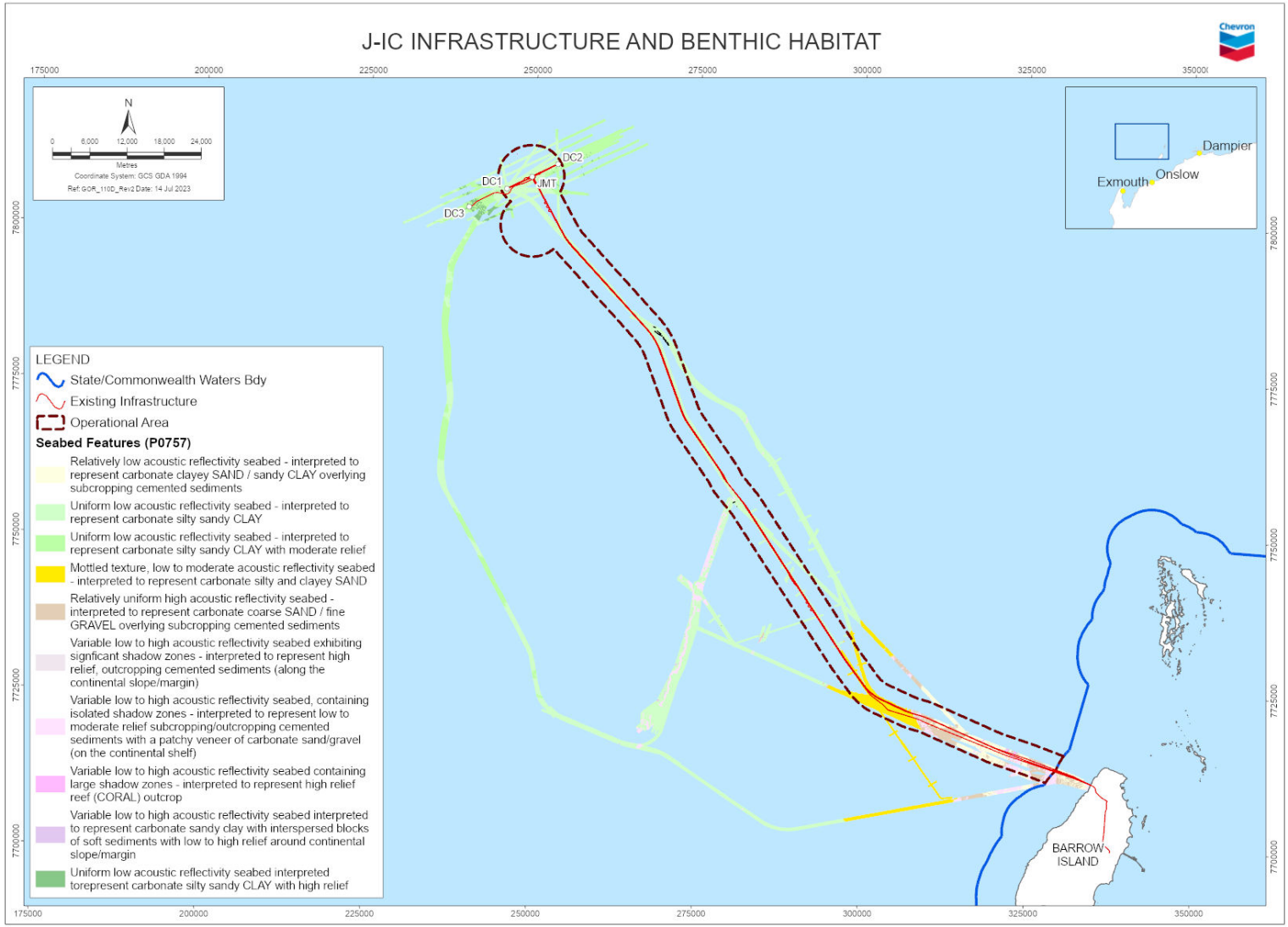


Figure 4-2: Benthic substrate in the vicinity of the existing Jansz Feed Gas Pipeline and field infrastructure

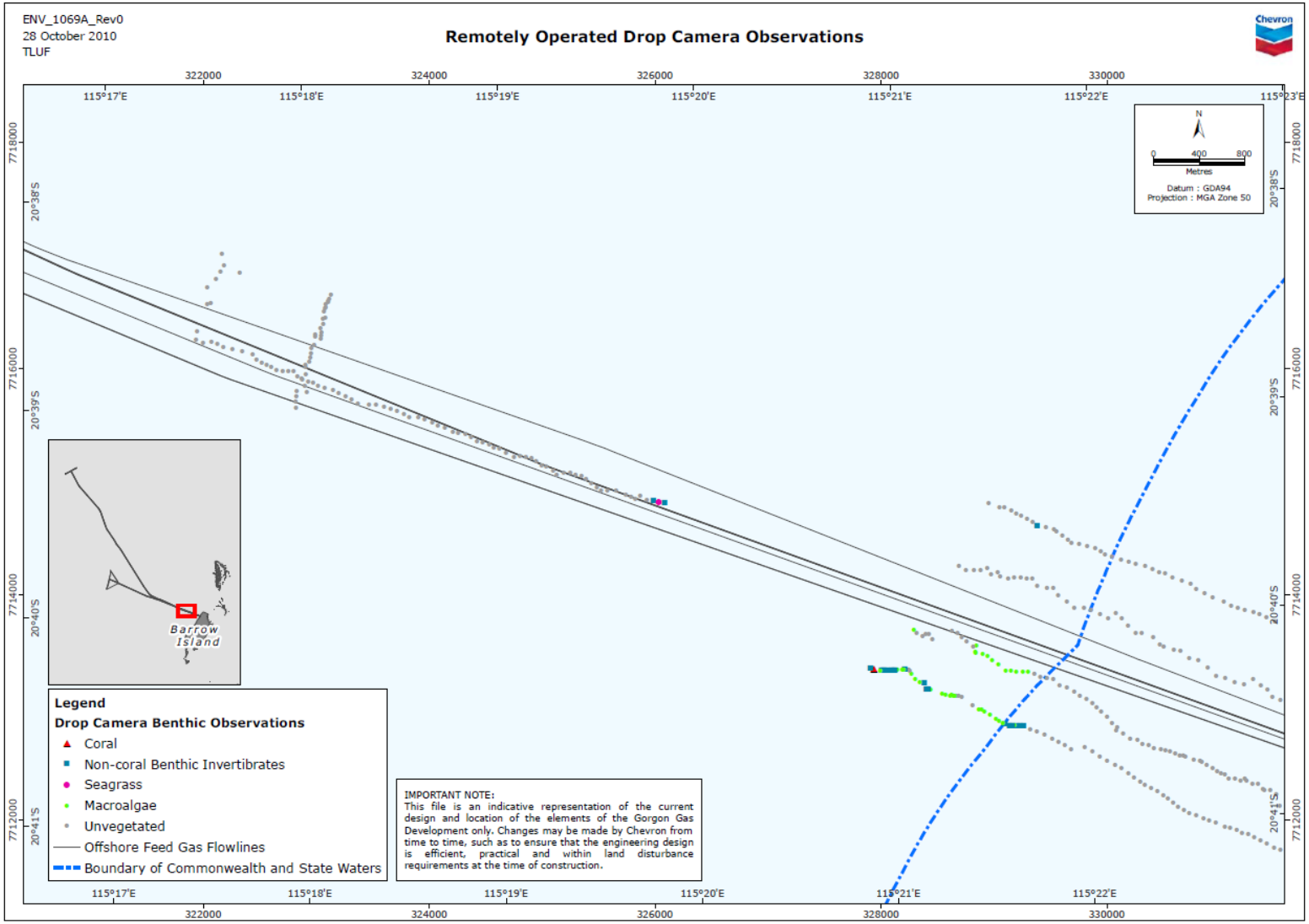
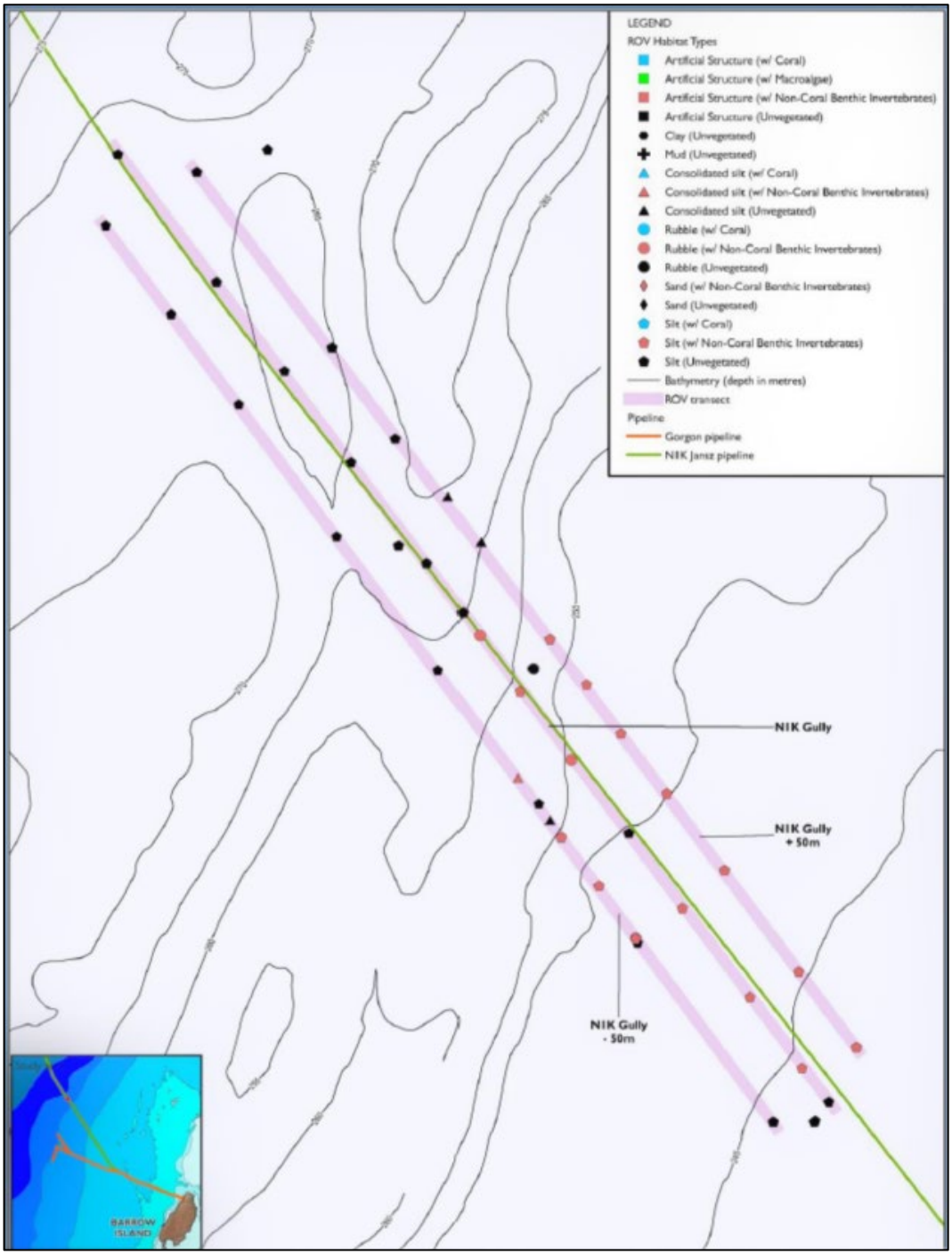
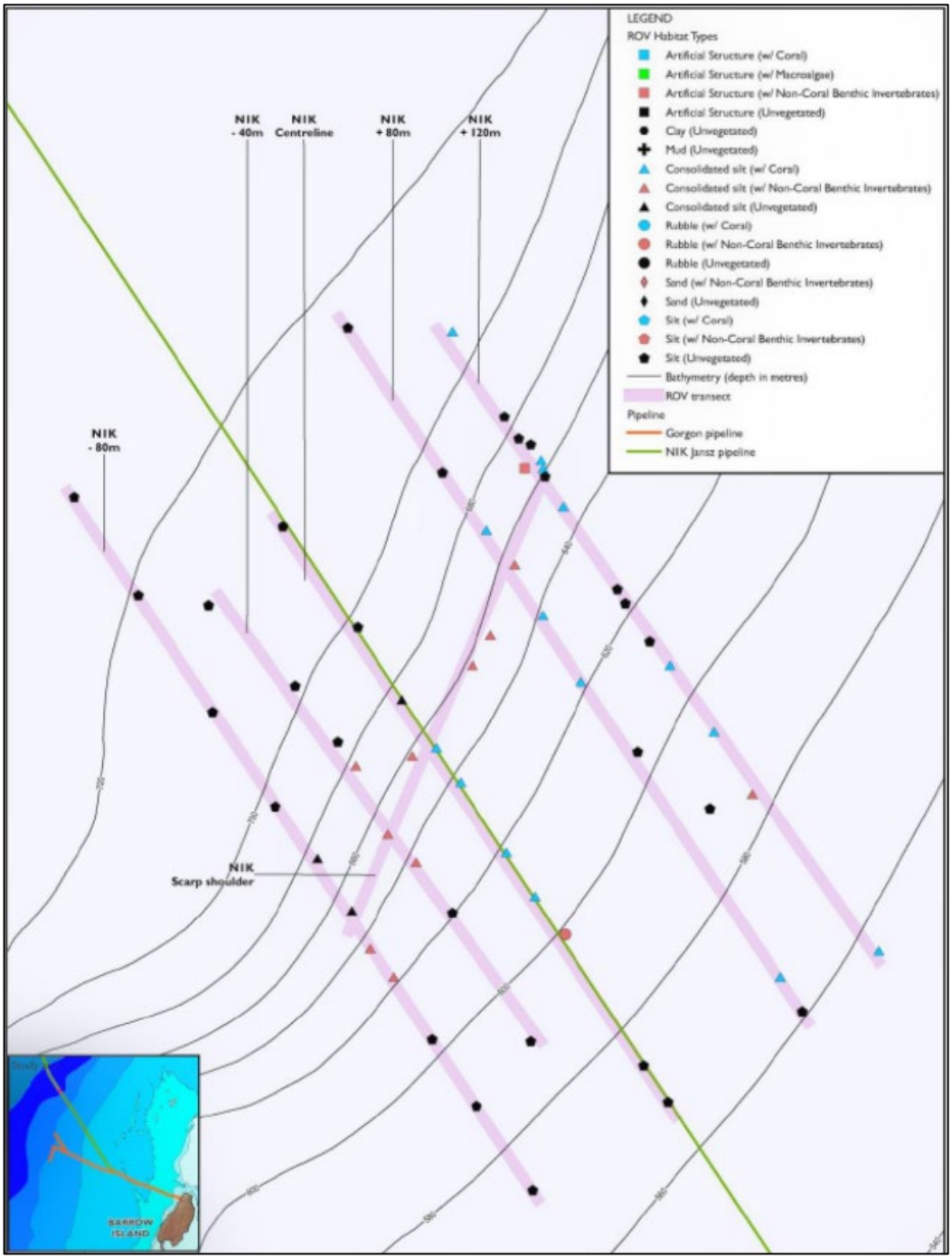


Figure 4-3: Benthic habitat along the Jansz Feed Gas Pipeline within the vicinity of the State waters boundary



Source: (Ref. 255)

Figure 4-4: Benthic habitat at the gully region along the Jansz Feed Gas Pipeline



Source: (Ref. 255)

Figure 4-5: Benthic habitat at the scarp region along the Jansz Feed Gas Pipeline

4.3.1.2 Rankin Bank

Rankin Bank is located ~100 km northeast of the OA. While Rankin Bank is not protected and is not a key ecological feature (KEF), it is a large, complex bathymetrical feature on the outer western shelf of the Pilbara region and represents habitats that are likely to play an important role in the productivity of the Pilbara region (Ref. 168). Rankin Bank consists of three submerged shoals delineated by the 50 m depth contour with water depths of ~18–30.5 m (Ref. 168). 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. 168). 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. 169). 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. 169). Other benthic taxa including soft corals and sponges were present in lower proportions at all depths (Ref. 169). The high cover of macroalgae and hard corals in shallower water depths are likely due to greater light penetration and lower sand cover (Ref. 169).

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. Similarly, to benthic communities (as described in Section 4.3.1), 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 interface with the coast. The Hydrocarbon EMBAs do interface with the coast (due to predicted shoreline loading associated with unplanned hydrocarbon release events; Table 4-1). The Hydrocarbon Ecological EMBA includes the west coasts of Barrow, Middle and Boodie islands, as well as parts of Montebello, Lowendal, Serrurier, Bessieres, and Flat islands. The Hydrocarbon Social EMBA includes the above coastal areas, as well as: parts of Passage Island, Steamboat Island, and Cape Preston; parts of the western and northern coasts of the North West Cape peninsula; and several of the Pilbara Inshore Islands (e.g. Muiron, Sunday, Fly, Tortoise, Thevenard, Airlie, Tortoise, Round and Table islands) (Figure 4-1). The coastal communities and habitats that may be present within the EMBA are summarised below.

Based on Smartline (Ref. 170), a spatial database containing geomorphic classifications for Australia's coasts, the types of shoreline present within the Hydrocarbon Ecological and Social EMBAs include rocky coasts and sandy beaches. 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. 171). Based on this dataset, areas of saltmarsh may be present on southwestern Barrow Island; and isolated areas of mangroves may be present on 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 as they occur in lagoons of offshore islands (Ref. 172). Coastal and marine baseline studies undertaken by CAPL (Ref. 213) identified that there are no mangrove stands on the west coast of Barrow Island, where the Hydrocarbon EMBAs intersect 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. 213, Ref. 246).

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. 52; appendix b), the threatened and/or migratory marine mammal species shown in Table 4-5: may be present within the EMBA. The full list of marine species identified from the PMST is provided in appendix b. Biologically important areas[7] (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[8] (Antarctic Minke Whale, Blue Whale, Bryde's Whale, Fin Whale, Humpback Whale, Sei Whale) and mid-frequency cetaceans[9] (Sperm Whale, Australian Humpback Dolphin, Australian Snubfin Dolphin, Killer Whale, Spotted Bottlenose Dolphin). High-frequency cetaceans[10] (e.g. Dwarf Sperm Whale, Pygmy Sperm Whale) were also identified within the PMST (Ref. 52; appendix b) 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 4-6:, except for Pygmy Blue and 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 cetacean species within the OA and Sound EMBA would be of a transitory nature.

CAPL deployed three acoustic loggers for a full year period in 2019 located at various sites and depths adjacent to the existing Jansz field infrastructure. Several species of cetaceans were identified, including Pygmy Blue, Antarctic Blue, Omura's, Bryde's, Dwarf Minke, Antarctic Minke, Fin, Humpback, Sei and Sperm whales. Small odontocetes (e.g. dolphins) were also detected (Ref. 232).

[7] Biologically important areas are spatially defined areas where aggregations of individuals of a species are known to display biologically important behaviour such as breeding, foraging, resting or migration.

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

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

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

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

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

Table 4-6: Presence of BIAs for marine mammals

Common Name	BIA Behaviour	Seasonal Presence^	OA	Sound EMBA	Hydrocarbon and Social Ecological EMBAs
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	✓	✓	✓
Pygmy Blue Whale	Foraging	(Not defined in database)			✓
	Migration	Northern migration (enter Perth canyon January to May; pass	✓	✓	✓

Common Name	BIA Behaviour	Seasonal Presence^	OA	Sound EMBA	Hydrocarbon and Social Ecological EMBAs
		Exmouth April to August; continue north to Indonesia) Southern migration (follow WA coastline from October to late December)			

^Source: Ref. 177

4.3.3.1.1 Humpback Whale

Humpback Whales migrate north annually (from June to October) between their feeding grounds in Antarctic waters and their calving grounds in Kimberley waters (Ref. 222). Northbound Humpback Whales tend to remain around the 200 m water depth contour, while southbound Humpback Whales tend to travel closer to Barrow Island and generally occur between 50 m and 200 m water depths (Ref. 222). The migration (north and south) BIA corridor extends from the coast to out to ~100 km offshore in the Kimberley and Pilbara regions; reducing to ~50 km offshore south of North West Cape (Figure 4-6).

The Humpback Whale breeding and calving grounds in the southern Kimberley region extend from Broome to the northern end of Camden Sound, particularly between Lacepede Islands and Camden Sound (Ref. 222). Breeding and calving occur in the region between mid-August and early-September (Ref. 222), followed by the start of the southern migration. Exmouth Gulf and Shark Bay are both important resting areas for migrating Humpback Whales, particularly for cow-calf pairs on the southern migration (Ref. 222). The southerly migration, from around the Lacepede Islands (north of Broome) extends parallel to the coast on approximately the 20–30 m depth contour (Ref. 222, Ref. 223). Southbound migration is more diffuse and irregular, lacking an obvious peak. An increase in southerly migrating individuals may be observed between the North West Cape and the Montebello Islands between August to early September (Ref. 222; Ref. 224). Females and calves are known to stop and rest in Exmouth Gulf and Shark Bay (Ref. 222).

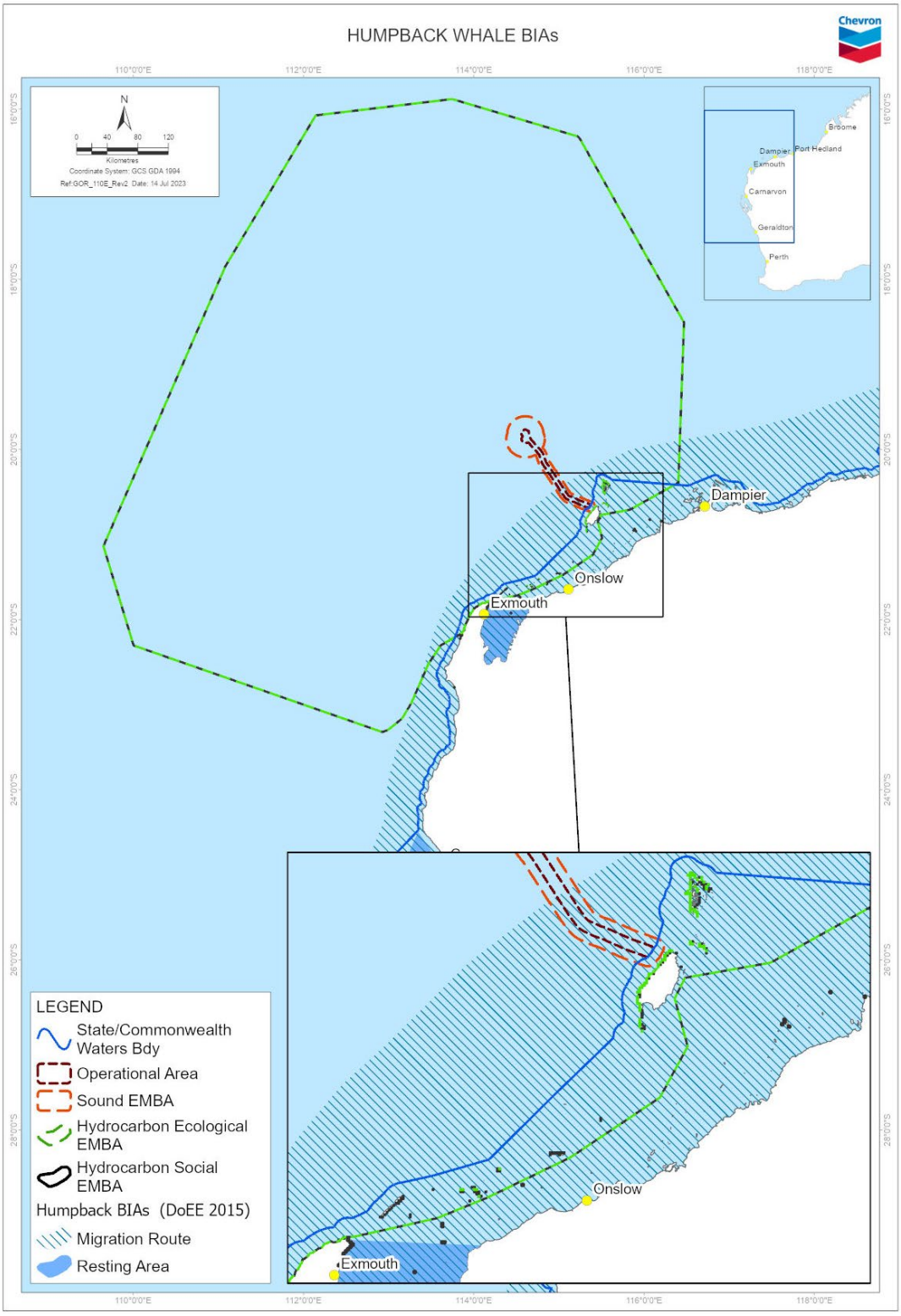


Figure 4-6: Biologically important areas for Humpback Whales

4.3.3.1.2 Pygmy Blue Whale

Pygmy Blue Whales migrate along the west coast of Australia in the northern direction to their breeding grounds near the Indonesian Archipelago from mid-February to early June, and in the southern direction to the feeding grounds in the Southern Ocean from mid-November to early January (Ref. 225). 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. 226; Ref. 227; Ref. 228). 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. 229; Ref. 230).

Acoustic monitoring conducted by McCauley and Jenner (Ref. 231) 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. 231) that between 700 and 1,500 Pygmy Blue Whales migrated southward past Exmouth in 2004.

CAPL noise loggers deployed for a full year period in 2019 detected Pygmy Blue Whales on their northern and southern migration (Ref. 232). The noise loggers were located at various sites and depths adjacent to existing Jansz field infrastructure (and within the OA). The detection of Pygmy Blue Whale song peaked from mid-April to the end July, and then again from beginning of November through to early-December (Ref. 232). These peaks correspond with previously identified northern and southern migration peak periods of Pygmy Blue Whales. Pygmy Blue Whale song was detected on more days than any other type of mysticete (baleen whale) sound (Ref. 232).

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. 87; Ref. 59). However, more recent studies (e.g. Ref. 226; Ref. 225) 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. 226). 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. 86). Gavrilov et al. (Ref. 225) 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. 225). Pygmy Blue Whales have demonstrated extensive use of continental slope habitat off Western Australia and only limited use of shelf waters (Ref. 86). This contrasts with southern Australia, where use of the shelf and shelf break by Pygmy Blue Whales is more common.

McCauley and Jenner (Ref. 231) 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. 86), 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[11] 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. 86). The deeper northern extent of the OA and Sound EMBA does intersects with the most important area for migration (Figure 4-7).

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. 86). Monthly spatial predictions indicated higher densities around the Montebello Island region during May and June (northern migration) and November and December (southern migration) (Ref. 86).

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. 86). 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. 59). The *Conservation Management Plan for the Blue Whale* (Ref. 59) also identifies 'Possible Foraging Areas'[12], 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 ~170 km south-west and ~870 km north-east of the OA respectively.

Thums et al (Ref. 86) determined that Pygmy Blue Whale movement off north-west WA was predominantly relatively fast, directed travel (high move persistence) interspersed with relatively short (median 28 h) periods of low move persistence (Ref. 86). This high move persistence is indicative of migration, while the low move persistence is generally indicative of foraging (Ref. 86). Data collected from both passive acoustic monitoring and satellite telemetry data, was analysed and determined the 'most important areas' for foraging[13] 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. 86). Although foraging areas are described as static, they are likely to be dynamic given their dependence on presence of prey (Ref. 86; Ref. 243). The OA

[11] 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. 86).

[12] "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. 86).

[13] 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. 244).

does not intersect with the most important area for foraging; however parts of the Sound EMBA (associated with the installation of the FCS and SCSt) do intersect with areas identified as most important for foraging (Figure 4-8).

The OA is located in water depths ranging from ~25–1,350 m. The defined BIA for Pygmy Blue Whales overlaps the northern part of the OA; however, it is expected based on satellite tracking and acoustic detection studies that Pygmy Blue Whales are likely to travel further offshore, 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 North West Shelf (NWS), recent analysis indicates that there may be short interspersed periods of foraging occurring along the shelf edge during migration (Ref. 86). The outer extents of the Sound EMBA do intersect with these areas identified as potential foraging.

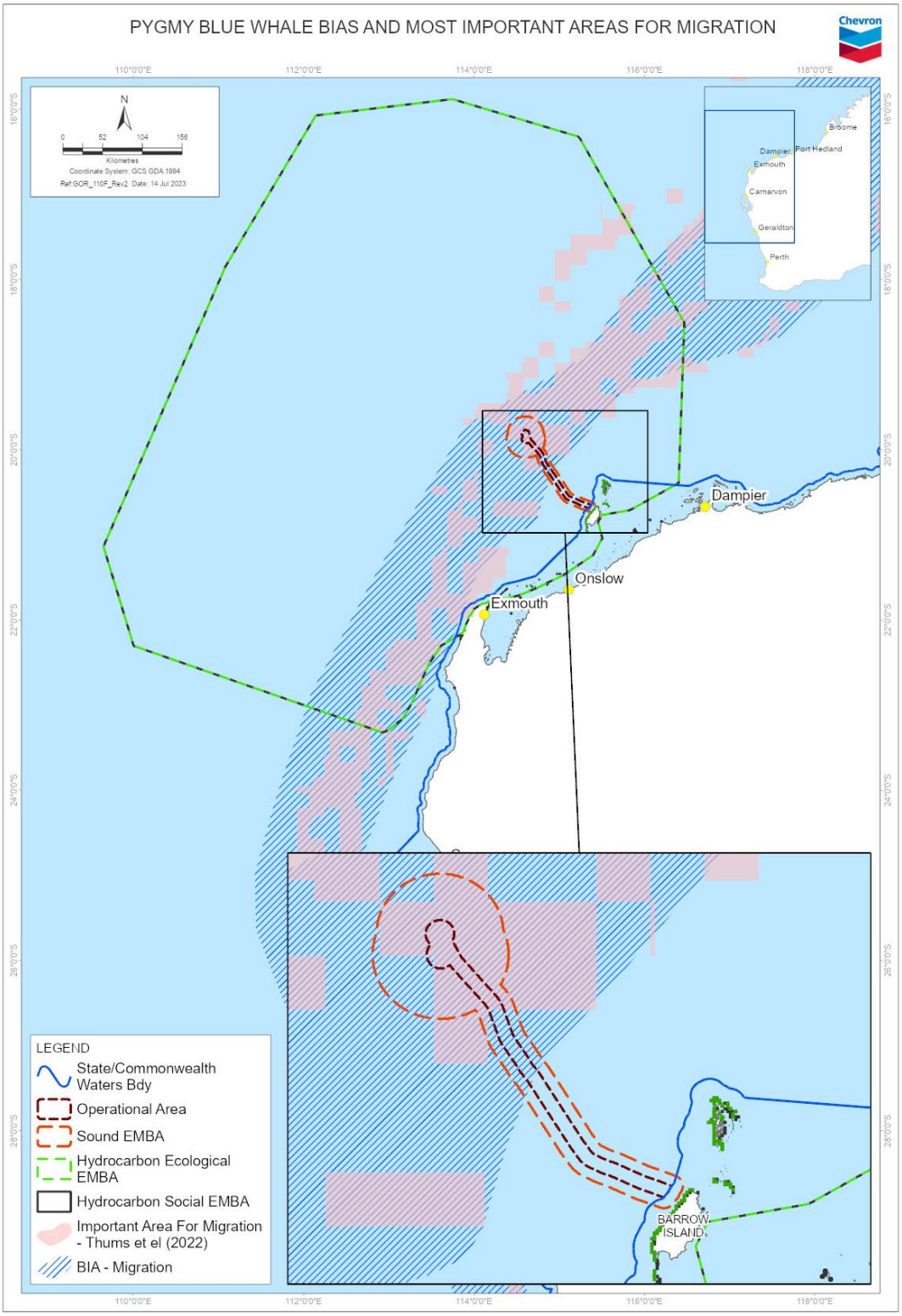


Figure 4-7: Most important areas (pink) for migration along WA coast as determined by Thums et al (2022); inset shows overlap of the OA

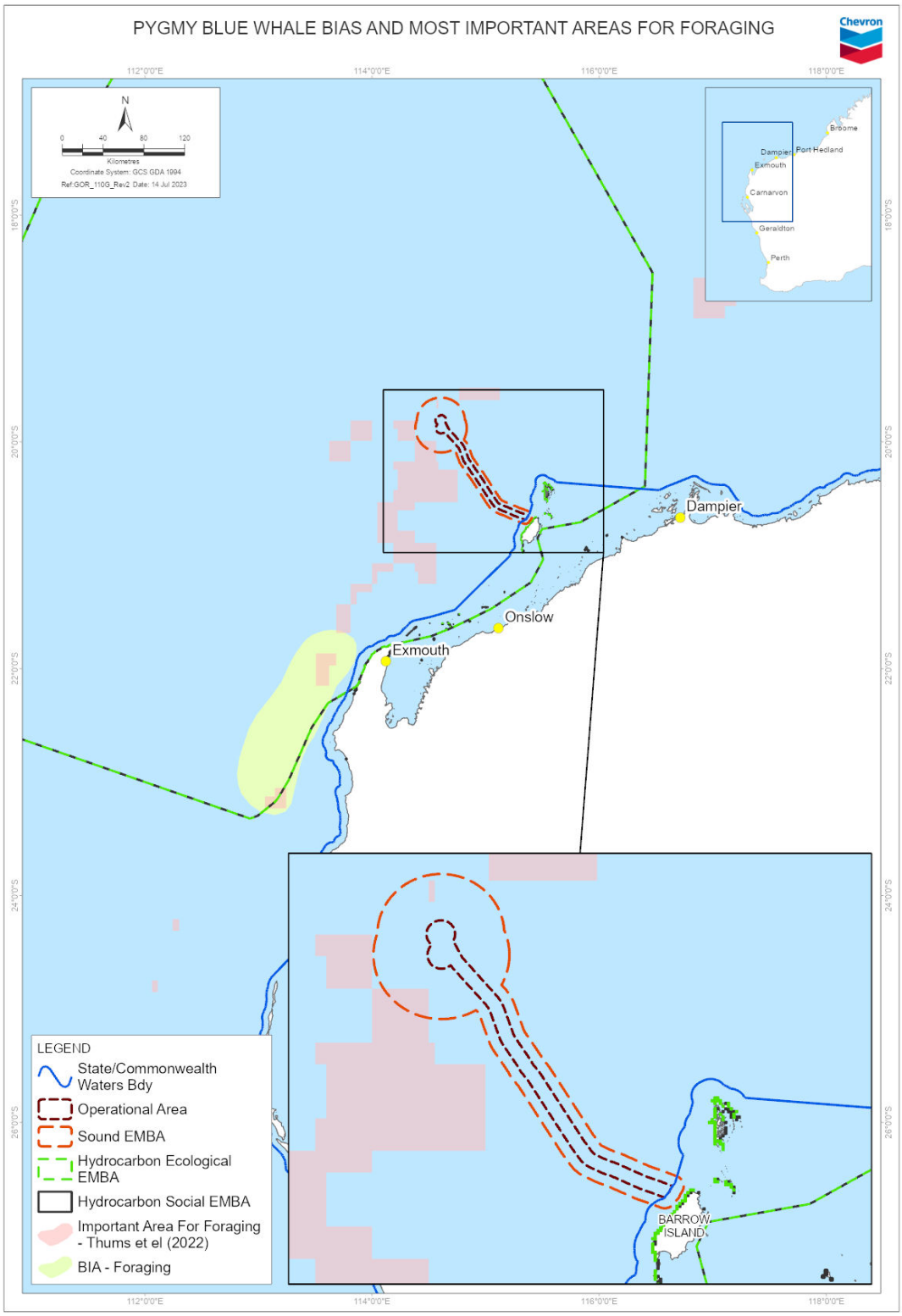


Figure 4-8: Most important areas (pink) for foraging along WA coast as determined by Thums et al (2022); inset shows overlap of the OA

4.3.3.2 Reptiles

Based on searches of the online PMST (Ref. 52; appendix b), the threatened and/or migratory reptile species shown in Table 4-7 may be present within the EMBA. The full list of marine species identified from the PMST is provided in appendix b. 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 and Social EMBAs
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 and Social EMBAs
Flatback Turtle	Barrow Island, Montebello Islands, coastal islands from Cape Preston to Locker Island.	60 km	Oct–Mar	✓	✓	✓
	Dampier Archipelago, including Delambre Island and Hauy Island.	60 km	Oct–Mar			✓
Green Turtle	Barrow Island, Montebello Islands,	20 km	Nov–Mar	✓	✓	✓

Common Name	Nesting location^	Internesting buffer^	Seasonal Presence^	OA	Sound EMBA	Hydrocarbon Ecological and Social EMBAs
	Serrurier Island, and Thevenard Island.					
	Dampier Archipelago.	20 km	Nov–Mar			✓
	Exmouth Gulf and Ningaloo coast.	20 km	Nov–Mar			✓
Hawksbill Turtle	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands.	20 km	Oct–Feb	✓	✓	✓
	Dampier Archipelago, including Delambre Island and Rosemary Island.	20 km	Oct–Feb			✓
Loggerhead Turtle	Exmouth Gulf and Ningaloo coast	20 km	Nov - May			✓

^*Source: Ref. 55 and Ref. 178*

Table 4-9: Presence of BIAs for reptiles

Common Name	BIA Behaviour	Seasonal Presence^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
Flatback Turtle	Aggregation	(Not defined in database)			✓	✓
	Foraging	Early summer			✓	✓
		(Not defined in database)		✓	✓	✓
		Observations during July, no evidence of turtle activity. October to November for Solitary, Steamboat, Carey, Preston Islands and Cape Preston.				✓
	Internesting	(Not defined in database)			✓	✓
	Internesting buffer	Early summer	✓	✓	✓	✓
		January			✓	✓
		Summer	✓	✓	✓	✓
		Summer (nesting/internesting) year round			✓	✓
	Mating	Early summer			✓	✓
		(Not defined in database)		✓	✓	✓
	Nesting	Early summer			✓	✓

Common Name	BIA Behaviour	Seasonal Presence^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
		Short summer nesting season, predominantly Nov–Mar with peak in Jan		✓	✓	✓
		Summer			✓	✓
Green Turtle	Aggregation	(Not defined in database)			✓	✓
	Basking	Summer		✓	✓	✓
	Foraging	Early summer			✓	✓
		Observations during July, no evidence of turtle activity. October to November for Solitary, Steamboat, Carey, Preston Islands and Cape Preston.				✓
		Summer			✓	✓
		Year round		✓	✓	✓
		(Not defined in database)			✓	✓
	Internesting	Summer			✓	✓
		(Not defined in database)		✓	✓	✓
	Internesting buffer	Early summer		✓	✓	✓
		Summer	✓	✓	✓	✓
	Mating	Early summer			✓	✓
		Summer		✓	✓	✓
		(Not defined in database)			✓	✓
	Nesting	Early summer			✓	✓
		Summer		✓	✓	✓
Hawksbill Turtle	Foraging	Early summer			✓	✓
		Observations during July, no evidence of turtle activity. October to November for Solitary, Steamboat, Carey, Preston Islands and Cape Preston.				✓
		Spring and early summer, peak nesting October			✓	✓
		Year round		✓	✓	✓
	Internesting	Spring and early summer, peak nesting Oct			✓	✓
	Internesting buffer	Early in Summer		✓	✓	✓
		Spring and early summer	✓	✓	✓	✓
		Year round			✓	✓
		(Not defined in database)		✓	✓	✓

Common Name	BIA Behaviour	Seasonal Presence^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
	Mating	Early in Summer			✓	✓
		Spring and early summer, peak nesting October			✓	✓
		Year round		✓	✓	✓
	Nesting	Early in summer			✓	✓
		Peak nesting in spring and early summer		✓	✓	✓
		Year round			✓	✓
		(Not defined in database)			✓	✓
Loggerhead Turtle	Internesting buffer	(Not defined in database)		✓	✓	✓
	Nesting	(Not defined in database)			✓	✓

^*Source: Ref. 177*

4.3.3.2.1 Flatback Turtle

Montebello and Barrow islands supports Flatback Turtle nesting, occurring from October to March, with a peak in December to January. The Montebello Islands and Barrow Island are identified as nesting habitat critical to the survival of the species, as is the 60 km internesting buffer around the Montebello Islands (Ref. 55, Figure 4-9).

Typically, Flatback Turtle nesting on Barrow Island occurs between October and March, with peak nesting activity occurring between November and January. On Barrow Island, nesting activity is concentrated on the east coast on sandy, low-sloped, low-energy beaches with wide, shallow intertidal zones (Ref. 199; Ref. 200). Limited nesting activity has also been recorded on the south-west, north, and north-east beaches of Barrow Island (Ref. 201).

During internesting, turtles remain close to the nesting beach or rookery (Ref. 55). The 60 km internesting buffer defined within the *Recovery Plan for Marine Turtles in Australia* (Ref. 55) is based primarily on the movements of tagged internesting Flatback Turtles in WA (Ref. 202). 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 represented the greater distances (Ref. 202). There is little 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. 74) 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 at closest

~5.5 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. 74). 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. 74). The majority of 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. 203) 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. 204; Ref. 205; Ref. 206) have also presented findings that internesting behaviour was only observed in water depths of <40 m. One of these studies (Ref. 205) 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 ~25–1,350 m, and is at closest ~5.5 km from the west coast of Barrow Island, and ~20 km from the Montebello Islands. Flatback Turtles do not nest on the west coast of Barrow Island (Ref. 199; Ref. 200, Ref. 201), as such the internesting habitat within the pipeline route is expected to be low. Additionally, the majority of the OA is located in deeper waters and further offshore than internesting behaviours were observed in any of the previous studies (Ref. 202; Ref. 74; Ref. 203; Ref. 204; Ref. 205; Ref. 206), therefore, it is considered highly unlikely that internesting Flatback Turtles will occur within the majority of the OA.

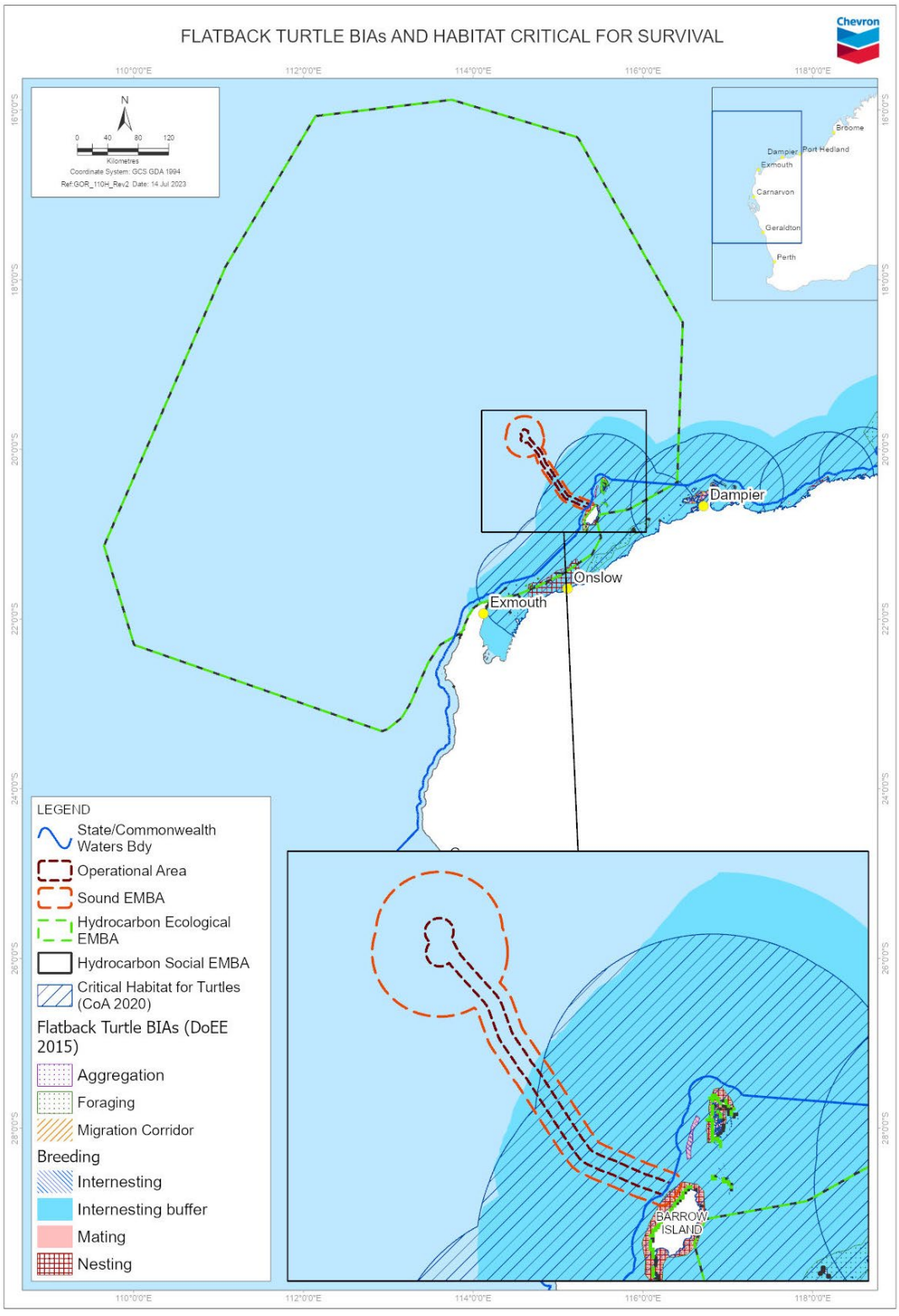


Figure 4-9: Biologically important areas and habitat critical to the survival of the species, for Flatback Turtles

4.3.3.2.2 Green Turtle

The Montebello Islands and Barrow Island supports Green Turtle nesting, occurring from November to March. The Montebello Islands are identified as nesting habitat critical to the survival of the species, as is the 20 km internesting buffer around the Montebello Islands (Ref. 55, Figure 4-10).

The NWS stock is one of the largest green turtle stocks in the world and the largest in the Indian Ocean (Ref. 207). Nesting occurs over a large geographic range with nesting on offshore islands and the mainland. Green Turtle nesting usually occurs on the west and north-east coasts of Barrow Island between October and March each year, with a remigration interval of approximately five years (Ref. 208) and peak nesting activity occurring between December and February (Ref. 209; Ref. 199).

During internesting, turtles remain close to the nesting beach or rookery (Ref. 55). Analysis of satellite tracking data for Barrow Island on Green Turtles suggests internesting habitat occurs throughout the rocky intertidal and subtidal platforms common on the west coast, around to the north-eastern beaches and waters (Ref. 209; Ref. 199).Satellite tracking of internesting Green Turtles on Barrow Island were recorded to remain in shallow water within 5 km of Barrow Island (Ref. 199).

Satellite tracking of post-nesting female Green Turtles has shown that Green Turtles nesting on Barrow Island and Sandy Island (Scott Reef, Western Australia) feed between 200 km and 1,000 km from their nesting beaches (Ref. 199). Following nesting at Barrow Island, Green Turtles that were tracked migrating to foraging grounds extending from Legendre Island in the Dampier Archipelago to waters in the southern Kimberley (Ref. 199).

As Green Turtle nesting occurs on the west coast of Barrow Island, and as the OA at its closest is ~5.5 km from the west coast, there is a potential to encounter turtles within the OA and Sound EMBA. During internesting turtles remain close to the nesting beach or rookery (Ref. 55). Once breeding and nesting is complete, turtles return to their favoured foraging areas (Ref. 210). As such, it is expected that any presence of these species within the OA would be of a transitory nature.

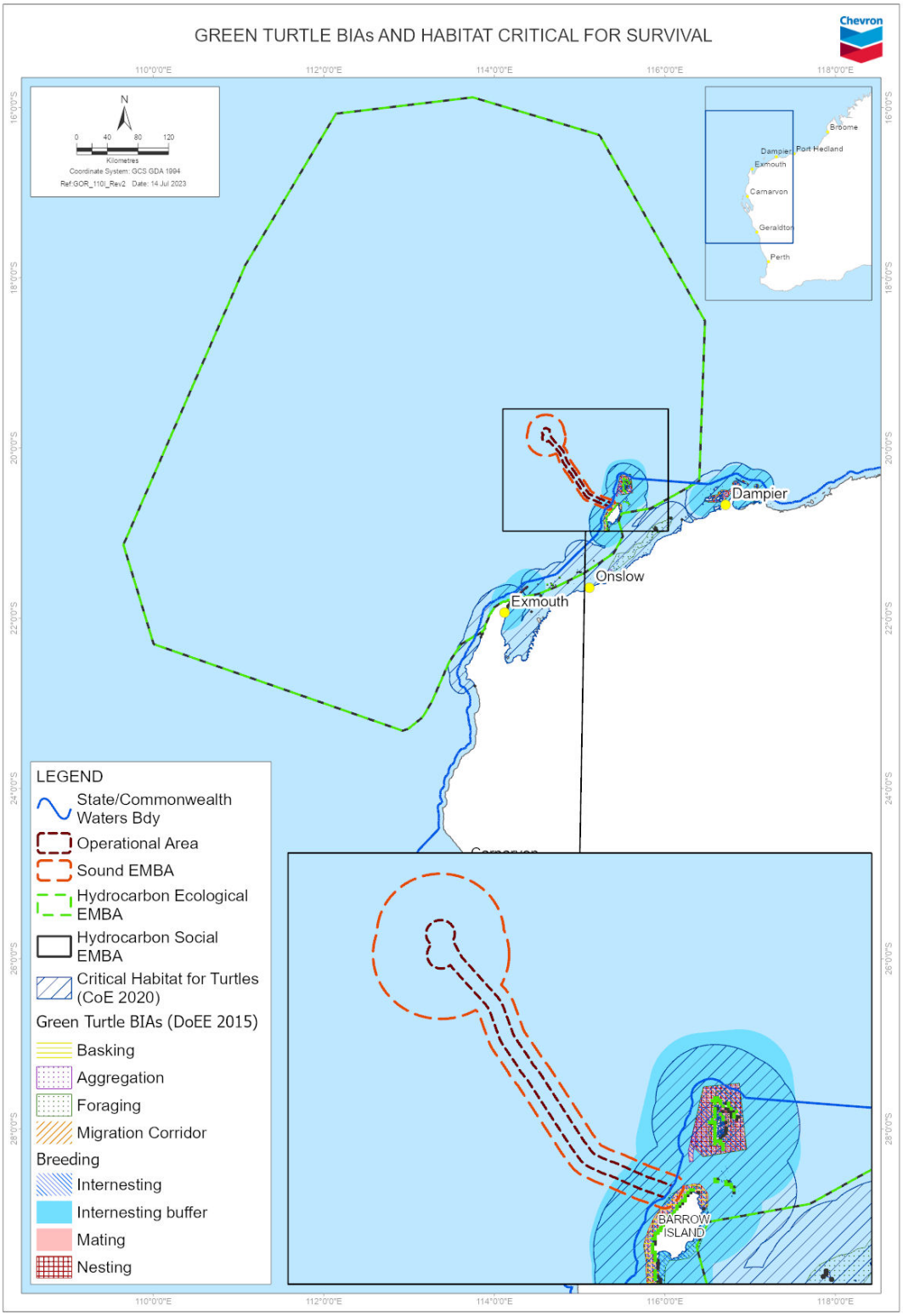


Figure 4-10: Biologically important areas and habitat critical to the survival of the species, for Green Turtles

4.3.3.2.3 Hawksbill Turtle

The Montebello Islands and Lowendal Islands are identified as nesting habitat critical to the survival of the species, as is the 20 km internesting buffer around the Islands (Ref. 55). Hawksbill Turtles are expected to be present within these areas between October and February (Ref. 55, Figure 4-11)

The Western Australia Hawksbill Turtle stock is one of the three stocks within Australia (Ref. 55).. Most of the nesting for this stock is located in the Pilbara (Ref. 55). The key nesting and inter-nesting areas in Australia include the Dampier Archipelago, the Ningaloo and Jurabi Coasts, and Thevenard, Barrow, Lowendal and Montebello Islands (Ref. 211). The estimated size of the reproductive population of WA stock is small (Ref. 253). For example, it has been estimated as an overall reproductive population at Barrow Island of 100, an additional 1,000 in the Lowendal Islands, and 13,00 in the Montebello Islands (Ref. 253).

Monitoring of Barrow Island Hawksbill Turtle nesting has found that nesting activity is more temporally and spatially diffuse than Flatback and Green Turtle nesting activity and occurs predominantly on small, rocky, east coast beaches. Nesting on Barrow Island peaks in October (Ref. 213) and Hawksbill Turtles typically have an internesting interval of 14.5 days and a remigration interval of approximately three years (Ref. 209; Ref. 211).

During internesting turtles remain close to the nesting beach or rookery (Ref. 55). Satellite tracking of Hawksbill Turtles found that they remained in shallow coastal waters (<10 m deep) post nesting (Ref. 199).

Although BIAs have been identified (Table 4-9), Hawksbill Turtle mating, internesting, and foraging grounds have not been identified for Barrow Island (Ref. 253). However, data from Hawksbill Turtles tracked from nearby Varanus Island indicate potential internesting habitat in waters north-east of Barrow Island (Ref. 199). This internesting is consistent with the internesting habitat critical for the survival of the species that has been identified (Table 4-8).

As Hawksbill Turtle nesting occurs predominantly on east coast beaches on Barrow Island, it is expected that any presence of these species within the OA would be of a transitory nature.

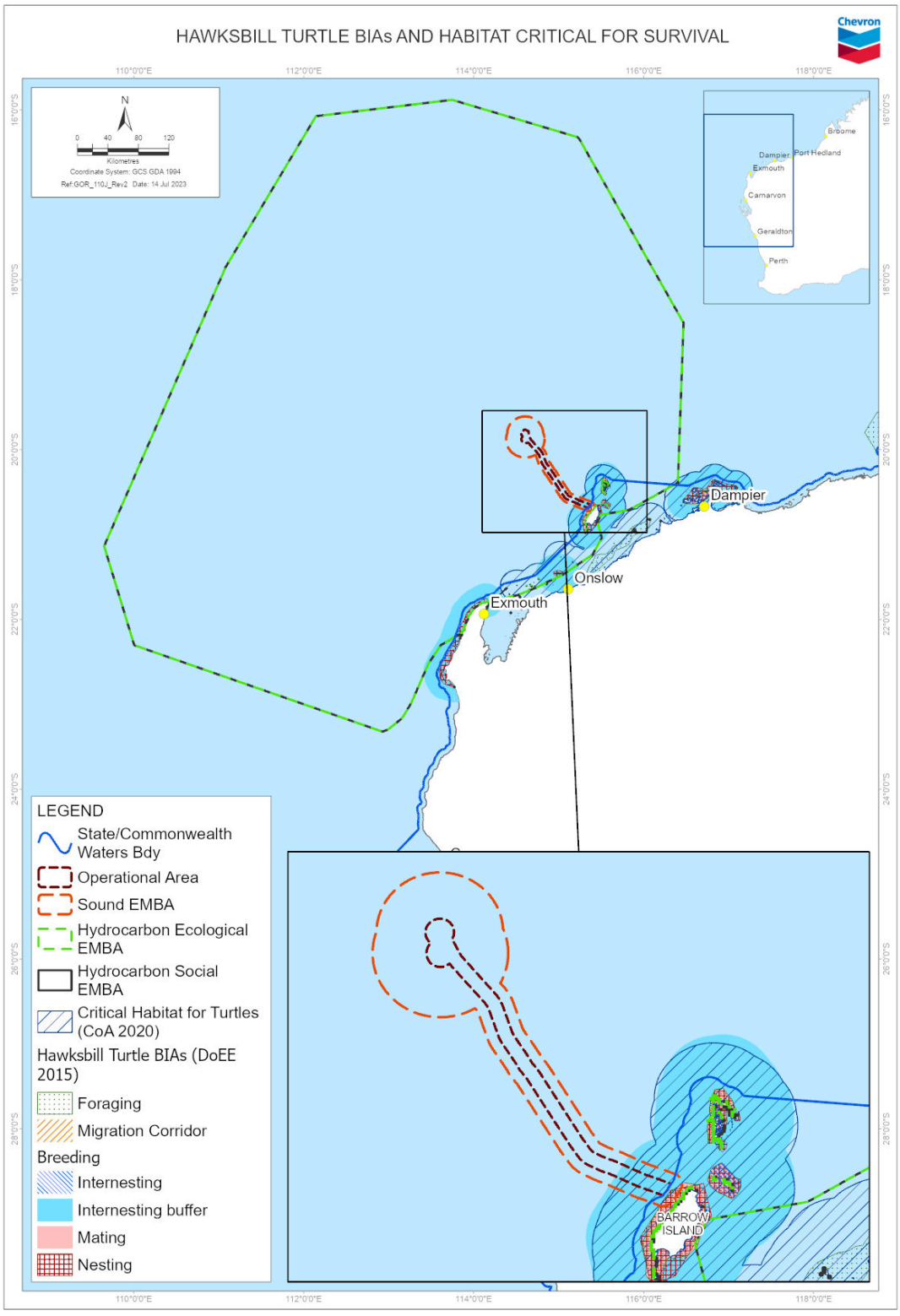


Figure 4-11: Biologically important areas and habitat critical to the survival of the species, for Hawksbill Turtles

4.3.3.2.4 Loggerhead Turtle

Loggerhead Turtles are globally distributed in tropical, sub-tropical waters and temperate waters. Loggerheads are carnivorous, feeding primarily on benthic invertebrates in habitat ranging from nearshore to 55 m depth (Ref. 214). Loggerhead Turtles forage in all coastal states and the Northern Territory (Ref. 55, Figure 4-12).

The primary Australian breeding areas for Loggerhead Turtles are within southern Queensland and Western Australia (Ref. 215). Loggerhead Turtles will migrate over distances in excess of 1,000 km and show a strong fidelity to their feeding and breeding areas (Ref. 212).

In WA nesting occurs from Shark Bay (including on the mainland near Steep Point) to the North West Cape with major nesting at Dirk Hartog Island; Gnaraloo Bay; Murion Island; and the beaches of the North West Cape (Ref. 216). Occasional late summer nesting crawls have also been recorded as far north as Barrow Island, the Lowendal Islands and Dampier Archipelago (Ref. 217). During internesting turtles remain close to the nesting beach or rookery (Ref. 55). Once breeding and nesting is complete, turtles return to their favoured foraging areas (Ref. 210). The closest known foraging area is ~350 km northeast of the OA. As such, it is expected that any presence of these species within the OA would be of a transitory nature.

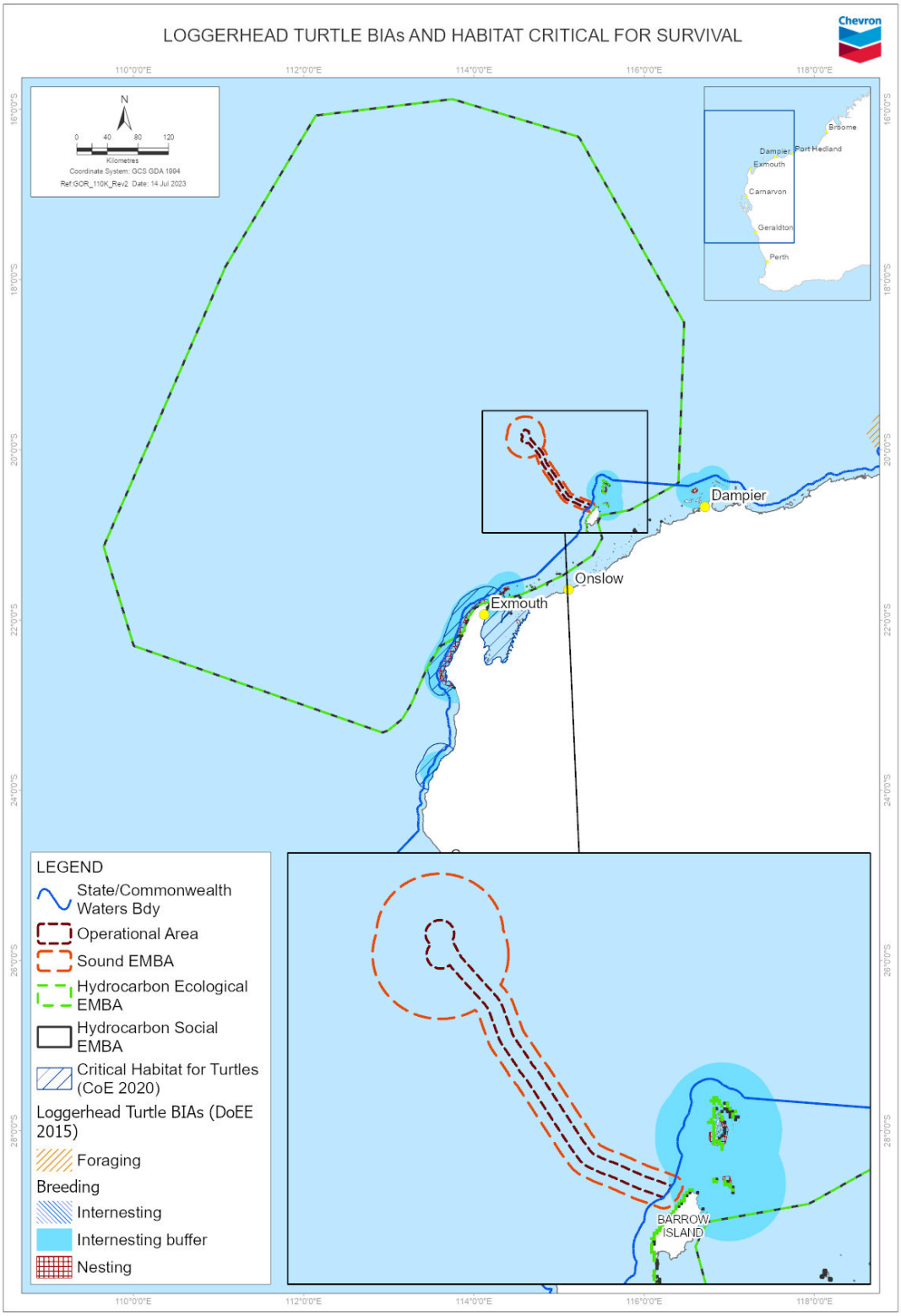


Figure 4-12: Biologically important areas and habitat critical to the survival of the species, for Loggerhead Turtles

4.3.3.3 Fishes, including sharks and rays

Based on searches of online PMST (Ref. 52; appendix b), the threatened and/or migratory fish species shown in Table 4-10 may be present within the EMBA. The full list of marine species identified from the PMST is provided in appendix b. 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.

A review of ROV video footage recorded between 2015 and 2018 along the Jansz-Io pipeline in water depths ~737–1,348 m (Ref. 289) indicated:

- no threatened and/or migratory fish, shark, or ray species were observed
- generally low diversity and abundance of bony and cartilaginous fish compared to shallow nearshore regions; with assemblages dominated by Macrouridae (deep sea fishes) and Synaphobranchidae (cutthroat eels) as found at similar depth ranges in other regions
- some spatial differences in assemblage between non-infrastructure and infrastructure sites, with greater overall abundances, species richness, and species diversity generally associated with infrastructure
- a decrease in richness, abundance, and diversity with depth as found in other studies both in the north-west of Western Australia and elsewhere.

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 and Social EMBAs
Fish			
Southern Bluefin Tuna *(Conservation dependent)*	✓	✓	✓
Sharks			
Dwarf Sawfish *(Vulnerable, migratory)*	✓	✓	✓
Freshwater Sawfish *(Vulnerable, migratory)*	✓	✓	✓
Green Sawfish *(Vulnerable, migratory)*	✓	✓	✓
Grey Nurse Shark *(Vulnerable)*	✓	✓	✓
Little Gulper Shark *(Conservation dependent)*			✓
Longfin Mako *(Migratory)*	✓	✓	✓
Narrow Sawfish *(Migratory)*	✓	✓	✓
Oceanic Whitetip Shark *(Migratory)*	✓	✓	✓
Porbeagle *(Migratory)*			✓
Scalloped Hammerhead *(Conservation dependent)*	✓	✓	✓
Shortfin Mako *(Migratory)*	✓	✓	✓
Whale Shark *(Vulnerable)*	✓	✓	✓

Common name (EPBC protected status)	OA	Sound EMBA	Hydrocarbon Ecological and Social EMBAs
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 and Social EMBAs
Whale Shark	Foraging	Spring	✓	✓	✓
	Foraging (high-density prey)	Apr–Jun, autumn			✓

^*Source: Ref. 177*

4.3.3.3.1 Whale Shark

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. 218, Figure 4-13).

Whale Sharks have a global distribution in tropical and warm temperate waters, including within Australian waters (mainly Northern Territory, Queensland and northern WA) (Ref. 219; Ref. 218). 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. 218). Ningaloo Reef is considered the main known seasonal aggregation area (Ref. 65). Whale Sharks aggregate off Ningaloo Reef between March and July each year to feed (Ref. 219; Ref. 220). Their presence off Ningaloo Reef has been linked to coral mass spawning timing (Ref. 219). 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. 219). 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 distribution is largely unknown, although three migration routes from Ningaloo reef have been identified through various surveys (Ref. 220):

- 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.

Given that Whale Shark foraging within the BIA typically occurs between July and November, there is potential for an overlap with planned activities.

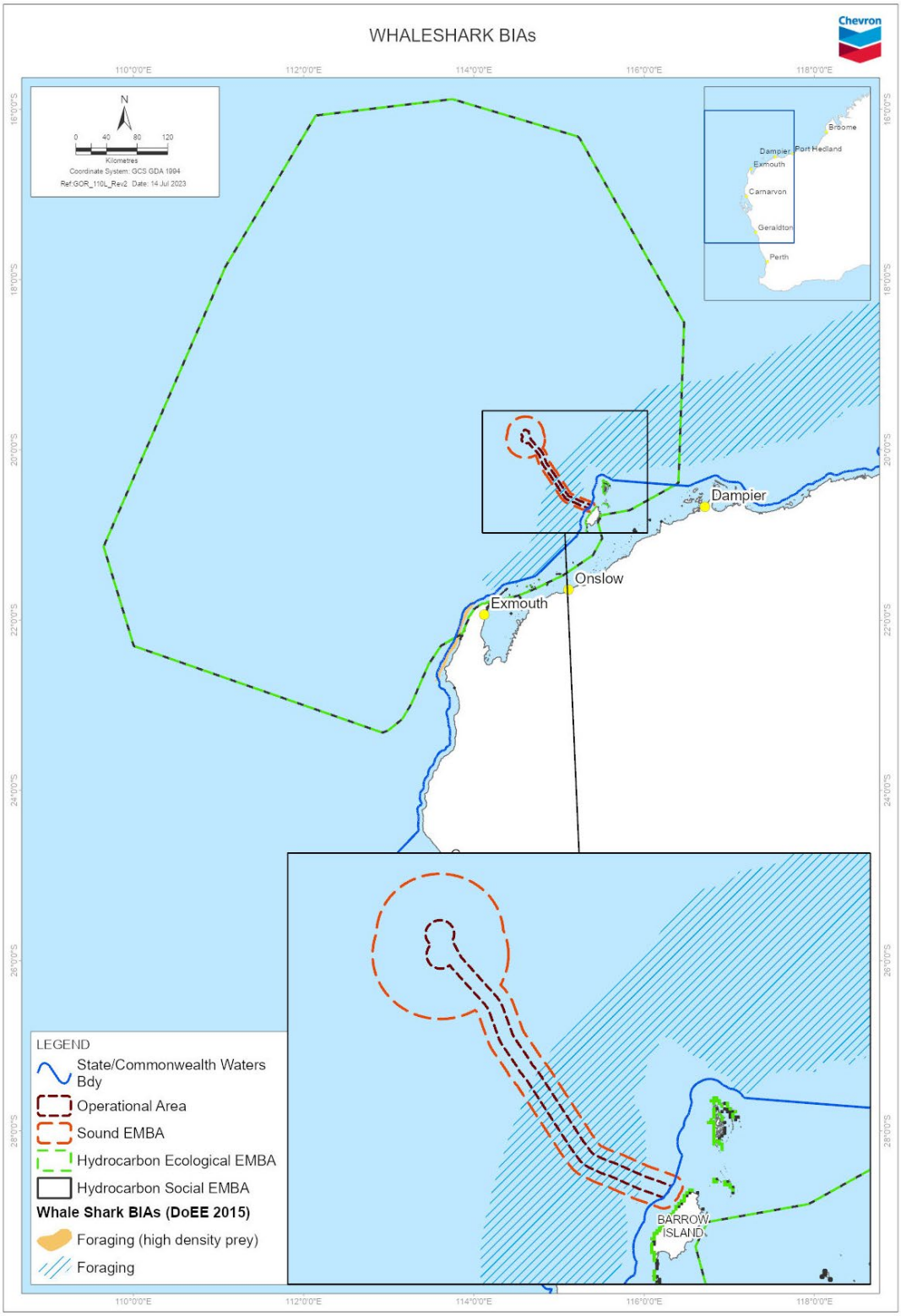


Figure 4-13: Biologically important areas for Whale Sharks

4.3.3.4 Seabirds and shorebirds

Based on searches of the online PMST (Ref. 52; appendix b), the threatened and/or migratory seabird and shorebird species shown in Table 4-12 may be present within the EMBA. The full list of marine species identified from the PMST is provided in appendix b. 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 (i.e. EMBAs associated with planned activities), 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 and Social EMBAs
Abbott's Booby *(Endangered)*		✓
Asian Dowitcher (M*igratory*)		✓
Australian Fairy Tern *(Vulnerable)*	✓	✓
Australian Painted Snipe *(Endangered)*		✓
Bar-tailed Godwit (M*igratory*)		✓
Black-browed Albatross *(Vulnerable, migratory)*		✓
Bridled Tern (M*igratory*)		✓
Campbell Albatross *(Vulnerable, migratory)*		✓
Caspian Tern (M*igratory*)		✓
Christmas Island White-tailed Tropicbird *(Endangered)*	✓	✓
Common Greenshank (M*igratory*)		✓
Common Noddy (M*igratory*)	✓	✓
Common Sandpiper (M*igratory*)	✓	✓
Curlew Sandpiper *(Critically endangered, migratory)*	✓	✓
Eastern Curlew *(Critically endangered, migratory)*	✓	✓
Flesh-footed Shearwater (M*igratory*)		✓
Fork-tailed Swift (M*igratory*)	✓	✓
Great Frigatebird (M*igratory*)		✓
Greater Crested Tern (M*igratory*)		✓
Greater Sand Plover *(Vulnerable, migratory)*		✓
Indian Yellow-nosed Albatross *(Vulnerable, migratory)*		✓
Lesser Frigatebird (M*igratory*)	✓	✓
Little Tern (M*igratory*)		✓
Northern Siberian Bar-tailed Godwit *(Critically endangered)*		✓
Oriental Plover (M*igratory*)		✓
Oriental Pratincole (M*igratory*)		✓

Common name (EPBC protected status)	OA	Hydrocarbon Ecological and Social EMBAs
Osprey (M*igratory*)		✓
Pectoral Sandpiper (M*igratory*)	✓	✓
Red Goshawk *(Endangered)*		✓
Red Knot *(Endangered, migratory)*	✓	✓
Roseate Tern (M*igratory*)	✓	✓
Sharp-tailed Sandpiper (M*igratory*)	✓	✓
Shy Albatross *(Endangered, migratory)*		✓
Soft-plumaged Petrel *(Vulnerable)*		✓
Southern Giant-Petrel *(Endangered, migratory)*	✓	✓
Streaked Shearwater (M*igratory*)	✓	✓
Wedge-tailed Shearwater (M*igratory*)		✓
White-capped Albatross *(Vulnerable, migratory)*		✓
White-tailed Tropicbird (M*igratory*)	✓	✓
White-winged Fairy-wren (Barrow Island) *(Vulnerable)*		✓

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

Common Name	BIA Behaviour	Seasonal Presence^	OA	Hydrocarbon Ecological and Social EMBAs
Fairy Tern	Breeding	Breeding from July to late September	✓	✓
Lesser Crested Tern	Breeding	Breeding from March to June	✓	✓
Roseate Tern	Breeding	Breeding from mid-March to July	✓	✓
Wedge-tailed Shearwater	Breeding	Breeding visitor; arrives in mid-August and leaves Pilbara in April	✓	✓

^*Source: Ref. 177*

4.3.3.4.1 Fairy Tern

Behaviours used to define BIAs for seabirds in Commonwealth marine areas include breeding with a foraging buffer, and roosting (Ref. 236). The BIAs for this species are buffers around islands that the species is known to nest on as they may forage in the waters surrounding the islands during nesting seasons (Figure 4-14).

The Fairy Tern has a large geographic range between Australia, New Zealand and New Caledonia. Three subspecies have been identified based on phenotypic, genotypic and geographic differences (Ref. 75). While the Fairy Tern is not listed

as threatened or migratory under the EPBC Act, it is noted that the Australian Fairy Tern subspecies has been identified in Table 4-12 as having the potential to be present within the OA, and is listed as vulnerable under the EPBC Act.

The Australian Fairy Tern has been found in embayments of a variety of habitats including offshore, estuarine, or lacustrine (lake) islands, wetlands and mainland coastline (Ref. 233). The subspecies breeds from October to February, and nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation (Ref. 245).

Australian Fairy Terns are diurnal plunge diving feeders that predate exclusively on small (<60 mm) surface schooling bait fishes throughout their range. Prey include species of sprats, hardy heads and larval prey of some demersal fish species (Ref. 233).

4.3.3.4.2 Roseate Tern

The BIAs for this species are buffers around islands that this species is known to nest on (Figure 4-15). Bird species may forage in the waters surrounding the islands during nesting seasons. The closest foraging BIA for the Roseate Tern is >800 km south of the OA, near Kalbarri.

The Roseate Tern occurs in coastal and marine areas in subtropical and tropical seas. The species inhabits rocky and sandy beaches, coral reefs, sand cays and offshore islands (Ref. 233). The Roseate Tern is a migratory species, though the movement patterns are not well known. Birds are known to usually move away from breeding colonies following breeding, but their non-breeding range is not well defined (Ref. 233).

In the NWMR breeding populations of Roseate Terns have been recorded at Ashmore Reef, Napier Broome Bay, Bonaparte Archipelago, Lacepede Island, Bedout Island, Dampier Archipelago, Lowendall Island, Frazer Island, Koks Island, Mary Anne Island and Meade Island (Ref. 234).

Different islands can be chosen for the breeding colony from year to year. As Roseate Terns do not forage widely from their breeding colonies, suitable nesting islands may be chosen because of nearby aggregations of their pelagic fish prey (Ref. 235). Within WA, the peak laying months are April to November (Ref. 233).

4.3.3.4.3 Wedge-tailed Shearwater

The BIAs for this species are buffers around islands that this species is known to nest on (Figure 4-16). 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 (>580 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. 237); out of an estimated global population of five million (Ref. 234). 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. 238; Ref. 239). The departure (early-April to early-May) of Wedge-tailed Shearwaters from WA may overlap with the timing of the installation activity.

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. 234).

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. 240; Ref. 241). CAPL (Ref. 209; Ref. 241) 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. 234). 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. 239). 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. 239). 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. 242; Ref. 239). 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. 239).

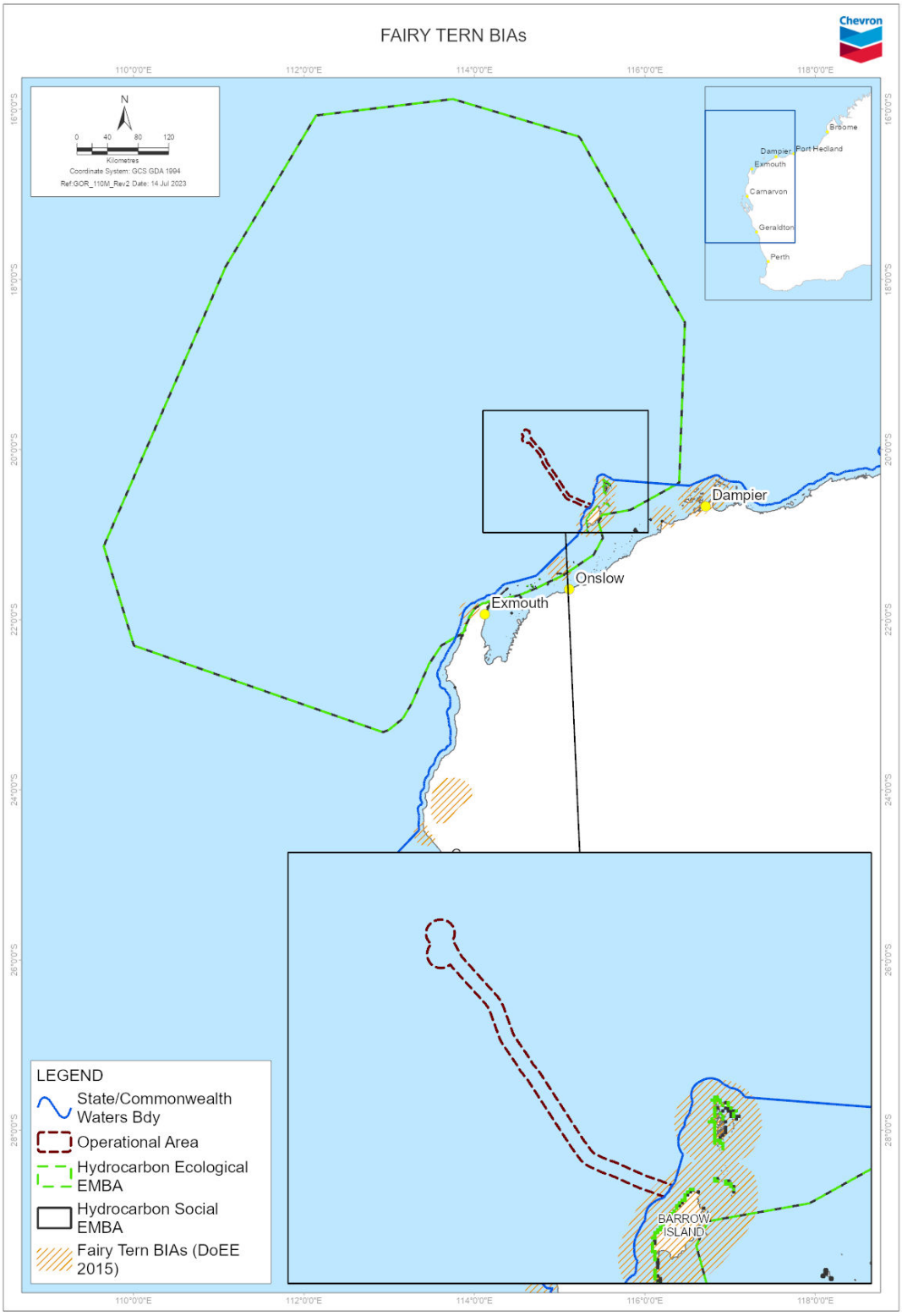


Figure 4-14: Biologically important areas for Fairy Terns

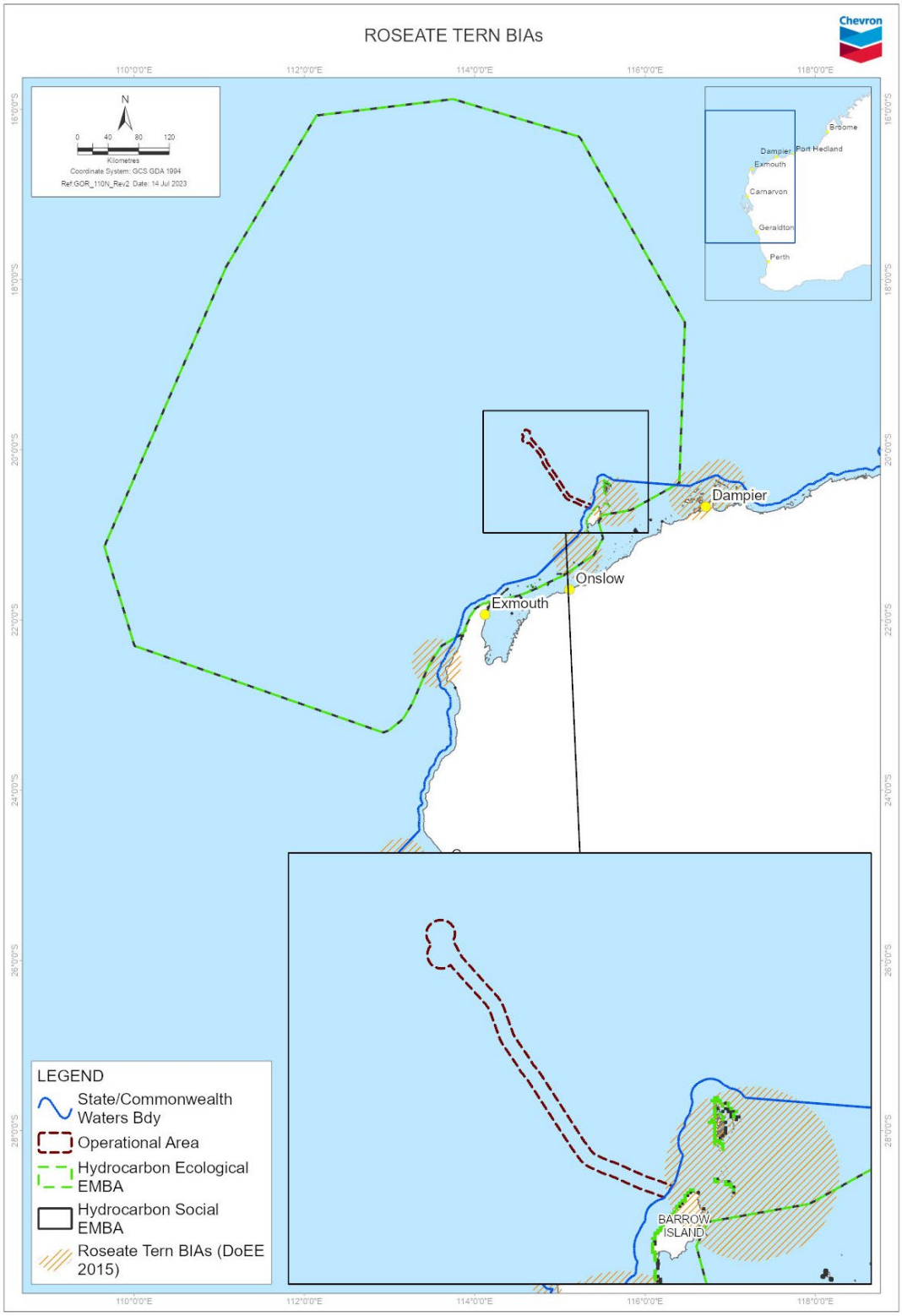


Figure 4-15: Biologically important areas for Roseate Tern

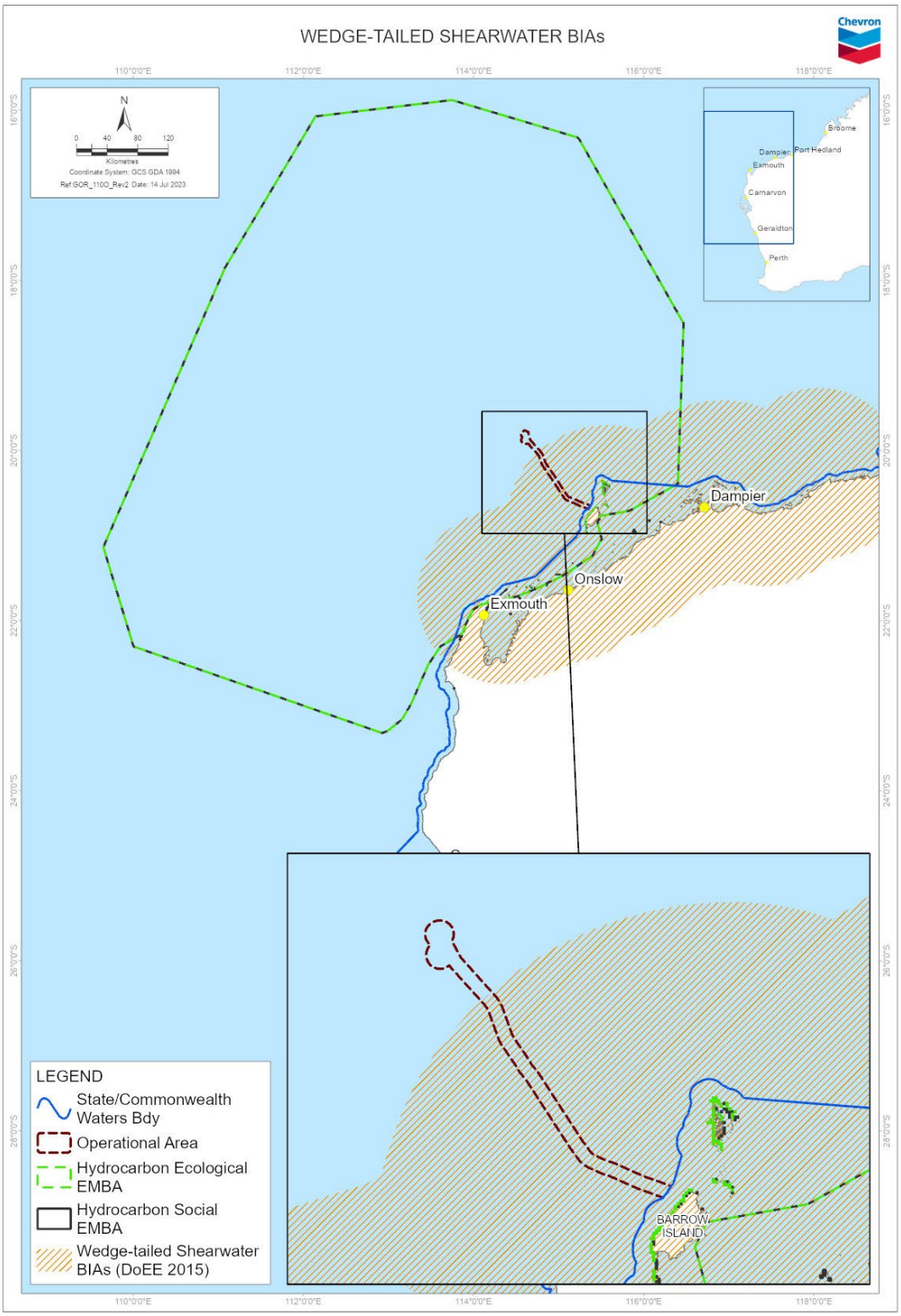


Figure 4-16: Biologically important areas for Wedge-tailed Shearwater

4.3.4 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. 173).

4.3.4.1 Water quality

Marine water quality within the EMBA is expected to be representative of 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, tidal or wave induced resuspension of fine sediments and seasonal fluvial inputs (Ref. 174, Ref. 258). In the waters off the east coast of Barrow Island, turbidity and concentrations of suspended sediments were generally low (<5 mg/L) and indicative of clear water environments (Ref. 258).

The nearshore waters on the east coast of Barrow Island are generally oligotrophic, with temporal fluctuations in nutrients (Ref. 258; Ref. 262). Nutrient concentrations were generally below the ANZG default trigger values (nutrient enrichment) for tropical Australia, with occasional fluctuations of ammonia, nitrite+nitrate, and orthophosphate well above guideline values (Ref. 258; Ref. 262).

Water quality sampling undertaken in proximity of existing the Janz-Io field infrastructure showed that concentrations of hydrocarbons (total recoverable hydrocarbon [TRH), benzene, toluene, ethylbenzene and xylenes [BTEX] and polycylic aromatic hydrocarbon [PAH]) were below the laboratory limits of reporting (LoR) (Ref. 261). Dissolved metals concentrations were also below the respective ANZG default guideline values for 99% species protection (Ref. 261). 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. 175) The Wenziker et al (Ref. 175) study found no detectable levels of the sampled organics chemicals, and metals were below ANZG guidelines in the waters of the Dampier Archipelago. Pre-construction water quality sampling off the east coast of Barrow Island showed that concentrations of metals were typically consistently below the ANZG guideline trigger values for 99% species protection (Ref. 258). However, natural oil seeps are known to occur on the NWS (Ref. 174).

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

4.3.4.2 Sediment quality

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

Previous sediment quality data for Pilbara coastal waters (Ref. 176) indicated no detectable hydrocarbons, and with metal concentrations typically below the relevant ISQG-low guidelines.

Sediment quality sampling during 2014 and 2015 off the east coast of Barrow Island showed that except for nickel in one reference site sample, total metal concentrations of all sediment samples were below respective laboratory LoR and/or Interim Sediment Quality Guideline (ISQG)-Low trigger values (Ref. 258). Sediment tributyltin (TBT) concentrations were all below the laboratory LoR and

the ISQG-Low trigger value, except for one sample in each of the 2014 and 2015 surveys (Ref. 258). Total petroleum hydrocarbons (TPH) and Total polycylic aromatic hydrocarbon (PAH) concentrations were all below the LoR in 2014 and at very low concentrations in 2015 samples (with a much lower LoR). Once normalised for (very low) organic carbon content, six samples from 2015 were above ISQG-Low concentrations for benzo(a)pyrene, but well below the ISQG-High concentrations (Ref. 258).

Sediment quality sampling undertaken in proximity of existing the Janz-Io field infrastructure showed that concentrations of hydrocarbons (TRH, BTEX, and PAHs) were below the laboratory LoR (Ref. 261). Total metal concentrations were also below the respective ANZG default guideline values (Ref. 261). It is expected that these low levels of contamination would continue throughout the EMBA (unless within the immediate vicinity of an offshore point source).

4.3.4.3 Air quality

Air quality within the EMBA is expected to be representative of typically high air quality found in offshore areas, away from anthropogenic sources of contamination.

As part of the Ambient Air Quality Monitoring Program on Barrow Island, there were no recorded exceedances for nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), carbon monoxide (CO), hydrogen sulfide (H_2S), or aromatic hydrocarbons (benzene, toluene, ethylbenzene and xylene) against the relevant National Environmental Protection Measure (NEPM) standards (Ref. 259). There have been elevations of PM_{10} levels around facilities on Barrow Island, however these are likely associated with vehicle traffic and regional weather events (Ref. 259).

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

4.3.5 People and communities

People and communities, and specifically their social, economic, and cultural features, are included within the definition of environment within the OPGGS(E)R. People and communities have been identified and described to the extent that they 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. 87). These uses of the NWMR make an important economic and social contribution to settlements along the coast (Ref. 87). Industry activities present with the EMBA are identified and described in Section 4.4.

4.3.5.1 Land use

The OA occurs offshore and does not have any interface with the coast. The Hydrocarbon EMBAs do interface with the coast, including parts of Barrow Island, the Montebello Islands, other Pilbara inshore islands, as well as some parts of the mainland coast along the North West Cape Peninsula and Cape Preston (Figure 4-1). Noting however that the Hydrocarbon EMBAs typically only extends landward to the high-water mark (HWM).

The land uses that may be present within the Hydrocarbon EMBAs 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 (Sections 4.5.1 and 4.5.2). 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. 179). Camping is permitted on some of the islands (with some restrictions during turtle nesting season) (Ref. 179; Ref. 180).

Barrow, Double, Middle, and Boodie islands are designated as State 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. 179). Camping is not permitted on any of these islands (Ref. 179).

The Pilbara Inshore 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. 179). Some of the islands that occur within 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. 179). Fishing, beach walks and wildlife viewing are types of activities that may occur in the Pilbara Inshore Islands Nature Reserves (Ref. 179). Camping is only permitted on certain islands and may require a permit (Ref. 179).

The Cape Range National Park (IUCN II) and Bundegi Coastal Park (IUCN) are protected under WA jurisdiction (Section 4.5.3), and they are part of the Ningaloo Coast World Heritage Area. Both terrestrial protected areas are gazetted to the HWM. Given the natural values of the parks and surrounding waters, recreational activities may occur. Walk trails, wildlife viewing, camping, beachcombing, swimming, snorkelling, beach fishing are types of activities that may occur (Ref. 221, Ref. 249).

Two Native Title determination (WCD2019/016 and WCD2018/006) extend into the Hydrocarbon EMBAs (Section 4.6). The determination areas contain places of special significance, such as mythological and ceremonial sites and natural resources (Ref. 181).

There are no towns or cities located within the Hydrocarbon EMBAs.

4.3.5.2 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. 182).

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.

4.3.5.2.1 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, and have an ongoing connection to these areas (Ref. 87).

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. 183). For First Nations peoples, the term ‘country’ includes both land and sea and the coastal areas that are connected with the traditional country of a 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 Thalanyji 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. 183). 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. 183).

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. 183).

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 ~5 km outside the Hydrocarbon EMBAs).

4.3.5.2.2 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. 87). British colonisation didn’t begin in the Pilbara until 1860s, with pastoralism as the first major industry, followed by small ports and service centres (Ref. 87). The pearling industry began in the late-1800s, and remains a significant contributor to the economy of northwest WA (Ref. 87). 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. 87). Petroleum discovery and development commenced from the 1950s, with both onshore and offshore discoveries (Ref. 87).

The marine and coastal industries that still exist and operate within the NWMR are further described in Section 4.4.

4.3.6 Commonwealth marine areas

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 intersects within 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. 87). 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. 87).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. 163). 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. 87).

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)
- KEFs (Section 4.3.6.1).

4.3.6.1 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. 184):

- 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. 184).

The presence of KEFs within the EMBA, and a description of the KEFs values, are shown in Table 4-14: and Figure 4-17.

Table 4-14: Presence of KEFs

Key ecological feature	OA	Sound EMBA	Hydrocarbon Ecological and Social EMBAs
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. 87). 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. 87). Benthic surveys undertaken by CAPL, identified that the habitat within this KEF in proximity to the OA consisted of smooth seabed with bioturbation and appeared devoid of biota (Ref. 261). **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. 87). 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. 87). 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. 165). **Values:** Unique sea floor features with ecological properties of regional significance.			
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. 185). 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 (750–1000 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. 87). Benthic survey undertaken by CAPL, identified that the habitat within this KEF in proximity to the OA comprise irregular and smooth seabed with bare substrates, discrete depressions of bare substrate, and scarps with bare substrate, were the most dominant benthic features (Ref. 261). **Values**: High levels of endemism.			

Key ecological feature	OA	Sound EMBA	Hydrocarbon Ecological and Social EMBAs
Commonwealth waters adjacent to Ningaloo Reef			✓
The Commonwealth waters adjacent to Ningaloo reef include Ningaloo Marine Park (Commonwealth waters) and encompass an area of 2,435 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. 87). Aggregations of whale sharks, manta rays, humpback whales, sea snakes, sharks, large predatory fish and seabirds are known to occur in this area (Ref. 87). **Values:** High productivity and aggregations of marine life			
Exmouth Plateau			✓
The Exmouth Plateau is a regionally and nationally unique deep-sea plateau (water depths of 800-4000 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. 87). 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 1000 m. Sediments on the plateau suggest that biological communities include scavengers, benthic filter feeders and epifauna (Ref. 87). Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton (Ref. 165). **Values:** Unique sea floor feature with ecological properties of regional significance			

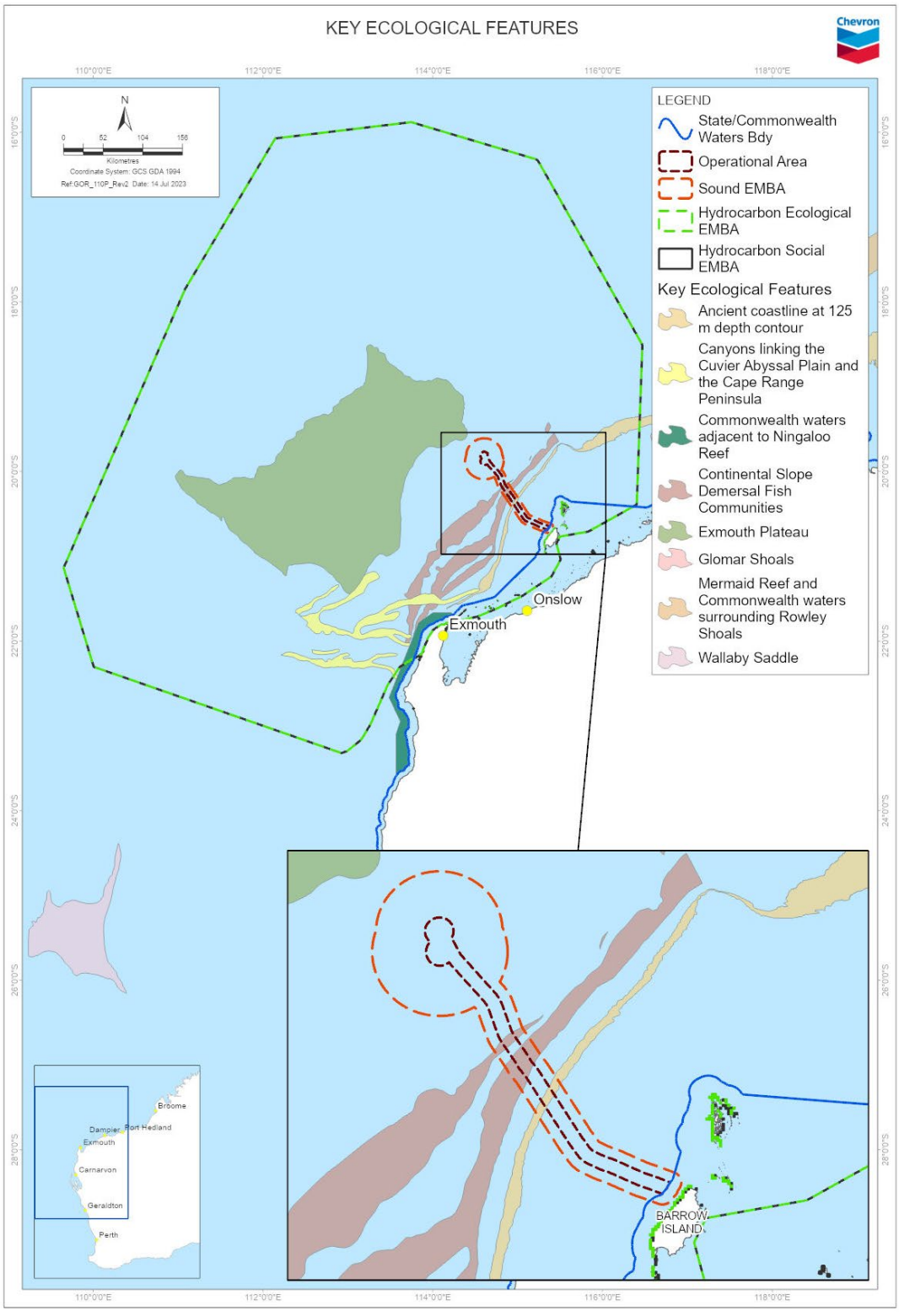


Figure 4-17: Key ecological features within the vicinity of the EMBA

4.3.7 Commonwealth land area

Commonwealth land[14] is a particular value and sensitivity under the OPGGS(E)R. Based on spatial review and searches of the EPBC Act protected matters database (Ref. 52; appendix b) there is Commonwealth land associated with Department of Defence facilities that intersect 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. 197) 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 Social Ecological	Hydrocarbon Ecological EMBA
North-West Slope Trawl Fishery	✓	✓	✓	✓
Western Deepwater Trawl Fishery			✓	✓

Relative fishing intensity data is not available for the North West Slope Trawl fishery due to low vessel numbers and confidentiality. Fishing activity during 2015-2020 is shown in Figure 4-18.

The North West Slope Trawl Fishery use bottom (or demersal) trawl methods to target deep-water prawn and scampi typically in depths of 350–600 m. The primary species landed in the North West Slope Trawl Fishery 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

[14] 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.

component of the catch. Mixed snappers (*Lutjanidae*) and redspot emperor (*Lethrinus lentjan*) have historically been an important component of the North West Slope Trawl Fishery 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.

The Southern Bluefin Tuna Fishery is active within waters in the Great Australian Bight and south-eastern Australia (i.e.i.e. not within the EMBA); however, the spawning grounds for Southern Bluefin Tuna are located in the north-east Indian Ocean (Ref. 197). The indicative spawning area for the Southern Bluefin Tuna extends into the EMBA.

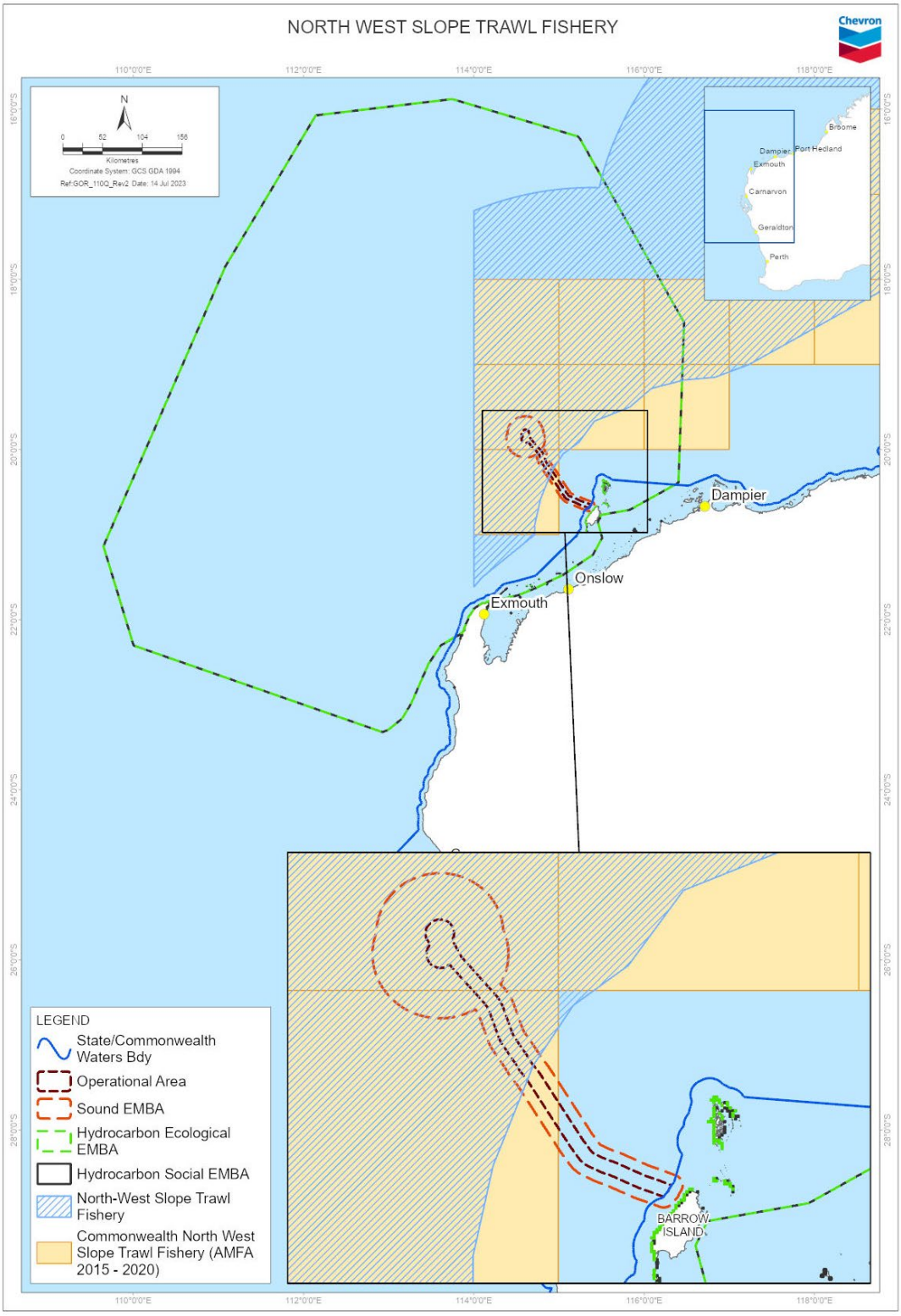


Figure 4-18: North West Slope Trawl Fishery—fishery management area, and records of fishing activity (based on 60 nm graticular reporting blocks) for 2015–2020, within the vicinity of the EMBA

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. 54) 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 during 2012-2021 within State-managed commercial fisheries

Fishery	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
North Coast Bioregion				
Mackerel 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 Fishery			✓	✓
Statewide				
Marine Aquarium Fish Managed Fishery			✓	✓
Specimen Shell Managed Fishery			✓	✓
Hermit Crab Fishery			✓	✓
Open Access in the North Coast, Gascoyne Coast and West Coast Bioregions			✓	✓

Five fisheries were identified with activity within the vicinity of the OA; these are shown in Figure 4-19 to Figure 4-23. None of the identified fisheries within the OA or Sound EMBA operated more than three vessels per year.

The Mackerel Managed Fishery utilises near-surface trolling or jig fishing methods, with vessels primarily active during May to November (Ref. 198), and with the bulk of the catch typically taken north of the OA within Kimberley waters (Ref. 198). 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. 198). The total catch for the fishery in 2020/2021 was 246–430 t. The intersect between the OA and fishing effort for the Mackerel Managed Fishery occurs in the part of the OA associated with the installation of the HVSC (Figure 4-19).

The Pilbara Crab Managed Fishery utilises hourglass 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. 198). The intersect between the OA and fishing effort for the Pilbara Crab Managed Fishery occurs in the part of the OA associated with the installation of the HVSC (Figure 4-20). 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. 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).

The Pilbara Fish Trawl (Interim) Managed Fishery, Pilbara Line Fishery, and Pilbara Trap Managed 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. 198).

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 Fishery catch is made up around 45-50 different fish species. The main species targeted by the fishery 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 forthe fishery in 2020/2021 was 167 t (Ref. 198).

The Pilbara Trap Managed Fishery (trap methods) is managed through area closures and effort allocations (Ref. 198). 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 for the fishery in 2020/2021 was 584 t (Ref. 198).

The West Australian Sea Cucumber (Beche-De-Mer) Fishery collects sea cucumbers (also known and bêche-de-mer or trepang). The fishery is primarily based in the northern half of WA, from Exmouth Gulf to the Northern Territory border, however fishers do have access to all WA waters. It is a hand-harvest fishery, with animals caught principally by diving, and a smaller amount by wading. Given the OA occurs in water depths of ~25–1,350 m, and is >5 km from the coast, the use of this area by this fishery is expected to be limited. This is supported by the records for fishing effort, which show that within the ten-year period (2012–2021), only four months (January 2019, December 2018, November 2017, April 2014) recorded any presence within the 10 nm graticular reporting blocks that intersect with the OA. The intersect between the OA and fishing effort for the West Australian Sea Cucumber (Beche-De-Mer) Fishery occurs in the part of the OA associated with the nearshore installation of the HVSC (Figure 4-23).

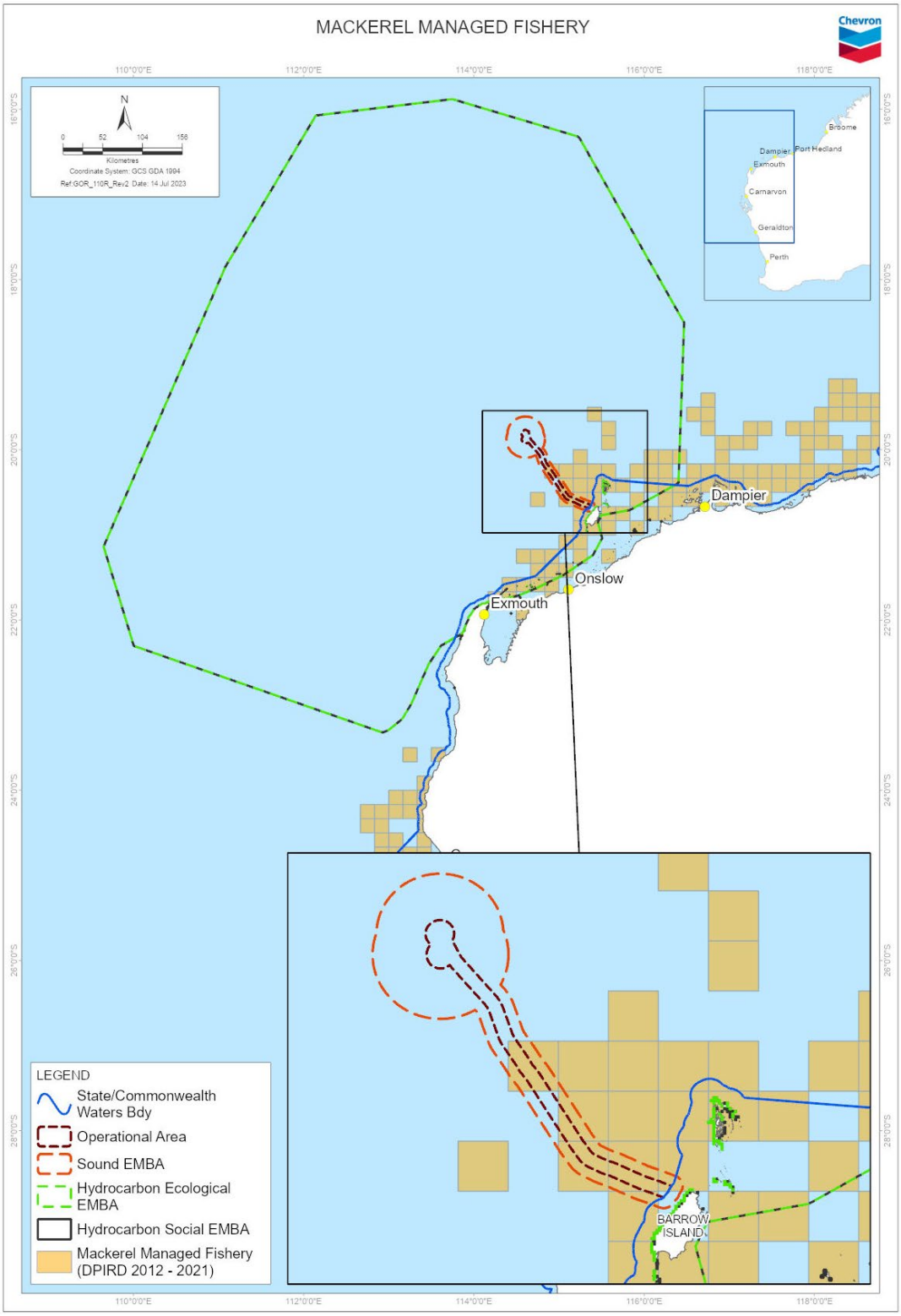


Figure 4-19: Mackerel Managed Fishery—recorded fishing effort (based on 10 nm graticular reporting blocks) for 2012–2021, within the vicinity of the EMBA

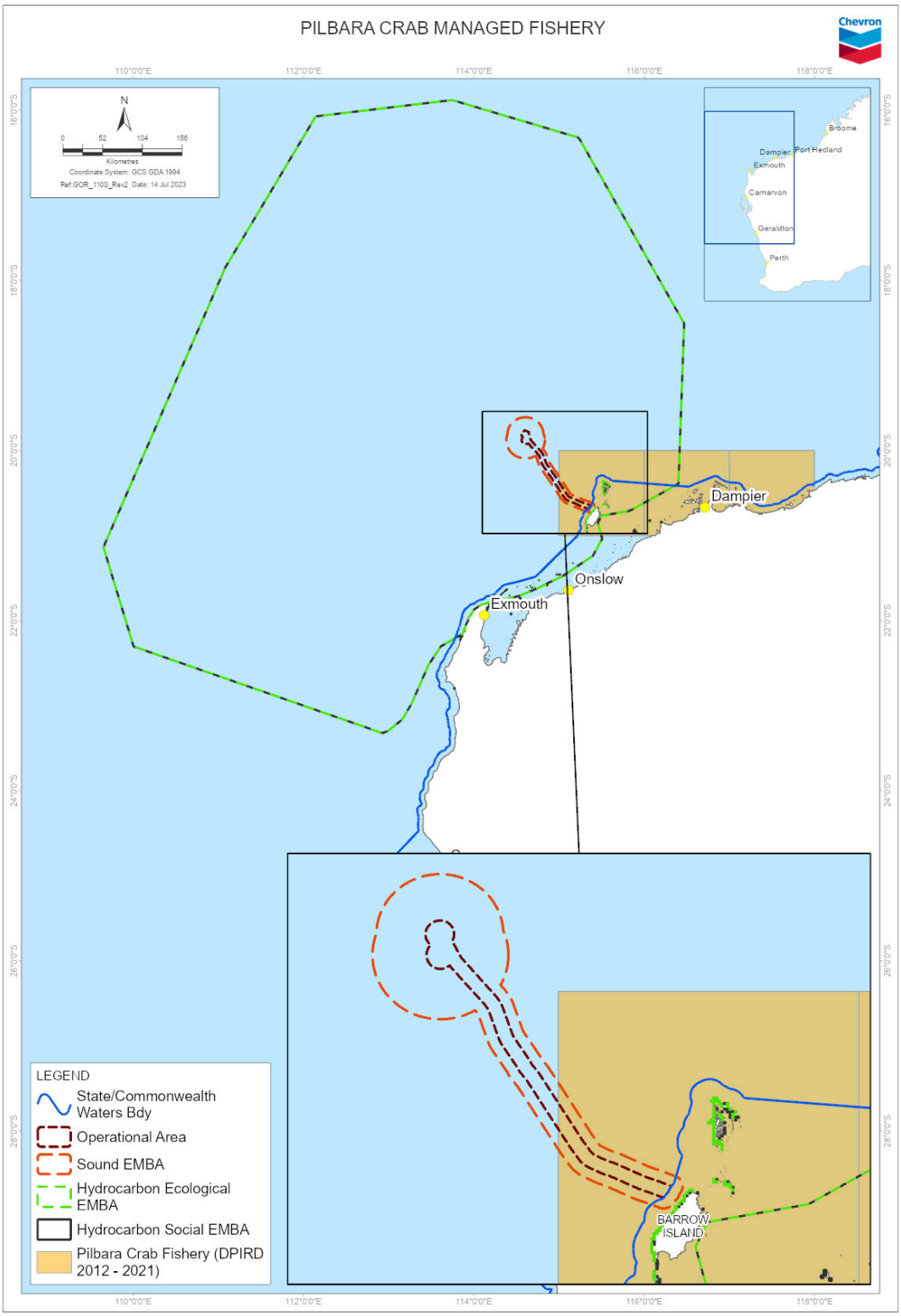


Figure 4-20: Pilbara Crab Managed Fishery—recorded fishing effort (based on 60 nm graiticular reporting blocks) for 2012–2021, within the vicinity of the EMBA

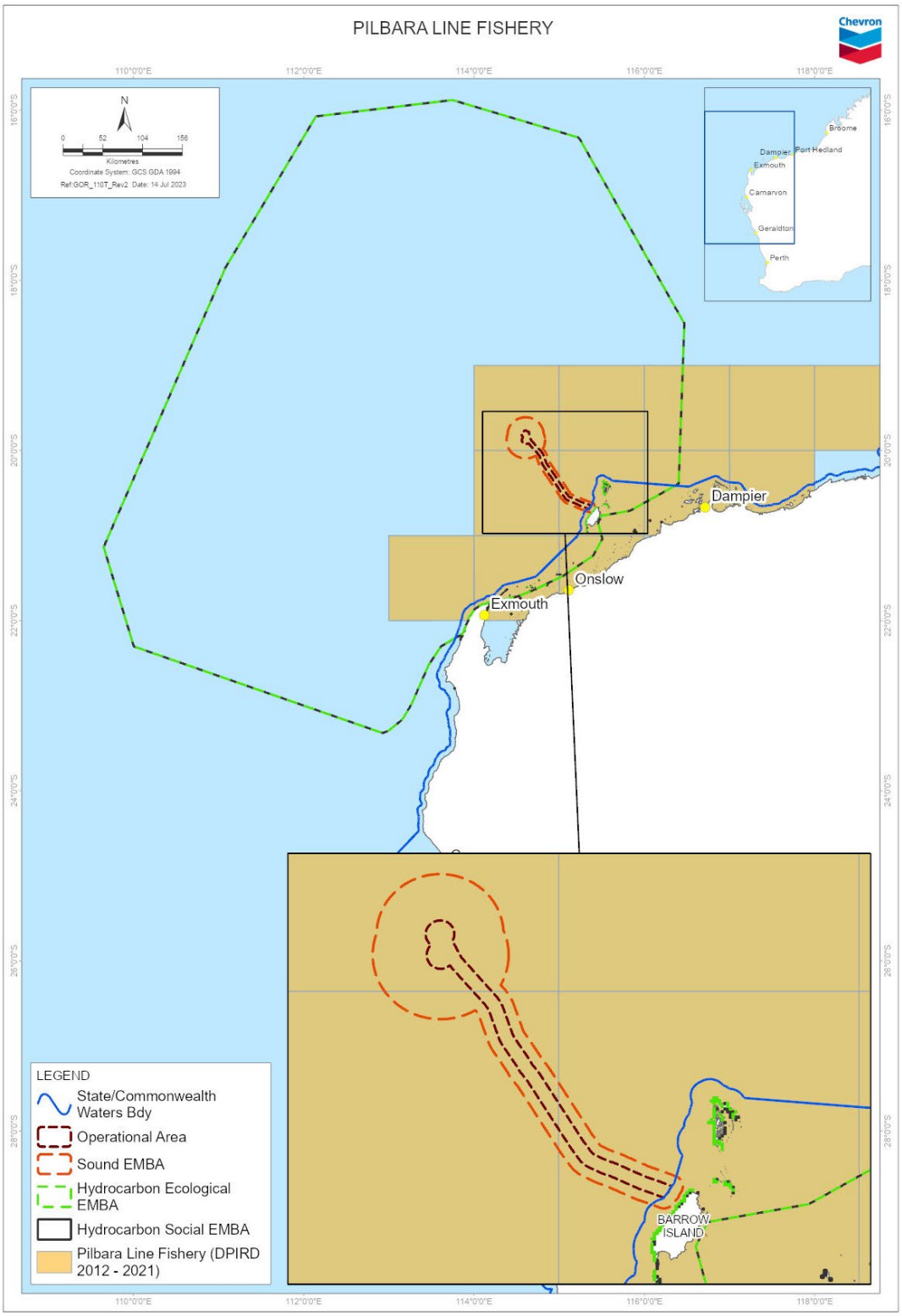


Figure 4-21: Pilbara Line Fishery—recorded fishing effort (based on 60 nm graiticular reporting blocks) for 2012–2021, within the vicinity of the EMBA

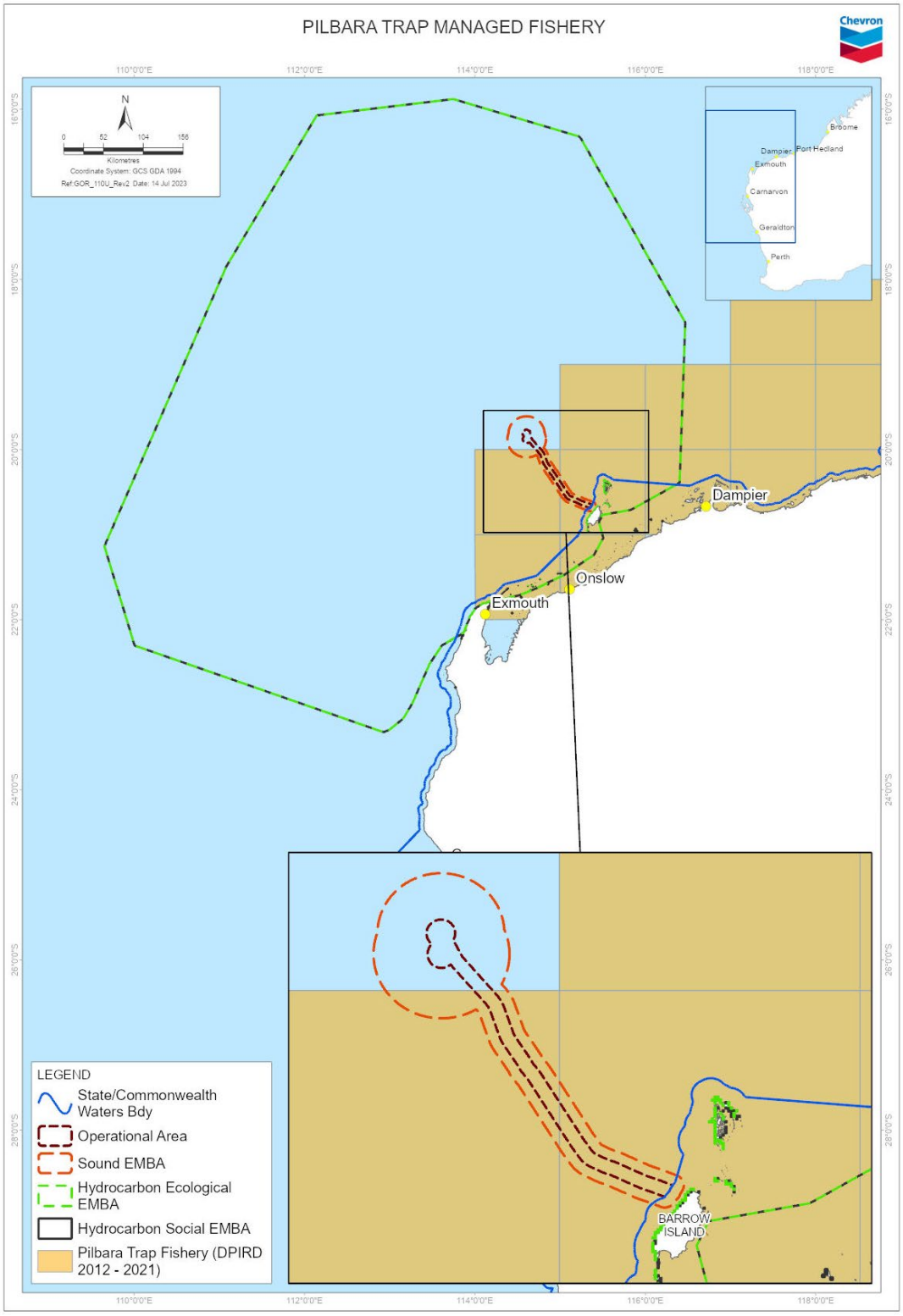


Figure 4-22: Pilbara Trap Managed Fishery—recorded fishing effort (based on 60 nm graiticular reporting blocks) for 2012–2021, within the vicinity of the EMBA

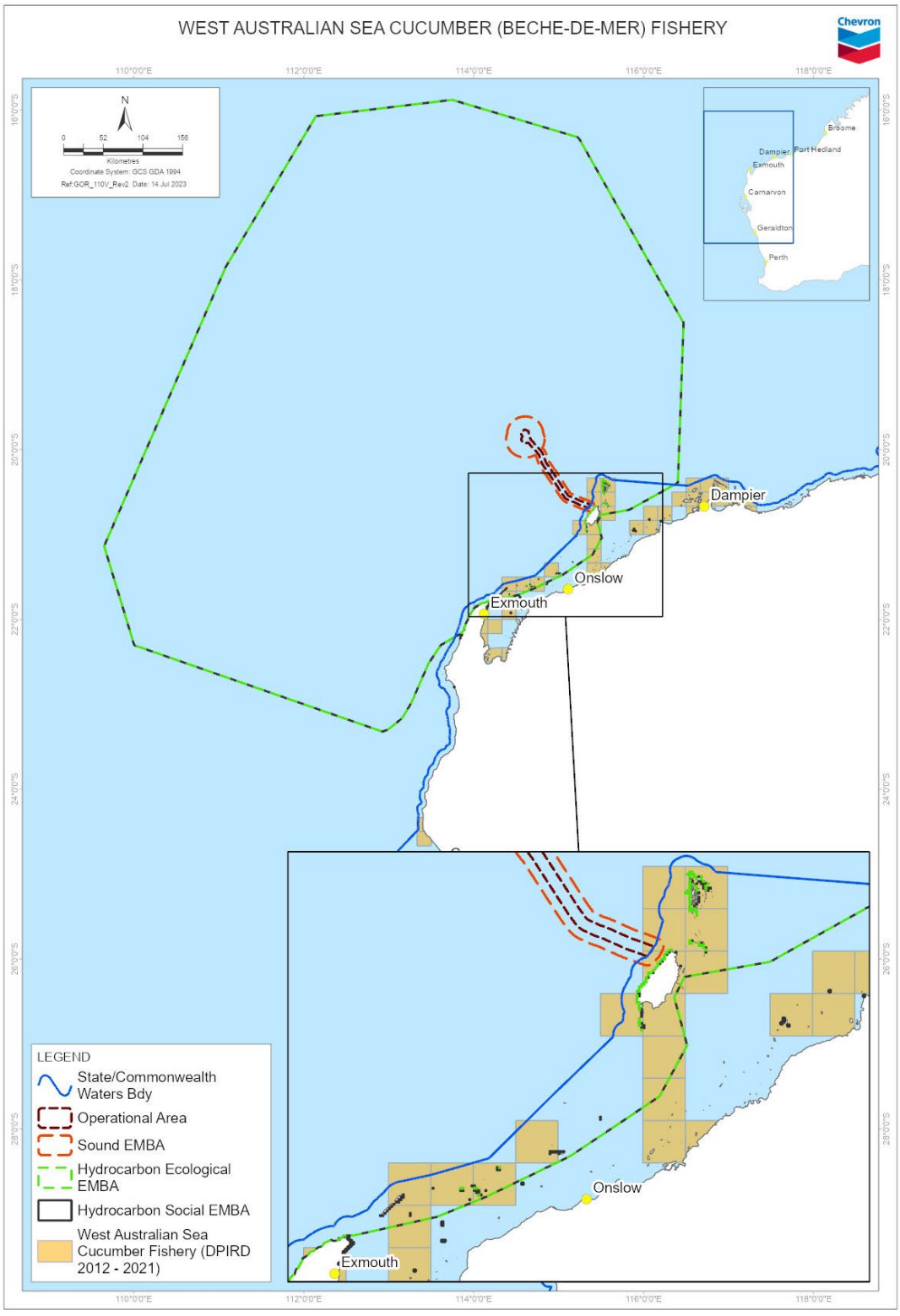


Figure 4-23: West Australian Sea Cucumber (Beche-De-Mer) Fishery—recorded fishing effort (based on 60 nm graiticular reporting blocks) for 2012–2021, within the vicinity of the EMBA

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 occurs offshore and does not have any interface with the coast; and therefore there is no overlap with any known licensed aquaculture or pearling operations. The Sound EMBA does extend into nearshore waters on the west coast of Barrow Island; however there are no pearling or aquaculture facilities in these waters.

The Hydrocarbon EMBAs do interface with the coast, including around Barrow Island, the Montebello Islands, several Pilbara inshore islands, and scattered coastal areas along the North West Cape peninsula coast and Cape Preston (Figure 4-1). There are known pearl farm leases in nearshore waters around the Montebello Islands and one pearl approved site close to the North Muiron Island. There are also known aquaculture site northeast of Thevenard Island.

4.4.2 Recreation fisheries

Recreational fishing is one of the most popular activities in WA with an estimated third of the population fishing recreationally (Ref. 191). 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. 192) 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. 54) identified there were up to seven vessels operating within the OA, however, fishing efforts have been reported between May and December only.

Some shore-based fishing may occur in the coastal regions within the Hydrocarbon EMBAs (Section 4.3.5.1).

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. 193). 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 4.3.5.2.1, 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. Where shore-based fishing is undertaken, this may intersect with the Sound EMBA and Hydrocarbon EMBAs.

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 4-24, which shows recent vessel traffic within the vicinity of the EMBA.

The OA intersects a NWS shipping fairway (Figure 4-24). However, vessel traffic within the fairway is relatively low (compared to other NWS shipping fairways). Vessel traffic within and around the OA is most likely to comprises offshore support vessels for petroleum activities.

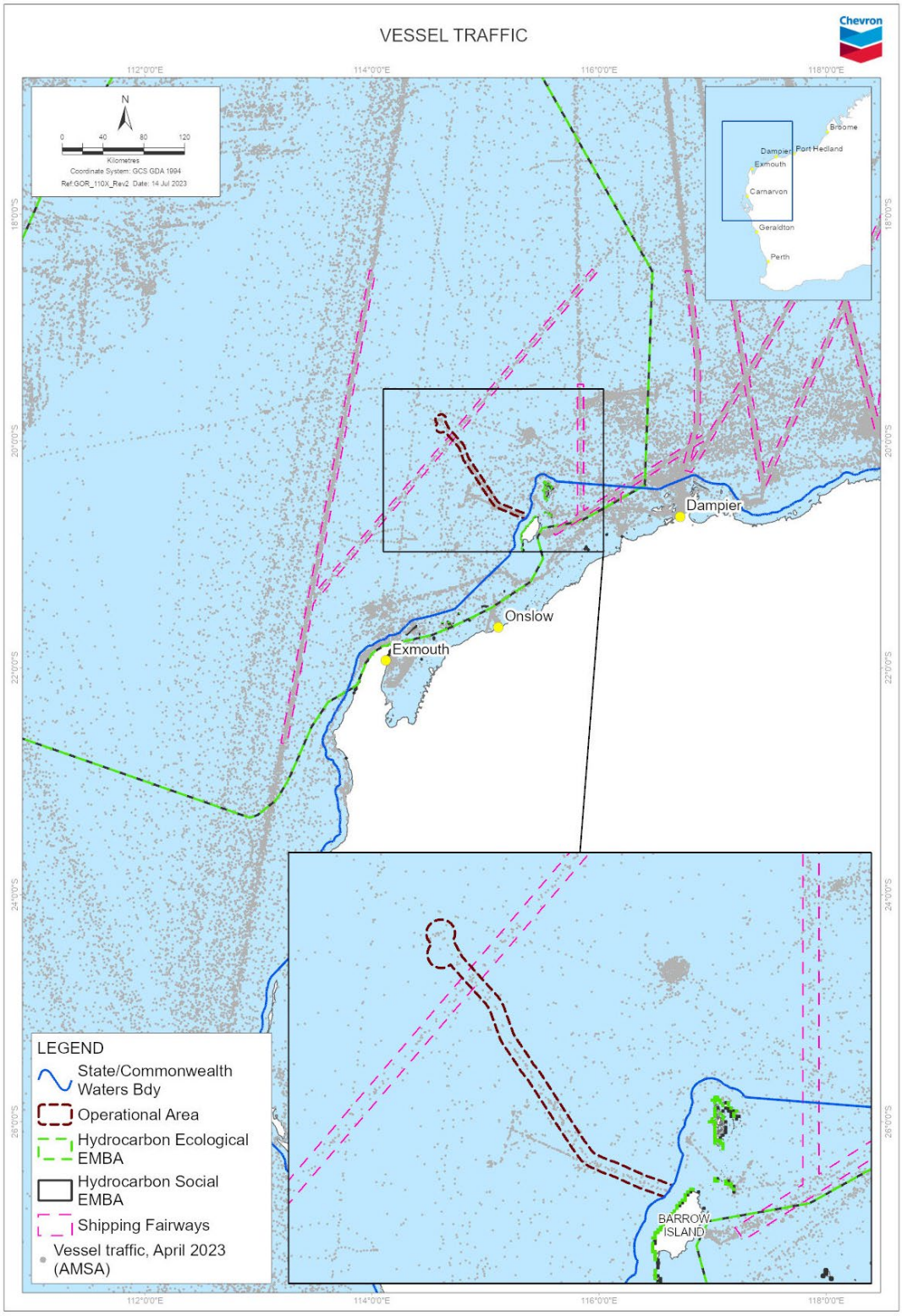


Figure 4-24: Vessel traffic within the vicinity of the EMBA

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. 194). Charter fishing, diving, snorkelling, wildlife watching, and cruising are some of the commercial tourism activities in and adjacent to the NWMR (Ref. 87). With the exception of offshore fishing, most marine tourism and recreational activities occur in the shallower State waters (Ref. 87).

The OA and Sound EMBA occur offshore and do not have any interface with the coast. The Sound EMBA does extend into the nearshore areas of the west coast of Barrow Island. As such there is limited tourism and recreational activities expected within the OA and Sound EMBA.

The Hydrocarbon EMBAs do interface with the coast, including parts of Barrow Island, the Montebello Islands, other Pilbara inshore islands, as well as some parts of the mainland coast along the North West Cape Peninsula and Cape Preston (Figure 4-1). As described in Section 4.3.5.1, tourism and recreational activities may occur around the Montebello Islands, Pilbara Islands and Ningaloo/Exmouth areas.

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 (~130 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. 195), 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. 196).

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, 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	✓	✓	✓
Defence			✓
Submarine cables	✓	✓	✓
Ports			✓

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. 162). 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. 162).

Infrastructure from the Gorgon Gas Development is located within the OA, including existing manifolds, pipelines, flowlines and umbilicals. Except for standard subsurface operations, no other energy activities have been identified within the OA and Sound EMBA.

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. 247). The Australian Navy has three communication stations located on the North West Cape peninsula. The Harold E Holt Area A is located at the northern extent of the North West Cape, and includes a very low frequency radio, towers and associated infrastructure. Harold E Holt Area A also includes the Point Murat Navy Pier, and the waters extending 400 m around the pier (Ref. 260), There are no known sites of unexploded ordnance within the OA (Ref. 248).

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. One known submarine cable intersects with the OA, the Darwin-Jakarta-Singapore Cable(DJSC) . This cable will link the existing Australia Singapore Cable (ASC) to the North-West Cable System. The DJSC extends from Port Headland east to the ASC. 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.

The *Port Authorities Act 1999* (WA) governs Western Australia's port authorities, covering their functions, responsibilities, concept of operations and related matters. The Port of Ashburton and Port of Varanus Island are both proclaimed ports managed under this Act, and the port areas extend within the Hydrocarbon EMBAs. The *Shipping and Pilotage Act 1967* (WA) governs shipping and pilotage in and about ports, boat harbours, and mooring control areas of WA. The Barrow Island Port is a declared port under this Act, and occurs within the Hydrocarbon EMBAs.

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, snorkeling, or fishing (Ref. 186).

The North-west Marine Parks Network Management Plan (Ref. 186) 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. 66) 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:.

There is one AMP within the OA; the southern end of the OA partially overlaps the Montebello Marine Park.

Table 4-18: Presence of AMPs

Australian Marine Park^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
Gascoyne (Multiple use zone [IUCN VI], National Park Zone [IUCN II], Habitat protection zone [IUCN IV])			✓	✓
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.				

Australian Marine Park^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
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 water 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. **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 4.3.3.1.1). 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 Marine Park (Recreational Use Zone [IUCN IV], National Park Zone [IUCN II])			✓	✓
The Ningaloo Marine Park stretches ~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 km² and a water depth range of 30 m to more than 500 m. The Marine Park was originally proclaimed under the National Parks and Wildlife Conservation Act 1975 on 20 May 1987 as the Ningaloo Marine Park (Commonwealth Waters), and proclaimed under the EPBC Act on 14 December 2013 and renamed Ningaloo Marine Park on 9 October 2017. **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				

Australian Marine Park^	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA

- Northwest Shelf Province—a dynamic environment, influenced by strong tides, cyclonic storms, long-period swells, and internal tides. The bioregion includes diverse benthic and pelagic fish communities, and ancient coastline thought to be an important sea floor feature and migratory pathway for Humpback Whales.

Key ecological features of the Marine Park are:

- Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula—an area resulting in upwelling of nutrient-rich water and aggregations of marine life
- Commonwealth waters adjacent to Ningaloo Reef—an area where the Leeuwin and Ningaloo currents interact, resulting in enhanced productivity and aggregations of marine life
- Continental slope demersal fish communities—an area of high diversity among demersal fish assemblages on the continental slope.

Ecosystems represented in the Marine Park are influenced by interaction of the Leeuwin Current, Leeuwin Undercurrent, and the Ningaloo Current.

The Marine Park supports a range of species including species listed as threatened, migratory, marine, or cetacean under the EPBC Act. Biologically important areas within the Marine Park include breeding and or foraging habitat for seabirds; internesting habitat for marine turtles; a migratory pathway for Humpback Whales; foraging habitat and migratory pathway for Pygmy Blue Whales; breeding, calving, foraging, and nursing habitat for dugong; and foraging habitat for Whale Sharks.

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 Murion 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 UCH Act.

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.

^*Source: Ref. 66*

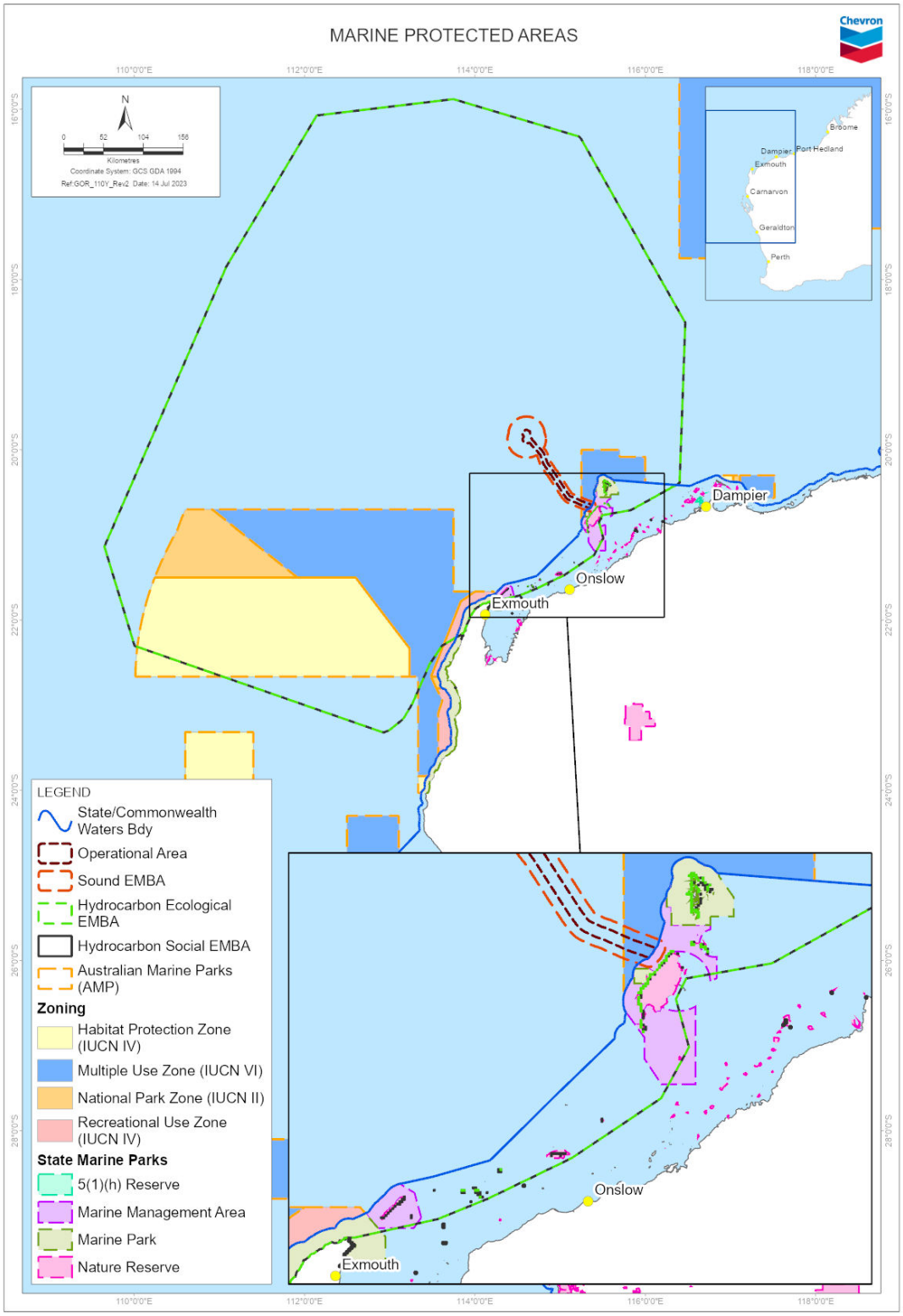


Figure 4-25: Commonwealth and State marine protected areas within the vicinity of the EMBA

4.5.2 State marine parks

State marine parks, and marine management areas 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, or management areas within the OA; however, the southern extent of the OA is adjacent to the Barrow Island Marine Management Area (Figure 4-25). The presence of State marine parks, and marine management areas within the EMBA is shown in Table 4-19:.

Table 4-19: Presence of State marine protected areas

State marine protected areas	Zone Type (IUCN category)	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
Barrow Island Marine Park	Unassigned (IUCN Ia)		✓	✓	✓
Barrow Island Marine Management Area	Unassigned (IUCN VI)		✓	✓	✓
Montebello Islands Marine Park	Sanctuary Zone (IUCN IA)		✓	✓	✓
	General Use Zone (IUCN II)		✓	✓	✓
	Special Purpose Zone – Pearling (IUCN VI)			✓	✓
	Special Purpose Zone (Benthic Protection) (IUCN IV)			✓	✓
	Recreation Zone (IUCN II)			✓	✓
Muiron Islands Marine Management Area	MMA (Unclassified) (IUCN VI)			✓	✓
	Conservation Area (IUCN IA)			✓	✓
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)			✓	✓

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 occur offshore and does not have any interface with the coast. The Hydrocarbon EMBAs do interface with the coast, including parts of Barrow Island, the Montebello Islands, other Pilbara inshore islands, as well as some parts of the mainland coast along the North West Cape Peninsula and Cape Preston (Figure 4-1). The State terrestrial protected areas that intersect with the Hydrocarbon EMBAs are shown in Table 4-20:.

Table 4-20: Presence of State terrestrial protected areas

Terrestrial protected areas	Zone Type (IUCN category)	OA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
Barrow Island Nature Reserve *	Nature Reserve (IUCN Ia)		✓	✓
Boodie, Double Middle Islands*	Nature Reserve (IUCN Ia)		✓	✓
Bundegi Coastal Park^	5(1)(h) Reserve (IUCN II)			✓
Cape Range National Park^	National Park (IUCN II)			✓
Montebello Islands Conservation Park^	Conservation Park (IUCN II)		✓	✓
Pilbara Islands[15] Nature Reserves*^	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 values

Feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
World Heritage property				
Ningaloo Coast			✓	✓
National Heritage place				
Ningaloo Coast			✓	✓
Commonwealth Heritage place				
Ningaloo Coast			✓	✓
Indigenous Protected Areas				
N/A	*(none identified within the EMBA)*			
Sites or artefacts protected under the *Underwater Cultural Heritage Act 2018* (Cth)				
Historic shipwrecks (>75 years old)			✓	✓

[15] The Pilbara Inshore Islands management plan includes 20 existing nature reserves, with several small unallocated Crown Land islands proposed to become nature reserves. Of the existing nature reserves, The Hydrocarbon Ecological and Social EMBAs interact with Bessieres, Lowendal, Serrurier Islands. The Hydrocarbon Social EMBA also interacts with Muiron, Round, Airlie, and Victor Islands.

Feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
Shipwrecks			✓	✓
Sunken aircraft	*(none identified within the EMBA)*			
In situ artefacts	*(none identified within the EMBA)*			
Sites or artefacts protected under the *Aboriginal Cultural Heritage Act 2021* (WA) [16]				
28 Mile Creek North 1 (Artefacts/Scatter, Midden/Scatter)				✓
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 North Middens (Artefacts/Scatter, Midden/Scatter)				✓
Camp 17 South Middens (Artefacts/Scatter, Midden/Scatter)				✓
Low Point Midden (Artefacts/Scatter, Midden/Scatter)				✓
Mandu Mandu Ck Rockshelters (Artefacts/Scatter)				✓
Mandu Mandu Creek North (Artefacts/Scatter, Midden/Scatter)				✓
Mandu Mandu Creek South (Artefacts/Scatter, Midden/Scatter)				✓
Mandu Mandu Rockshelters (Artefacts / Scatter, Midden / Scatter, Rockshelter, Arch Deposit, Other)				✓
Mangrove Bay. (Artefacts/Scatter, Midden/Scatter, Skeletal Material/Burial, Hunting Place)				✓
Mesa Camp (Artefacts/Scatter, Midden/Scatter)				✓
Montebello Island Haynes Cave (Artefacts / Scatter, Midden / Scatter, Rockshelter, Arch Deposit)			✓	✓
Montebello Island Noala Cave (Artefacts / Scatter, Midden / Scatter, Rockshelter, BP Dating: 27,220 +/- 640)			✓	✓
Oyster Stacks Midden (Artefacts/Scatter, Midden/Scatter				✓
Point Murat 01 (Artefacts/Scatter, Midden/Scatter)				✓
Point Murat 02 (Artefacts/Scatter, Midden/Scatter)				✓

[16] Only Aboriginal Heritage places, which has been assessed as meeting Section 5 of the *Aboriginal Cultural Heritage Act 2021* (WA), with a potential coastal and/or marine interface that intersect with the geographic extent of the EMBA (including areas of predicted shoreline loading) have been included. This is considered a conservative approach, as the heritage sites within the Department of Planning, Lands and Heritage (DPLH) spatial dataset (Ref. 263) include a buffer around sites to protect privacy regarding the location. As such, the identified heritage sites may not be present within the EMBA.

Feature	OA	Sound EMBA	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA
Point Murat 04 (Artefacts/Scatter)				✓
Point Murat (Artefacts/Scatter, Midden/Scatter, Skeletal Material/Burial, Camp, Other)				✓
Pilgramunna Bay Midden (Artefacts/Scatter, Midden/Scatter)				✓
Sandy Bay North (Artefacts/Scatter, Midden/Scatter)				✓
Site No. 25 (Engraving)				✓
Tulki Well Midden (Artefacts/Scatter, Midden/Scatter)				✓
Vlaming Head (Ceremonial, Mythological)				✓
Determined areas under the *Native Title Act 1993* (Cth)				
Native Title determination WCD2019/016				✓
Native Title determination WCD2018/006				✓
Claim areas under the *Native Title Act 1993* (Cth)				
N/A	(*none identified within the 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. 187). 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. 188).

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. 187). Intertidal systems such as rocky shores, sandy beaches, estuaries, and mangroves are also present (Ref. 187). The most dominant marine habitat is Ningaloo Reef, which sustains both tropical and temperate marine fauna and flora, including marine reptiles and mammals (Ref. 187).

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. 187). 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. 187). 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. 187).

In addition to the natural values of the Ningaloo Coast, Indigenous values are identified under the National Heritage listing (Ref. 188). 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. 188).

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[17].

Under section 15 of the UCH Act, underwater cultural heritage is defined as "any trace of human existence that has a cultural, historical, or archaeological character, and is located under water". The UCH Act protects physical sites and artefacts; intangible heritage values with no physical component are not protected under the Act (Ref. 291).

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. 292) 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 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).

4.6.3.1 Native Title determination (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. 189). 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. 189). The determination area contains places of special significance, such as cultural, spiritual and ceremonial sites and natural resources (Ref. 189).

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

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

4.6.3.2 Native Title determination (WCD2018/006)

The 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. 190). The determination area contains places of special significance, such as cultural, spiritual, and ceremonial sites and natural resources.

The relevant PBC is the Wirrawandi Aboriginal Corporation.

5 environmental 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 activity (as described in Section 3) and any potential emergency conditions associated with the petroleum activity. These methods support the environmental impact and risk assessment as required under regulation 13(5) of the OPGGS(E)R.

The impact and risk assessment for this EP was undertaken in accordance with CAPL's *ABU OE Risk Management Process* (Ref. 13) 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. 14) and HB 203:2012 *Managing Environment-Related Risk* (Ref. 15).

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

- experience gained during previous GFP and GS2 installation
- expertise and experience of CAPL personnel involved in operations
- relevant persons consultation (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 environmental values and sensitivities

The presence of environmental values and sensitivities within the EMBA is documented in Section 4. In accordance with regulation 13(3) of the OPGGS(E)R, particular values and sensitivities include the following:

- 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 TEC 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 the habitat and/or temporal area that

supports protected and endangered fauna (including areas defined as BIAs for these species) is part of the particular value or sensitivity.

Environmental values and sensitivities are also considered to be associated with each of the receptor groups identified and described in Section 4 (i.e. in addition to those particular values and sensitivities as identified under the OPGGS(E)R). All relevant environmental values and sensitivities have been taken into consideration during the consultation process (and the identification of associated functions, interests, or activities; Section 6), and the impact and risk assessment (Section 7).

5.3 Identification of relevant environmental 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 discharges, greenhouse gas emissions, legacy environmental obligations).

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

Note: Potential interactions with safety, health, and assets are 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
- air emissions
- light emissions
- underwater sound emissions
- electromagnetic 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 Chevron's 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 the 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.

5.5.2.1 ALARP decision context

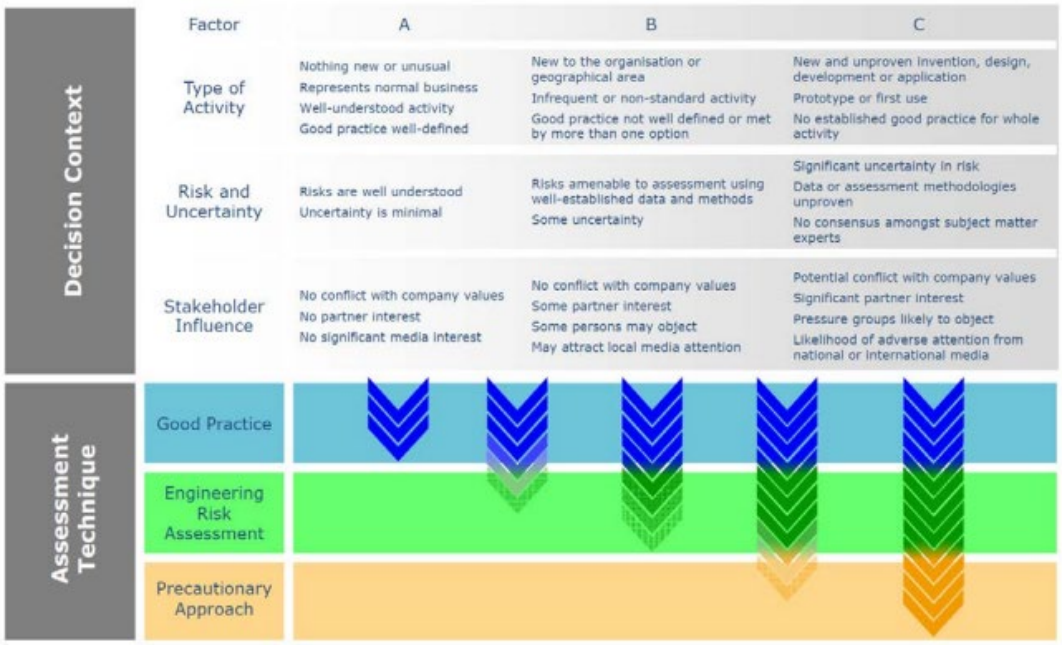
In alignment with NOPSEMA's ALARP guidance note (Ref. 16), CAPL has adapted the approach developed by Offshore Energies UK (OEUK) (Ref. 17) for use in an environmental context to determine the assessment technique required to demonstrate that impacts and risks are ALARP. Specifically, the framework considers 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 conservation advices), 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. 16)

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

OEUK (Ref. 17) 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 OEUK (Ref. 17), 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, OEUK (Ref. 17) 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. 18). 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 and systems)
- external context (existing environment, relevant persons consultation).

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.
© the principle of inter-generational equity – that the present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations;	The risk assessment methodology ensures that impacts and risks are reduced to levels that are considered ALARP. If the impacts and risk are determined to be serious or irreversible, the precautionary principle is implemented to ensure that risks are managed to ensure that the environment is maintained for the benefit of future generations.
(d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;	Evaluate if there is the potential to affect biological diversity and ecological integrity.
(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. 16), 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. 18), 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- and higher-order impacts and risks

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

CAPL will 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 petroleum 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.

Criteria	Test
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 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 guideline (Ref. 18), 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 8.3.4.1.

6.1 Purpose

Regulation 11A of the OPGGS(E)R enables the titleholder to properly understand all the environmental impacts and risks of the petroleum activity, and 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."*[18]

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. 19). The purpose of consultation is also to:

- identify the social and cultural features of communities within the ecosystem
- inform the control measures to eliminate, reduce and mitigate impacts and risks to those socio-cultural values and sensitivities in response to relevant persons concerns
- to inform NOPSEMA of relevant persons' identities, the nature of the consultation, and the control measures adopted (Ref. 20 at paragraphs 55–57).

Regulation 11A establishes an obligation on titleholders to carry out consultation with relevant persons during preparation of an EP, and this obligation must be discharged prior to submitting an EP to NOPSEMA (Ref. 19).

[18] Paragraph 89 of *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Ref. 20).

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. 21) and further guided by:

- NOPSEMA's *Environment plan decision making guideline* (Ref. 18)
- NOPSEMA's *Environment plan content requirements guidance note* (Ref. 22)
- NOPSEMA's *Consultation in the course of preparing an environment plan guideline* (Ref. 19)
- NOPSEMA's *Consultation with Commonwealth agencies with responsibilities in the marine area guideline* (Ref. 23)
- NOPSEMA's *Petroleum activities and Australian Marine Parks guidance note* (Ref. 24)
- Full Court of the Federal Court of Australia's decision in *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Ref. 20)
- 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. 25)
- Government of Western Australia's *Aboriginal Cultural Heritage Act 2021—Consultation Guidelines* (Ref. 26)
- 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. 27)
- Australian Fisheries Management Authority's (AFMA) Petroleum industry consultation with the commercial fishing industry (Ref. 28)
- Western Australian Fishing Industry Council's (WAFIC) *Oil & Gas Consultation Approach for Unplanned Events* (Ref. 29)
- DPIRDs *Guidance statement for oil and gas industry consultation with the Department of Fisheries* (Ref. 30)
- WA Department of Transport's (DoT) *Offshore Petroleum Industry Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements* (Ref. 31).

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. 20), and subsequent NOPSEMA guidance (Ref. 19), it is clear that the phrase "functions, interests or activities" stated in regulation 11A(1)(d) should be broadly construed[19]on the basis that a broad construction best promotes the objects of the OPGGS(E)R. 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[20]
- **interests**—in accordance with the accepted concept of "interest" in other areas of public administrative law, and including "any interest possessed by an individual whether or not the interest amounts to a legal right or is a proprietary or financial interest or relates to reputation"[21]
- **activities**—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[22].

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. 20 at paragraphs 96–102) and has sought to do so through meetings (Ref. 20 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. 20 at paragraph 47) and CAPL has also sought to identify those representative body organisations themselves as relevant persons (Ref. 20 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

[19] Paragraph 51 of *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Ref. 20).

[20] Paragraph 60 of *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Ref. 20).

[21] Paragraphs 63 and 65 of *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Ref. 20).

[22] Paragraphs 58 and 59 of *Santos NA Barossa Pty Ltd v Tipakalippa* [2022] FCAFC 193 (Ref. 20).

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. 18; Ref. 19), 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:

- 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; 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 J-IC installation and pre-commissioning activities 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 the J-IC installation and pre-commissioning activities
- 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 the J-IC installation and pre-commissioning activities, 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

Category of persons or organisations	Consultation strategy and information provided
	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 • 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. 18; Ref. 19), 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. 20),

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. 18) or up to eight weeks (Ref. 24).

Available guidance regarding consultation with State departments or agencies indicates a reasonable period for standard activities is no less than 20 business days (Ref. 30), and up to six weeks (Ref. 31).

Guidance taken from the *Aboriginal Cultural Heritage Act 2021—Consultation Guidelines* (Ref. 26) 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. 19), 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 organisations or individuals 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. 23; Ref. 24; Ref. 28; Ref. 29; Ref. 30; Ref. 31)
  - 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, which 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 • installation—permanent presence of the SCSt, SCSM, HVSC, MV umbilicals, and other associated subsea infrastructure, and subsea stabilisation (e.g. rock berms, concrete mattresses) within the OA • installation—permanent presence of FCS (at the surface) and the associated subsea mooring system within the OA • field support—temporary (short or long-term) presence of vessels within the OA during installation and pre-commissioning, or IMR activities.	Commercial shipping	Interest and activity – Commercial shipping	Presence of vessels or FCS has the potential to result in disruption to other marine users	Commercial vessel traffic density within the OA is relatively low, including within the part of the OA that intersects a NWS shipping fairway. Therefore, the presence of vessels or the FCS within the OA are not expected to have significant 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	Potential for unplanned interactions between other marine users with the subsea infrastructure Presence of vessels or FCS has the potential to result in disruption to other marine users	Subsea infrastructure has been in place within the OA since 2012, and to date, no incidences of commercial fishing activities interacting with the infrastructure has been communicated to CAPL. 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. 54) for the five State- managed commercial fisheries indicated that fishing effort within the OA varies each year, but is typically low with <3 vessels recorded as present within the graticular reporting blocks that intersect the OA (Ref. 54). Similarly, fishing activity within the OA associated with the Commonwealth-managed fishery is also low.	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
	Other commercial industries	Interest and activity – petroleum exploration / production	Concurrent petroleum activities have 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 • field support—temporary (short or long-term) presence of vessels within the OA during installation and pre-commissioning, or IMR activities.	Marine fauna Cultural values	Interest and activity – Environmental conservation Cultural connections	Unplanned interactions with marine fauna Changes to cultural heritage values	Several BIAs or habitat critical to the survival of a species also overlap with the OA, including: • Humpback Whale (migration BIA) • Pygmy Blue Whale (migration BIA) • Flatback Turtle, Green Turtle, Hawksbill Turtle (internesting buffer BIA, and internesting habitat critical to the survival of a species) • 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. If a fauna strike occurred and resulted in death, it is not expected to have a detrimental effect on the overall population of protected species; this event would result in a limited environmental impact. However, it is acknowledged that relevant persons may hold interests relating to the protection of marine fauna.	Government departments or agencies First Nations people and/or representative bodies ENGOs
Seabed disturbance – • installation—presence of the subsea	Marine environmental quality	Interest and activity – Environmental conservation Cultural connections	Localised and temporary reduction in water quality	The petroleum activity is expected to result in disturbance when sediment on the seabed is disturbed and becomes suspended in the water	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
infrastructure and subsea stabilisation (e.g. rock berms, concrete mattresses) within the OA, and the contingency temporary storage of mooring lines, or the HVSC • IMR—as required by maintenance activities (e.g. span rectification) • field support—contingency anchoring by vessels, wet parking of ROVs within the OA.	Benthic habitat and communities Cultural values		Alteration of benthic communities and habitats Changes to cultural heritage values	column when infrastructure or equipment is placed on the seabed, or during trenching. The impacts are expected to be localised to around the area of seabed disturbance. After the activities are completed, sediments will settle back to the seabed and water quality will return to background levels. No protected underwater cultural heritage sites or artefacts have been identified within the OA. Notwithstanding it is acknowledged that that relevant persons may hold interests relating to marine environmental quality, benthic habitats and communities and cultural values, in particular with respect to the protection of sea country.	First Nations people and/or representative bodies ENGOs
Air emissions – • installation—combustion of diesel from the temporary generators (i.e. used until power supply via HVSC is available) on board the FCS • field support—combustion of marine fuel from vessels, or aviation fuel from helicopters, within the OA during	Marine environmental quality	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 direct GHG emissions associated with 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 ENGOs

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
installation and pre-commissioning, or IMR activities.					
Light emissions – • installation—navigation and operational lighting from the of FCS • field support—navigation and operational lighting from vessels during the petroleum activity (including installation and pre-commissioning, or IMR activities) within the OA.	Marine environmental quality Marine fauna	Interest and activity – Environmental conservation	A localised and temporary change in ambient light Change in fauna behaviour for light-sensitive species	CAPL expects that its activities could result in temporary changes to ambient light conditions. However it is expected that although light may be visible, it will not be at a level that is biologically relevant or that will result in behavioural impacts at distances >1.8 km from a vessel. Several BIAs and/or habitat critical to the survival of a species also overlap with the OA, including: • Fairy Tern, Lesser Crested Tern, Roseate Tern, Wedge-tailed Shearwater (breeding BIAs) • Whale Shark (foraging BIA) • Flatback Turtle, Green Turtle, Hawksbill Turtle (internesting buffer BIA, and internesting habitat critical to the survival of a species). 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.	Government departments or agencies ENGOs
Underwater sound – • field support—vessel or helicopter operations during the petroleum	Marine environmental quality Marine fauna	Interest and activity – Environmental conservation	Localised and temporary change in ambient underwater sound Auditory impairment,	Several BIAs or habitat critical to the survival of a species overlap with the Sound EMBA, including: • Pygmy Blue Whale (migration BIA)	Government departments or agencies ENGOs

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
activity (including installation and pre-commissioning, or IMR activities) within the OA • installation—acoustic surveys (MBES and SSS) associated with the pre-, as-trench, and post-lay surveys, as well as during rock stabilisation • IMR—acoustic surveys (MBES and SSS).			temporary threshold shift (TTS), permanent threshold shift (PTS), recoverable or non-recoverable injury to marine fauna Changes to cultural heritage values	• Humpback Whale (migration BIA) • Flatback, Green, and Hawksbill (internesting buffer BIA, internesting habitat critical to the survival of a species) • Whale Shark (foraging BIA). CAPL has undertaken underwater sound modelling which indicates localised and short-term behavioural impacts to transient individuals may arise from the activities. TTS and PTS are considered highly unlikely to occur due to the need for fauna to remain in close proximity to for extended durations before auditory impairments or injuries occur. 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 – • installation—presence of biofouling on subsea equipment used within the OA • field support—planned discharged of ballast water or the presence of biofouling on vessels undertaking activities within the OA.	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 ~25–1,350 m, is located offshore from the mainland coast and large ports, and the seabed is dominated by soft sediments such as sand and clay. Thus, the more favourable requirements of expansive hard substrate and sufficient light for IMP survival are not common within the OA. Although it is highly unlikely the activities in this EP would result in the introduction of IMPs, once established, IMPs 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	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
				the values and sensitivities that may be impacted by this aspect.	
Planned discharges – surface • installation—FCS operations during installation and pre-commissioning • field support—vessel operations during the petroleum activity (including installation and pre-commissioning, or IMR activities) within the OA.	Marine environmental quality Marine fauna	Interest and activity – Environmental conservation	Localised and temporary reduction in water quality Changes to predator-prey dynamics	Impacts and risks associated with planned discharges from the vessels or FCS 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 or the FCS, however relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	Government departments or agencies
Planned discharges – subsea • installation—potential displacement of MEG from spools or SCSt piping; potential release of production fluids during tie-in to existing Jansz infrastructure; potential release of treated seawater (e.g. including biocide, corrosion inhibitor, etc.) from FCS ballast; acid wash or similar	Marine environmental quality Benthic habitats and communities	Interest and activity – Environmental conservation	Localised and temporary reduction in water quality Alteration of benthic habitats and communities	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

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
cleaning agent used to clean subsea infrastructure • IMR—acid wash or similar cleaning agent used to clean subsea infrastructure • pre-commissioning—discharge of MEG, fluorescein dye, and barrier fluids during testing					
Electromagnetic emissions • pre-commissioning—testing of the HVSC, start-up and operation of the HVSC.	Marine fauna	Interest and activity – Environmental conservation	Behavioural disturbance of marine fauna	Several BIAs or habitat critical to the survival of a species also overlap with the OA, including: • Humpback Whale (migration BIA) • Pygmy Blue Whale (migration BIA) • Flatback Turtle, Green Turtle, Hawksbill Turtle (internesting buffer BIA, internesting habitat critical to the survival of a species) • Whale Shark (foraging BIA). Given the predicted small disturbance radius of the EMF (up to ~20 m) of the HVSC, significant adverse effects to marine fauna behaviour are not expected to occur. In areas where the HVSC is exposed there may be a localised change in the EMF and this may cause a very localised and temporary behavioural responses to fauna within close proximity to the	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
				HVSC, however the worst case response identified is minor movement deviation.	
Unplanned seabed disturbance • installation—dropped object (e.g. infrastructure) or incorrect positioning of infrastructure • field support—dropped object (e.g. tools or equipment) from vessels, ROVs or AUVs (during installation and pre-commissioning, or IMR activities).	Benthic habitats and communities Cultural values	Interest and activity – Environmental conservation Cultural connections	Alteration of benthic communities and habitats	The potential impacts to benthic communities and habitats as a result of unplanned seabed disturbance would be limited to individual occurrences and localised impacts (i.e. area of impact limited to the size of dropped object or equipment). It is unlikely the functions and activities of relevant persons would be impacted by unplanned seabed disturbance, however relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	Government departments or agencies First Nations people and/or representative bodies
Unplanned release – waste • field support—waste lost overboard from vessels during installation and pre-commissioning, or IMR activities within the OA,	Marine fauna	Interest and activity – Environmental conservation	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 relevant to the values and sensitivities that may be impacted by this aspect.	Government departments or agencies
Unplanned release – loss of containment • using, handling, and transferring hazardous materials and	Marine environmental quality Marine fauna	Interest and activity – Environmental conservation	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	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
chemicals on board (~1 m^3) • hydraulic line failure from equipment (~2 m^3) • failure during vessel refuelling (50 m^3).				by an unplanned release, however relevant persons may hold interests relevant to the values and sensitivities that may be impacted by this aspect.	
Unplanned release – vessel collision • field support—vessel operations during the petroleum activity (including installation and pre-commissioning, or IMR activities) within the OA. Unplanned release – hydrocarbon system • installation—dropped infrastructure during installation activities at the Jansz field	Marine environmental quality Benthic habitat and communities Coastal communities Marine fauna Marine protected areas World heritage properties National heritage places Cultural values Tourism Recreation Commercial fishing Commercial shipping Scientific research	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 Reduction in amenity resulting in impacts to tourism and recreation Changes to values and sensitivities of marine protected areas Changes to cultural heritage values	Although highly unlikely, an unplanned emergency event resulting in a hydrocarbon spill may affect the functions, interests and activities of relevant persons within the spatial extent of the EMBA. Refer to Section 4.1 for information on the EMBA for the activity.	Government departments or agencies First Nations people and/or representative bodies WA World Heritage advisory committees ENGOs Commercial fishery licence holders and/or representative bodies Commercial shipping industry Tourism and recreation operators Other petroleum titleholders Submarine cable operators Research organisations

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
	Other commercial industries				
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 environmental 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 Tourism and recreation operators
Physical presence – oiled wildlife response	Marine fauna Coastal communities Cultural values	Interest and activity – Environmental conservation Cultural connections	Potential to cause further harm to oiled fauna due to hazing, barriers, deterrents, and cleaning activities, and has the potential to cause injury/death	Oiled wildlife response has the potential to result in injury/mortality to fauna, however will only be undertaken where there is likely to be a net environmental 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 Tourism and recreation operators

6.2.5.1 Self-identification

As part of the consultation process (Figure 6-1) CAPL publicly advertised the upcoming petroleum activity (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.

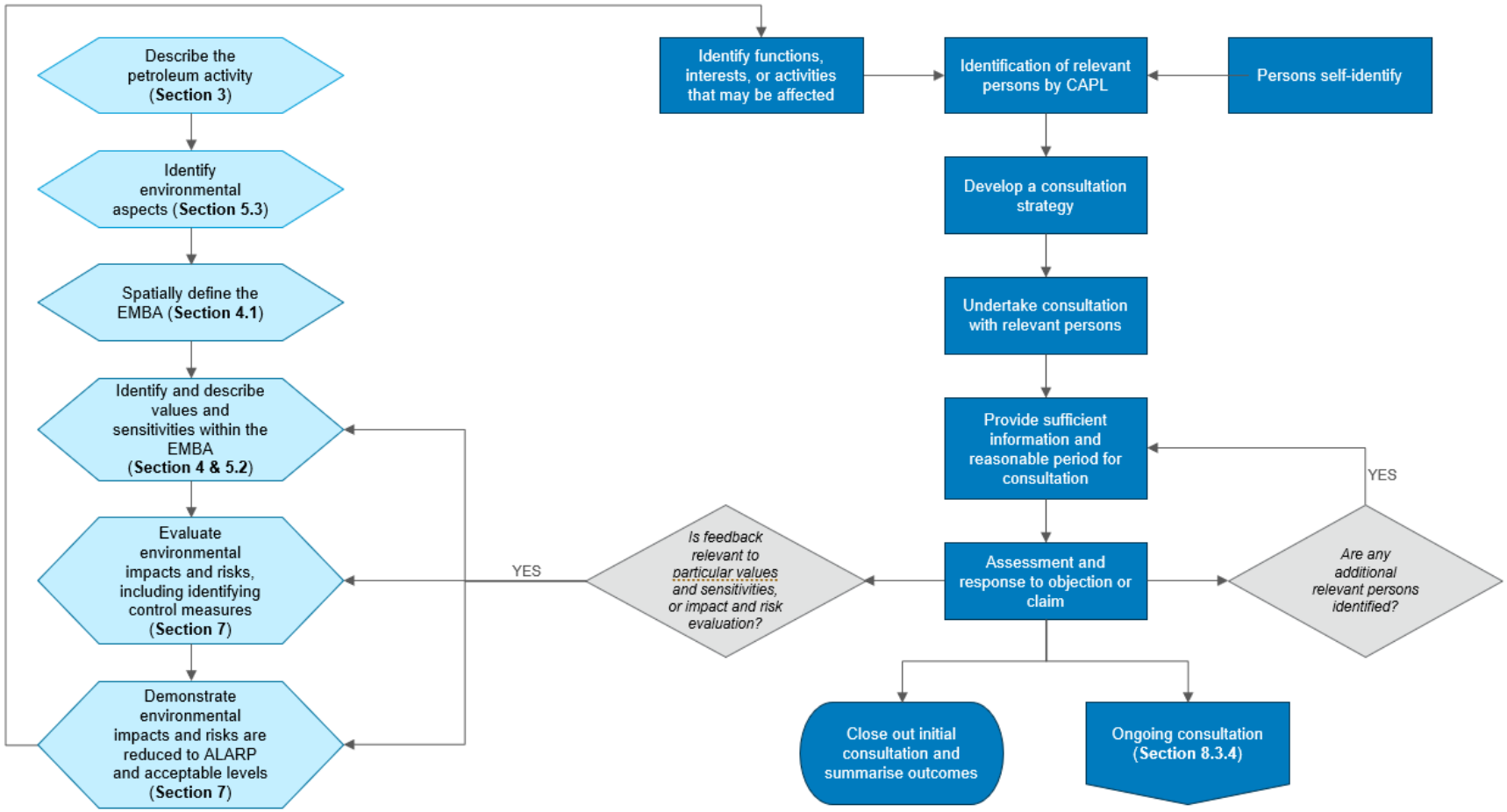


Figure 6-1: Relevant persons consultation process

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 risks associated with the petroleum activity
- the responsibilities of the Commonwealth or State department or agency, which was determined by:
  - CAPL's previous consultation history for petroleum activities on the NWS
  - online searches
  - published guidance, including NOPSEMA's *Consultation with Commonwealth agencies with responsibilities in the marine area* guideline (Ref. 23).

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 6-4.

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 considerations for determining the relevance of a person or organisation are described in Section 6.2.1 and Table 6-3.

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 identifying a relevant person
Commercial fishery licence holders and/or representative bodies	Commonwealth commercial fisheries: • fishery management area intersects with the EMBA, and a record of recent active fishing effort (based on annual ABARES data) occurring within the EMBA • fishing method, preferred locations or water depths, fishing season • key target species, distribution, and behaviour

Category of persons or organisations	Considerations for identifying a relevant person
	• potential for temporal and/or spatial interaction between petroleum activity and the commercial fishery State commercial fisheries: • guidance from WAFIC (Ref. 29) 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 • intersection between the spatial extent of the EMBA and/or values and sensitivities of the environment 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 within the vicinity of the EMBA • where an AMP is present within the EMBA, a review of any identified First Nations people or groups • review of Native Title determinations to determine cultural and/or spiritual link with BIAs 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 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 EMBA, and with current or proposed activities occurring (based on publicly available EPs from NOPSEMA’s EP submission website) within the EMBA • other State (based on spatial data from DMIRS) petroleum titles that intersect with the EMBA, and with current or proposed activities occurring (based on publicly available EP summaries from DMIRS EARS database) within the EMBA • potential for temporal and/or spatial interaction between petroleum activity and the operator of another petroleum title

Category of persons or organisations	Considerations for identifying a relevant person
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 EMBA • where an AMP is present within the EMBA, a review of the 'authorisations issued' from Parks Australia (Ref. 32) • 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 EMBA, 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 this J-IC installation and pre-commissioning 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.
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.

Relevant person	Rationale
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.
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.

Relevant person	Rationale
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 such, these organisations have functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
Commonwealth Fisheries Association	
Western Australian Fishing Industry Council (WAFIC)	
Tourism and recreation operators	
Recfishwest	This organisation is the peak body representing the State-managed recreational fisheries. Recreational fishing has been identified within coastal and nearshore areas of the EMBA (Section 4.4). As such, this organisation has functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
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

Relevant person	Rationale
	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	
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	

Relevant person	Rationale
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	
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	

Relevant person	Rationale
PGS Australia Pty Ltd	
Santos	
Sapura OMVUPstream	
Terrafirma Offshore Pty Ltd	
TGS NOPEC Geophysical Company Pty Ltd	
Vermillion Oil and Gas	
Western Gas	
Woodside	
ENGOs	
Australian Marine Conservation Society	ENGOs are organisations concerned about public welfare, people and the environment. Several environmental receptors intersect with the EMBA (Section 4). Therefore, NGOs may be considered relevant persons under regulation 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.

Relevant person	Rationale
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.
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	

Relevant person	Rationale
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.
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.

Relevant person	Rationale
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 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	

Relevant person	Rationale
International Fund for Animal Welfare (IFAW)	
Greenpeace	
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 the EP in Section 6.3.6. 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 8.3.4.1.

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

Ref.	Aspect	Impact	Risk			Decision Context (A/B/C)	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	3	8	A	Yes	Yes
7.3	Seabed disturbance	5	5	6	10	A	Yes	Yes
7.4	Air emissions	6	–	–	–	A	Yes	Yes
7.5	Light	6	5	5	9	A	Yes	Yes
7.6	Underwater sound—continuous	5	5	3	7	A	Yes	Yes
7.7	Underwater sound—impulsive	6	6	4	9	A	Yes	Yes
7.8	Invasive marine pests	–	2	6	7	A	Yes	Yes
7.9	Planned discharges—	6	6	6	10	A	Yes	Yes
7.10	Planned discharges—subsea	6	6	6	10	A	Yes	Yes
7.11	Electromagnetic emissions	–	6	4	9	A	Yes	Yes
7.12	Unplanned seabed disturbance	–	6	4	9	A	Yes	Yes
7.13	Unplanned release—waste	–	6	5	10	A	Yes	Yes
7.14	Unplanned release—loss of containment	–	5	5	9	A	Yes	Yes
7.15	Unplanned release—vessel collision	–	4	5	8	A	Yes	Yes
7.16	Unplanned release—hydrocarbon system	–	–	–	–	A	Yes	Yes
7.17.4.1	Ground disturbance – shoreline spill response	–	5	5	9	A	Yes	Yes
7.17.4.2	Physical presence – oiled wildlife response	–	5	5	9	A	Yes	Yes

C = Consequence; L = Likelihood; R = Risk level

^For aspects identified as 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 an interaction with other marine users are:

- installation—permanent presence of the SCSt, SCSM, HVSC, MV umbilicals, and other associated subsea infrastructure, and subsea stabilisation (e.g. rock berms, concrete mattresses) within the OA
- installation—permanent presence of FCS (at the surface) and the associated subsea mooring system within the OA
- field support—temporary (short or long-term) presence of vessels within the OA during installation and pre-commissioning, or IMR activities.

Potential impacts and risks

Impacts	C	Risks	C
N/A	–	Unplanned interactions with other marine uses may result in:	
		• disruption to commercial shipping or fishing	6
		• entanglement of fishing gear on subsea structures	6
		• disruption to other petroleum activities	6

Consequence evaluation

The physical presence of subsea and surface infrastructure associated with this petroleum activity is contained wholly within the OA. Vessels undertaking activities will also be present within the OA but only have a temporary presence. The duration of vessel presence will vary with activity, ranging from ~2 days (each rock dumping trip) to ~5–6 months for SCSt installation campaigns. The OA occurs in water depths ~25–1,350 m, and comprises a total area of ~744 km^2.

The potential for unplanned interactions between other marine users and subsea structures may occur where these users interact with either the seafloor or water column where these structures exist. While most of the infrastructure installed will be on the seafloor, the floating FCS will have mooring lines extending from the upper water column to the suction piles on the seafloor.

Marine users that have the potential to interact with the seafloor have been identified as commercial fisheries that utilise trawling or trap fishing methods. Marine users that have the potential to interact with the water column have been identified as commercial fisheries that use line 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.

Of the commercial fisheries identified in Section 4.4.1 that have fishery management areas that intersect with and recent fishing effort recorded within the OA, one uses trawl, two use trap, and two use line fishing methods.

The WA Mackerel Managed Fishery and Pilbara Line Fishery both use line fishing methods. The spatial extent of potential interaction for these fisheries is limited to within the vicinity of the FCS and its mooring system (in ~1,290 m water depth). However, the main species targeted within these fisheries (e.g. Bluespotted Emperor, Red Emperor, Rankin Cod, Ruby Snapper, and Spanish Mackerel) are typically found in water depths of <500 m (Ref. 264). As such, negligible interaction between these fisheries and the presence of the FCS mooring system is expected to occur and this has not been evaluated further.

The OA overlaps with ~0.2% of the total fishery management area for the Commonwealth North West Slope Trawl Fishery. The entire fishery has a small number of active permits and vessels (e.g. six permits with four vessels active during the 2020-2021 season [Ref. 53]). The fishery also does not regularly record fishing effort within the OA (e.g. only two years [2015 and 2020] out of the 2015-2020 period recorded fishing effort within a single [one block per year] 60 nm graticular reporting block that intersected with the OA ; Section 4.4.1).

The WA Pilbara Trap Managed Fishery and Pilbara Crab Managed Fishery intersect with the OA. The Pilbara Crab Managed Fishery does not regularly record fishing effort within the OA (e.g. only one year [2016] out of the 2012–2021 period recorded fishing effort within a single 60 nm graticular reporting block that intersected with the OA. Recorded fishing effort for the Pilbara Trap

Managed Fishery is also low with ≤3 vessels present within the 60 nm fishery grid blocks that intersect with the OA (Section 4.4.1.2).

Subsea infrastructure associated with the Gorgon Project has been in place within the OA since 2012, and to date, no incidences of commercial fishing activities interacting with the infrastructure has been communicated to CAPL. Consequently, the long-term presence of additional subsea structures is not expected to result in a significant impact to commercial fishing operations (via loss of catches or damage to fishing equipment). Any deviation required by fishing vessels around the subsea structures is not expected to impact on the functions, interests, or activities of commercial fisheries.

The stationary presence of the FCS and the use of vessels during the petroleum activity has the potential to result in a disruption to other marine users, including commercial shipping or fishing vessels. During parts of the offshore installation scopes (e.g. associated with the FCS or the SCSt), several vessels may be in the field at any one time.

As identified in Section 4.4.1, there are five vessel-based commercial fisheries that have recent fishing effort that overlaps with the OA. Fishing effort records obtained from DPIRD (Ref. 54) for the four State-managed commercial fisheries indicated that fishing effort within the OA varies each year, but is typically low with <3 vessels recorded as present within the graticular reporting blocks that intersect the OA (Ref. 54). As noted above, fishing activity within the OA associated for the Commonwealth-managed fishery is also low.

Commercial vessel traffic density within and around most of the OA is relatively low, including within the part of the OA that intersects one of AMSA's north-west coast shipping fairways (Figure 4-24). This fairway intersection occurs over part of the OA that is associated with the installation of the HVSC and so vessel presence within this area will be temporally and spatially restricted to this scope of activities. The OA extending around the FCS is >5 km northwest of the shipping fairway.

Therefore, the presence of vessels or the FCS within the OA is not expected to significantly adversely affect commercial fishing or shipping operators. Any deviation required by these vessels is not expected to impact on their respective functions, interests, or activities.

During the installation of the shallow water crossings of existing pipelines and umbilicals (Section 3.2.2.1), the activities of other titleholders have the potential to be disrupted, if any concurrent operations were to occur. Consultation with other titleholders has not indicated any potential for concurrent (e.g. inspection or maintenance) activities on the existing pipelines or umbilicals. Given the short duration (~3–4 weeks) for all shallow water crossing installations, this is not expected to impact on the functions, interests, or activities of other titleholders, and has not been evaluated further.

In summary, the physical presence of the subsea infrastructure, FCS (including its mooring system), or vessels is not expected to cause significant impacts to other marine users, and the risks are considered to have limited potential consequences. Therefore, CAPL has ranked the potential consequence to other marine users from physical presence as Incidental (6).

ALARP decision context justification

The installation of subsea infrastructure, offshore facilities, and the use of vessels are common and well-practised activities nationally and internationally. The control measures to manage the risks associated with unplanned interactions with other marine users are well defined and understood by the industry.

During relevant persons consultation, no objections or claims were raised regarding disturbance/disruption to other marine users arising from this petroleum activity.

The risks arising from the physical presence of infrastructure or 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 consultation	Communicating the activity details, location, requested safety exclusion area, and presence of vessels to other marine users ensures they are informed and aware, thereby reducing the risk of unplanned interactions. In addition to consultation undertaken during the preparation of this EP (Section 6), where requested, relevant persons will also be notified at least two weeks prior to the commencement of activities (Table 8-5).

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* (Cth), 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.
Marine Standard	Chevron's *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 35) 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 nearby exclusion zones.
Managing Safe Work (MSW) process	CAPL's *Managing Safe Work OE Process* (Ref. 34) ensures that workplace safety and health hazards are assessed and managed. The permit to work (PTW) system is part of this process and includes simultaneous operations (SIMOPS) and hazard analysis. Where required under the MSW process, a SIMOPS Plan will be developed to identify and manage hazards arising from the J-IC installation and pre-commissioning activities and other CAPL planned petroleum activities when occurring within the same area. There are currently no planned activities under CAPL operational control scheduled to occur for the Gorgon or Wheatstone subsea infrastructure during the proposed J-IC installation period, and as such no SIMOPS Plan is required. If a SIMOPS Plan is required to be developed because of a change in schedule or project requirements, these will be in place prior to the activities under this EP commencing.
Concurrent operations plan (COP)	Where required, a COP (or equivalent) will be developed to identify and manage hazards arising from the J-IC installation and pre-commissioning activities and other planned petroleum activities when occurring within the same area. No potential for concurrent (non-CAPL) petroleum activities was identified during consultation with relevant persons, and as such no COP is required. If a COP is required to be developed because ongoing consultation with other operators identifies concurrent operations, these will be in place prior to the activities under this EP commencing.

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

Likelihood and risk level summary	
Likelihood	Due to the nature and scale of the vessel activities within the scope of this EP, the slow-moving nature of vessels within the OA, and the limited spatial area of activities, the likelihood of interaction with other marine users is considered low. Interaction with infrastructure is expected to be limited based upon CAPL operational experience. As such, CAPL consider that the likelihood of the consequence occurring is Unlikely (4).
Risk level	Very low (9)

<table>
<tr><th colspan="4">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="3">The risks associated with this aspect are associated with unplanned interactions causing incidental disruption to other marine users, which is not considered as having the potential to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Incidental (6).
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td rowspan="3">Relevant environmental legislation and other requirements</td><td colspan="3">Legislation and other requirements considered relevant for this aspect include:
• Navigation Act 2012 (Cth).
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.</td></tr>
<tr><td>Requirement</td><td colspan="2">Demonstration</td></tr>
<tr><td>Navigation Act 2012 (Cth)
Notice to Mariners</td><td colspan="2">Requirement to issue a Notice to Mariners has been incorporated into the maritime safety information control measure.</td></tr>
<tr><td>Internal context</td><td colspan="3">These CAPL environmental performance standards or procedures were deemed relevant for this aspect:
• Marine Standard Non Tankers: Corporate OE Standard (Ref. 35)
• Managing Safe Work OE Process (Ref. 34)
Control measures related to the above management process have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.</td></tr>
<tr><td>External context</td><td colspan="3">During relevant persons consultation, no objections or claims were raised regarding interaction with other marine users arising from the petroleum activity.</td></tr>
<tr><td>Defined acceptable level</td><td colspan="3">These risks are inherently acceptable as they are considered lower-order risks in accordance with Table 5-3. In addition, the potential risks evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.</td></tr>
<tr><th>Environmental performance outcome</th><th>Environmental performance standard</th><th colspan="2">Measurement criteria</th></tr>
<tr><td rowspan="3">Other marine users are aware of the petroleum activity</td><td>Relevant persons consultation
Relevant persons that have requested notifications will be advised of the commencement and expected completion dates</td><td colspan="2">Relevant persons consultation records</td></tr>
<tr><td>Maritime safety information
Notify relevant agency of activities, vessel movements, and requested safety exclusion zone, to enable them to generate radio-navigation warnings and/or Notice to Mariners prior to commencing offshore activities</td><td colspan="2">Records of lodgement of notification to relevant agency</td></tr>
<tr><td>Marine Standard
Vessels will meet the crew competency, navigation equipment, and radar requirements of the Marine Standard</td><td colspan="2">Records indicate that vessels meet the crew competency, navigation equipment, and radar requirements of the Marine Standard</td></tr>
</table>

Reduce disruption to other titleholders' petroleum activities within the OA from vessel activity associated with the petroleum activity	**MSW process** CAPL will develop and implement SIMOPS Plan(s) to manage the petroleum activity and other planned petroleum activities within CAPL operational control within the OA	Records indicate that if other concurrent CAPL activities within the OA are identified, a SIMOPS Plan will be developed and in place prior to the petroleum activity commencing
	Concurrent operations plan Where required, CAPL will develop and implement COPs (or equivalent) to manage the petroleum activity and other (non-CAPL) planned petroleum activities within the OA	Records indicate that if other concurrent activities within the OA are identified, a COPs (or equivalent) will be developed and in place prior to the petroleum activity commencing

7.2 Physical presence—marine fauna

Source

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

- field support—temporary (short or long-term) presence of vessels within the OA during installation and pre-commissioning, or IMR activities.

Potential impacts and risks

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

Consequence evaluation

Injury or death of marine fauna

Surface-dwelling fauna are 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 or habitat critical to the survival of a species also overlap with the OA, including:

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

A review of the documents made or implemented under the EPBC Act for all threatened and/or migratory cetacean, shark, and turtle species that may be present within the OA (i.e. Fin Whale [Ref. 57], Sei Whale [Ref. 58], Blue Whale [Ref. 59], Whale Sharks [Ref. 56], and Flatback, Green, and Hawksbill turtles [Ref. 55],) indicates that either vessel disturbance or interaction (such as collisions) are a key threat to the recovery of the species.

For cetacean species that may 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 requirements in Section 8.4.2) and ensuring that the risk of vessel strike is assessed (see the text below).

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. 60).

The *Conservation Management Plan for the Blue Whale 2015–2025* (Ref. 59) indicates that although all forms of vessels can collide with whales, severe or lethal injuries are more likely to occur by larger or faster vessels. Laist et al. (Ref. 61) 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 >14 knots. Laist et al. (Ref. 61) showed that high speed vessels travelling >14 knots, were involved in 15% of the 40 accounts of ship strikes reported worldwide. Given that vessels will be stationary or slow moving (<5 knots) whilst undertaking the activities within the scope of this EP, any interaction with marine fauna would not be expected to cause severe injuries.

Vessel disturbance and strike is listed as a known current and future threat for the Humpback Whales (Ref. 265). Humpback Whales are one of the most frequently reported whale species involved in vessel strikes worldwide (Ref. 61).

The OA overlaps with the migration BIA for Humpback Whales, and as such, there is the potential for whales to be present within this area during the predicted migration periods (June to October). The part of the OA that intersects with the Humpback Whale BIA is associated with the installation of the HVSC. Depending on specific activity timing, there is the potential for overlaps with the predicted migration periods. Studies (Ref. 222) suggest that northbound Humpback Whales tend to travel around the 200 m water depth contour, while southbound Humpback Whales tend to travel closer to Barrow Island and generally occur between 50 m and 200 m water depths.

The OA also overlaps with the migration BIA for Pygmy Blue Whales. The part of the OA that intersects with the Pygmy Blue Whale BIA is associated with the installation of the FCS, HVSC and SCSt. Depending on specific activity timing, there is the potential for overlaps with the predicted migration periods. However, it is expected based on satellite tracking and acoustic detection studies that Pygmy Blue Whales are likely to travel predominantly to the north-west of the OA in deeper waters, particularly on their southern migration (November to December), but also during the northern migration (April to August) (Section 4.3.3.1.2).

There have been few recorded instances of cetacean deaths in Australian waters. Mackay et al. (Ref. 63) 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 death of a Bryde's Whale in Bass Strait in 1992 (Ref. 62) was also recorded, noting this data indicates deaths are more likely to be associated with container ships and fast ferries.

The *Recovery Plan for Marine Turtles in Australia* (Ref. 55) identifies vessel disturbance as a key threat; however, it also notes that this is particularly an issue in shallow coastal foraging habitats, internesting areas with high numbers of recreational and commercial craft, or in areas of marine development. The OA within this EP occurs in Commonwealth waters (at its shallowest the OA is ~25 m water depth, and ~5.5 km from nearest coast), but is not within an area of high vessel usage or large coastal (e.g. ports) developments.

The Recovery Plan (Ref. 55) defines the internesting habitat critical to the survival of a species as a distance seaward from nesting habitat critical to the survival of a species as 60 km for Flatback Turtles and 20 km for Green and Hawksbill turtles (Ref. 55). Recent studies (Ref. 74) have indicated that the internesting behaviour of Flatback Turtles on the NWS appears more spatially restricted than that suggested by the Recovery Plan (Ref. 55). Whittock et. al. (Ref. 74) reported that Flatback Turtles preference habitats within proximity of the coast and at relatively shallow depths during the internesting periods. Unsuitable Flatback Turtle internesting habitat was defined as waters >25 m deep and >27 km from the coast (Ref. 74). This suggests that although the OA does overlap with some internesting habitat critical for the survival of Flatback Turtles, due to the OA being located offshore in water depths ranging between ~25–1,350 m, and given that Flatback Turtle nesting occurs on the east coast beaches of Barrow Island (Ref. 253) (i.e. opposite side of the island to the OA), the OA is not likely to provide preferred internesting habitat for this species.

Green and Hawksbill Turtles have also demonstrated spatially restricted behaviour during internesting, and have been recorded as staying with within 5 km of Barrow Island (Ref. 199) and within shallow coastal waters (Ref. 199). Both Green and Hawksbill turtles are known to nest on the west coast of Barrow Island (Ref. 253). Given the depth and distance of the OA (>25 m water depth, and >5.5 km from Barrow Island), the majority of the OA is not likely to provide preferred internesting habitats for these species.

A review of the documents made or implemented under the EPBC Act for Whale Sharks indicate that conservation actions should consider minimising 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. The part of the OA that intersects with this Whale Shark BIA is associated with HVSC installation activities. The largest vessels associated with these scopes are the CLV and rock dumping vessel.

Whale Sharks are known to spend considerable time close to the surface, thereby increasing their vulnerability to vessel strike. Whale Sharks tagged off WA (Ref. 64, Ref. 65) spent ~25% of their

time <2 m from the surface and >40% of their time in the upper 15 m of the water column, making them vulnerable to collisions with smaller vessels as well as larger commercial vessels that have drafts greater than 20 m below the surface. Although the OA overlaps the Whale Shark foraging BIA, vessels will be stationary or slow-moving (<5 knots) whilst implementing the activities within the scope of this EP.

Consequently, incidences of fauna strike are not expected considering the slow vessel speeds, relatively low number of vessels within the OA at any time, and that incidents have been demonstrated to be very rare.

Nevertheless, if a fauna strike occurred and resulted in death, it is not expected to have a detrimental effect on the overall population and would result in a limited environmental impact (individual impacts); thus, fauna strike is evaluated as having the potential to result in an Incidental (6) consequence.

Changes to cultural heritage values

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

Based on the outcomes of relevant persons consultation, CAPL considers that indirect impacts to intangible First Nations cultural values may occur due to impacts on marine fauna. The consequence evaluations to these receptors are provided above, and were risk assessed as Incidental (6). Given the offshore location of the OA (~5.5 km from Barrow Island, and ~70–200 km from the mainland; Figure 3-1) and duration of the campaigns (~2 days to ~5–6 months), 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 for cultural values consistent with that for marine fauna, as Incidental (6).

ALARP decision context justification

Offshore commercial vessel operations are commonplace and well-practised nationally and internationally. The control measures to manage the risk associated with fauna strike are well defined via legislative requirements that are considered standard industry practice. These are well understood and implemented by the petroleum industry and CAPL.

During relevant persons consultation, no objections or claims were raised regarding interaction with marine fauna arising from this petroleum activity.

The risks arising from the physical presence of vessels 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
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
N/A	N/A	N/A

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 limited spatial area of activities, the likelihood of a vessel collision with marine fauna is considered low. Based upon previous operating experience in the OA, CAPL considers that the likelihood of the consequence occurring is Seldom (3).
Risk level	Low (8)

Determination of acceptability

Principles of ESD	The risks associated with this aspect are associated with unplanned interactions causing injury or death to individual marine fauna, which is not considered as having the potential to affect biological diversity and ecological integrity.

<table>
<tr><td></td><td colspan="2">The consequence associated with this aspect is Incidental (6).
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered relevant for this aspect include:
EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 59)
Conservation Advice Balaenoptera borealis Sei Whale (Ref. 58)
Conservation Advice Balaenoptera physalus Fin Whale (Ref. 57)
Conservation Advice Rhincodon typus Whale Shark (Ref. 56)
Recovery Plan for Marine Turtles in Australia (Ref. 55)
Approved Conservation Advice for Dermochelys coriacea (Leatherback Turtle) (Ref. 14)
North-west Marine Parks Network Management Plan 2018 (Ref. 66)
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.
<table>
<tr><th>Requirement</th><th>Demonstration</th></tr>
<tr><td>EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans
Caution and no approach zones for interacting with cetaceans from vessels</td><td>Requirements of 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>Conservation Management Plan for the Blue Whale 2015–2025
Management action A.4.2: Ensure all vessel strike incidents are reported in the National Ship Strike Database
Management action A.4.3: Ensure the risk of vessel strikes on blue whales is considered when assessing actions that increase vessel traffic in areas where blue whales occur and, if required, appropriate mitigation measures are implemented</td><td>Requirements to report vessel strike incidents is included in Section 8.4.2.
This section provides a risk evaluation for vessel strikes on Blue Whales, and control measures have been identified.
Therefore, this activity is not considered to be inconsistent with the Conservation Management Plan for the Blue Whale.</td></tr>
<tr><td>Conservation Advice Balaenoptera borealis Sei Whale
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>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>
</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	The OA is outside of whale shark aggregation areas (i.e. Ningaloo Reef, Christmas Island and the Coral Sea). This petroleum activity is scheduled to occur from mid-2024 to mid-2026, and as such activities may overlap with the northward migration (July to November) period along the WA coast for Whale Sharks. The part of the OA that intersects with this Whale Shark BIA is associated with HVSC installation activities. The largest vessels associated with these scopes are the CLV and rock dumping vessel. Based on both environmental and economic considerations, vessel activities are minimised to the smallest practicable extent. Therefore, this activity is not considered to be inconsistent with the *Conservation Advice Rhincodon typus Whale Shark.*
	Recovery Plan for Marine Turtles in Australia No specific management action identified.	N/A
	Approved Conservation Advice for Dermochelys coriacea (Leatherback Turtle) No specific conservation action identified.	N/A
	North-west Marine Parks Network Management Plan 2018 No specific zone rules identified.	N/A
Internal context	No CAPL environmental performance standards 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 vessel collision incidents to Pygmy Blue Whales or marine turtles such that it would prevent the long-term recovery of the species • no adverse change to the values of the Montebello Marine Park. CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the risk to marine fauna, that the risk to values of the AMP are also subsequently managed to this acceptable level.	

Environmental performance outcome	Environmental performance standard	Measurement criteria
No injury or mortality to marine fauna within the OA from vessel 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; 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. ***Exception**: does not apply to vessels when operating with constrained maneuverability (e.g. actively deploying subsea infrastructure); or to any vessel in the event of an emergency.*	Induction materials include relevant marine fauna caution and no approach zone requirements Training records confirm offshore personnel involved in the petroleum activity 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

7.3 Seabed disturbance

Source

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

- installation—presence of the subsea infrastructure and subsea stabilisation (e.g. rock berms, concrete mattresses) within the OA, and the contingency temporary storage of mooring lines, or the HVSC
- IMR—as required by maintenance activities (e.g. span rectification)
- field support—contingency anchoring by vessels, wet parking of ROVs within the OA.

Potential Impacts and Risks

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

Consequence Evaluation

Localised and temporary reduction in water quality

A reduction in water quality is expected to occur when sediment on the seabed is disturbed and becomes suspended in the water column when infrastructure or equipment is placed on the seabed, or during trenching. The impacts are expected to be localised to around the area of seabed disturbance. After the activities are completed, sediments will settle back to the seabed and water quality will return to background levels.

Both the Gorgon and Wheatstone projects have previously undertaken trenching and rock placement along parts of the Wheatstone Trunkline and the Gorgon and Jansz Feed Gas pipelines. Turbidity monitoring programs implemented during construction activities indicated plumes were highly localised and resulted in only short-term exposures (Ref. 96, Ref. 97, Ref. 98). In particular, turbidity monitoring during trenching for the Wheatstone Project indicated that a turbid plume may be evident up to ~70 m from the trench area, depending on environmental conditions (Ref. 96, Ref. 97). However, within two hours of ceasing trenching operations, the turbidity level had returned to background or very close to background level (Ref. 96, Ref. 97).

The nature and scale of the seabed disturbance for the petroleum activity covered by this EP is significantly smaller than that of the previous dredging and trenching campaigns, where water quality demonstrated rapid recovery after seabed disturbance. Therefore, turbidity resulting from the described activities is not expected to result in any significant environmental impacts.

Consequently, CAPL considers that the change in water quality from the activities covered in this EP is limited to a localised area immediately adjacent to the proposed activities and is expected to rapidly return to ambient conditions following completion of the activities; therefore, any impacts are Incidental (6).

Alteration of benthic communities and habitats

Benthic communities and habitats may be altered via physical disturbance or indirectly by the temporary increase in suspended sediment near the seabed as a result of the physical seabed disturbance.

The petroleum activity is expected to result in disturbance to the seabed within the vicinity of existing subsea infrastructure, with the exception of the mooring system for the FCS (the FCS is located ~7 km south-west of the existing Jansz MPTS). The area of benthic communities and habitat physically disturbed by the petroleum activity is confined to within the OA, with total disturbance footprint of ~1 km^2. The OA consists of an area of ~744 km^2. This indicative seabed disturbance area represents <0.13% of the OA.

As described in Section 4.3.1.1, benthic habitats within the OA mostly comprise unvegetated, soft, and unconsolidated sediments. Recent survey over parts of the Jansz pipeline showed the predominant benthic habitat was bare substrate, with either a smooth (mostly flat) or irregular (mostly flat with minor features) surface (Ref. 261). The only area identified as a high likelihood of biota being present was some patches over the scarp (Ref. 261).

The particular values and sensitivities within the OA with the potential to be impacted by seabed disturbance include the following KEFs:

- continental slope demersal fish communities
- ancient coastline at 125 m depth contour.

Although KEFs have been identified as having the potential to be exposed, any planned disturbance would be in close proximity of existing infrastructure (as the intersection between the KEFs and the OA occurs through the parts of the OA associated with the installation of HVSC, which is positioned broadly parallel of the existing Jansz umbilical; Figure 4-17). Recent surveys indicated that habitat within the ancient coastline at 125 m depth contour KEF in proximity to the OA consisted of smooth seabed with bioturbation and appeared devoid of biota (Ref. 261; Table 4-14). Similarly habitat within the continental slope demersal fish communities KEF in proximity to the OA comprise irregular and smooth seabed with bare substrates, discrete depressions of bare substrate, and scarps with bare substrate, were the most dominant benthic features (Ref. 261; Table 4-14).

As identified in Section 4.5.1, the OA overlaps with the Montebello Marine Park. The overlap between the marine park and the OA occurs at the shallower (typically <50 m) end of the OA, which has been characterised by sands, clays, or gravels overlying subcropping cemented sediments (Figure 4-2). The habitat within the shallower parts of the OA are expected to be predominantly unvegetated sand, with patches of seagrass and macroalgae, and no associated sessile biota (Section 4.3.1.1).

Impacts of increased turbidity on marine organisms as a result of dredging were extensively examined by CAPL during construction phases of the Gorgon and Wheatstone projects. Specifically, dredging for both projects and rock placement along the Wheatstone Trunkline and portions of the Gorgon and Jansz Feed Gas pipelines have been undertaken, and extensive monitoring programs were implemented that tracked changes in water quality and organism response. Both projects described alterations to water quality as a result of dredging (Ref. 95). However, neither project detected any significant impacts of dredging and altered water quality on coral assemblages (coral cover of whole assemblage), nor on non-coral assemblages including filter feeder (sponges cover etc.), macroalgae (cover), and seagrass (cover, seed, and shoot density). Turbidity monitoring programs implemented during construction activities indicated plumes were highly localised and resulted in only short-term exposures (Ref. 96, Ref. 97, Ref. 98). Post-installation monitoring indicated no changes to benthic habitats above natural variation (Ref. 98).

In addition, the physical presence of artificial structures on the seabed are known to provide hard substrate that can provide habitat for algae, fish, and invertebrates (Ref. 92; Ref. 93). Analysis of habitats on wellheads and associated infrastructure in water depths between 78–825 m on the NWS indicates that the presence of fish assemblages and invertebrate habitats were strongly influenced by depth, age and height of the structures (Ref. 94). Older, taller wellheads in depths <135 m possessed greater abundances of groupers, snappers, site-attached reef species, and transient pelagic fish species (Ref. 94).Beyond 350 m depth, the number of species and total fish abundance declined markedly, as did the percent cover of invertebrates (e.g. ascidians, black/octocorals, sponges) (Ref. 94). A review of ROV video footage recorded between 2015 and 2018 along the Jansz-Io pipeline in water depths ~737–1,348 m also indicated some spatial differences in assemblage between non-infrastructure and infrastructure sites, with greater overall abundances, species richness, and species diversity generally associated with infrastructure (Ref. 289). The review also indicated a decrease in richness, abundance, and diversity with depth as found in other studies both in the north-west of Western Australia and elsewhere (Ref. 289).Given the water depth of J-IC infrastructure ranges from ~25 m to ~1,350 m, the infrastructure may provide a hard substrate for colonisation over time, with a greater diversity and abundance of benthic invertebrates and fish assemblages within the shallower areas.

Given the nature of the receiving environment within the OA, ecosystem function or habitat connectivity is not expected to be affected by the planned seabed disturbance. The presence of subsea infrastructure is not expected to adversely impact the existing benthic communities and habitats, and in fact may lead to the establishment of additional benthic communities and habitats due to the introduction of hard substrates on an otherwise featureless seabed (i.e. a change, albeit not considered a negative change). As such, CAPL has ranked the consequence as Minor (5).

Changes to cultural heritage values

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

The J-IC infrastructure will predominantly be installed within proximity of existing infrastructure, however the disturbance footprint associated FCS mooring system is located southwest of existing infrastructure.

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 (~1 km^2) 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 petroleum activities is common, with the activities causing this aspect regularly undertaken nationally and internationally. The control measures to manage the impacts associated with seabed disturbance are well understood and implemented by the industry.

During relevant persons consultation, no objections or claims were raised regarding seabed disturbance arising from the petroleum activity.

The impacts and risks associated with seabed disturbance 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
Pre-lay survey	As described in Section 3, a pre-lay survey for key infrastructure locations (e.g. FCS moorings, HVSC route (or selected parts of the route), and mudmat/foundations for SCSt and SCMS) may be undertaken prior to installation works commencing. CAPL conducts pre-lay surveys to ensure that any uncertainty is mitigated before installing subsea infrastructure. These surveys detect obstructions such as emergent features, and where such obstructions are identified, the proposed installation location may be amended if practicable.
Marine Standard	Chevron's *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 35) ensures that various legislative requirements are met including that 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.

<table>
<tr><th colspan="3">Additional control measures and cost benefit analysis</th></tr>
<tr><th>Control measure</th><th>Benefit</th><th>Cost</th></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th colspan="3">Likelihood and Risk Level Summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">Due to the limited area of seabed disturbance, and with the control measures in place, the likelihood of impacts to cultural values from seabed disturbance is Rare (6).</td></tr>
<tr><td>Risk Level</td><td colspan="2">Very low (10)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential impact associated with this aspect is limited to localised short-term effects that are not expected to affect biological diversity and ecological integrity.
The impact associated with this aspect is Minor (5).
Therefore, no further evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant Environmental Legislation and Other Requirements</td><td colspan="2">Legislation and other requirements considered for this aspect include:
• North-west Marine Parks Network Management Plan 2018 (Ref. 66)
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>North-west Marine Parks Network Management Plan
No specific zone rules identified.</td><td>N/A</td></tr>
</table></td></tr>
<tr><td>Internal Context</td><td colspan="2">These CAPL environmental performance standards or procedures were deemed relevant for this aspect:
• Marine Standard Non Tankers: Corporate OE Standard (Ref. 35).
Control measures related to the above management processes 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 seabed disturbance 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:
• 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 Outcomes	Environmental performance standard	Measurement Criteria
Reduce the risk of impacts to sensitive environmental receptors within the OA from the petroleum activity No adverse change to the values of Australian Marine Parks from the petroleum activity	**Pre-lay survey** Where pre-lay surveys are undertaken, if emergent seabed features or obstacles are present, the proposed infrastructure will be repositioned if practicable	Pre-lay surveys verify no emergent seabed features or obstacles are present at proposed infrastructure locations
		Records indicate that if emergent seabed features or obstacles are identified within the proposed infrastructure footprint during pre-lay surveys, the proposed infrastructure has been repositioned where practicable
	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 MSRE process

7.4 Air emissions

Source

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

- installation—combustion of diesel from the temporary generators (i.e. used until power supply via HVSC is available) on board the FCS
- field support—combustion of marine fuel from vessels, or aviation fuel from helicopters, within the OA during installation and pre-commissioning, or IMR activities.

Potential impacts and risks

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

Consequence evaluation

Localised and temporary reduction in air quality

Atmospheric emissions will result in a decline in local air quality, within the immediate vicinity of the emissions source (i.e. vessels or FCS). The spatial extent and duration of this localised change in air quality will vary with emission volume and frequency.

Atmospheric emissions generated during the combustion of fuels typically include sulfur oxides (SOx), nitrogen oxides (NOx), particulates, and volatile organic compounds (VOCs). SOx and particulate matter emissions are influenced by the fuel used and its relative sulfur content (e.g. MGO usually has a lower sulfur content than MDO or HFO).

The National Environment Protection (Ambient Air Quality) Measure (NEPM AAQ) establishes quantifiable standards and goals against which ambient air quality can be assessed. The NEPM AAQ is aimed at achieving ambient air quality that allows for the adequate protection of human health and wellbeing. However, in the absence of other standards, it is considered appropriate to use these standards as the criteria for comparison.

Air emissions dispersion modelling undertaken for the Wheatstone Platform demonstrated the concentrations of NOx, carbon monoxide, particulate matter, and VOCs are predicted to be well below NEPM AAQ standards indicating there was no significant degradation of ambient air quality (Ref. 266).

Given the total volume of air emissions from an operational platform are expected to be much larger than those produced from vessels and diesel generators used during activities within scope

of this EP, no significant degradation of the local air shed around the vessels of FCS is expected to occur. Therefore, CAPL has ranked the potential consequence to air quality as Incidental (6).

Contribution to the reduction of the atmospheric carbon budget (direct emissions)

One of the main principles of greenhouse gas (GHG) accounting and reporting is relevance, of which an integral aspect is defining an appropriate GHG emissions inventory boundary (Ref. 267). CAPL has defined the emissions boundary for the assessment of direct GHG emissions in relation to the planned petroleum activity[23] within the OA as described in Section 3.1.1 of this EP. Any unplanned events, including emergency events, have been excluded from the emissions inventory.

The following activities have been identified as direct emission sources for planned activities under this EP:

- diesel fuel combustion by generators onboard the FCS
- marine fuel combustion by vessels within the OA
- aviation fuel combustion by helicopters activities within the OA.

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

Based on the boundary and inventory described above, an estimate of direct GHG emissions from activities within this EP are estimated to be ~0.20 Mtpa CO_2-e. These direct emissions represent ~0.04% of national Australian annual emissions (based on a comparison to 2022 reported data) (Ref. 99).

According to the Intergovernmental Panel on Climate Change (IPCC), Assessment Sixth Report for Working Group 1, "the total anthropogenic effective radiative forcing (ERF) in 2019, relative to 1750, was 2.72 [1.96 to 3.48] Wm^{-2} (*medium confidence*) and has likely been growing at an increasing rate since the 1970s, [and]...Over 1750–2019, CO_2 increased by 131.6 ± 2.9 ppm (47.3%)."[24]

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."[25]

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.[26].

If the total direct GHG emissions from activities associated with this EP are ~0.20 Mtpa CO2-e, then the activities under this EP may contribute ~0.1–0.4 x10 $^{-4}$ percent to the reduction in the total remaining global carbon budget, which is determined to be 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.

Contribution to the reduction of the atmospheric carbon budget (indirect emissions)

To determine the relevance of indirect GHG 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'*. For the purposes of the assessment:

- the "primary action" is the activities covered by this EP, as described in Section 3
- the "secondary action" is the operation of the Gorgon Project, which is out of scope of this EP (Section 2.3)
- the "indirect consequence" is indirect GHG emissions.

[23] Where 'petroleum activity' is as defined within regulation 4 of the OPGGS(E)R.

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

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

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

Given that the purpose of installing the J-IC infrastructure is to maintain gas supply to the Gorgon GTP, CAPL has determined that the primary action (i.e. installation and pre-commissioning of J-IC infrastructure) therefore facilitates to a major extent the secondary action (i.e. the ongoing operation of the Gorgon Project, and specifically the Jansz gas field). As such, the following activities have been identified as indirect emission sources for planned activities under this EP:

- operational activities associated with the Gorgon hydrocarbon system
- gas processing at the GTP on Barrow Island
- transport and third party end-use of LNG, condensate and domestic gas products.

These indirect emissions for the activities under this EP comprise the direct and indirect emissions detailed in the NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations (Commonwealth Waters) Environment Plan* (Ref. 6).

In accordance with regulation 31 of the OPGGS(E)R, as this information has been previously supplied for another purpose, and is publicly available[27] , the emissions inventory, impact and risk assessment, control measures, and acceptability assessment have not been repeated here.

ALARP Decision Context Justification

Offshore commercial vessel operations and subsequent atmospheric emissions arising from these activities are commonplace in offshore environments, both nationally and internationally.

The control measures to manage the risk associated with atmospheric 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.

During relevant persons consultation, no objections or claims were raised regarding air emissions arising from the petroleum activity.

The impacts arising from air emissions constitute 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 marine 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 (SO_x) emissions.
Marine Order 97: Marine Pollution Prevention – Air Pollution	Prior to commencement of the petroleum activity, Chevron's *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 35) is used to verify that all vessels will 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 NO_x emission levels will comply with regulation 13 of MARPOL 73/78 Annex VI.
Fuel consumption	The combustion of vessel fuels has been identified as the predominant source of direct GHG emissions associated with the petroleum activity within this EP. Consequently, vessel fuel usage will be monitored and recorded during the petroleum activity such that usage (and therefore associated GHG emissions) are managed to only those required to perform the petroleum activity.

[27] The NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations (Commonwealth Waters) Environment Plan* is available online at: https://info.nopsema.gov.au/activities/20/show_public. Section 6.5 presents the impact and risk assessment associated with GHG emissions.

<table>
<tr><th colspan="3">Additional control measures and cost benefit analysis</th></tr>
<tr><th>Control measure</th><th>Benefit</th><th>Cost</th></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">N/A</td></tr>
<tr><td>Risk level</td><td colspan="2">N/A</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The impact associated with this air emissions is a temporary reduction in air quality to a localised area, which is not considered to have the potential to affect biological diversity and ecological integrity.
The impact associated with GHG emissions is a de minimis contribution to the reduction of the global carbon budget, which is not considered to have the potential to affect biological diversity and ecological integrity, or intergenerational equity.
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 to this aspect include:
• Marine Order 97
• MARPOL 73/78
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 97
Gives effect to Annex VI of MARPOL 73/78</td><td>Prescribed limits (as per Division 7) for sulfur content of fuel oil have been incorporated into the reduced sulfur content fuel control measure
IAPP and IEE certificate (as per Division 2), SEEMP (as per Division 6), and nitrogen oxides emission requirements (as per Division 3) have been incorporated into the Marine Order 97: Marine Pollution Prevention – Air Pollution control measure</td></tr>
</table></td></tr>
<tr><td>Internal context</td><td colspan="2">These CAPL environmental performance standards or procedures were deemed relevant for this aspect:
• Marine Standard Non Tankers: Corporate OE Standard (Ref. 35).
Control measures related to the above management processes or procedures have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding air emissions arising from the activity.</td></tr>
<tr><td>Defined acceptable level</td><td colspan="2">These impacts are inherently acceptable as they are considered lower-order impacts in accordance with Table 5-3. In addition, the potential impacts evaluated for this aspect are not inconsistent with any relevant recovery or conservation management plan, conservation advice, or bioregional plan.</td></tr>
</table>

Environmental performance outcomes	Environmental performance standard	Measurement criteria
Planned air emissions from the petroleum activity will meet Marine Order 97 requirements Direct GHG emissions will be managed to ensure only those necessary to perform the petroleum activity are generated	**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, and a SEEMP is in place (as appropriate to class), and NOx emission levels comply with regulations
	Fuel combustion Vessel fuel usage will be recorded during the petroleum activity	Records confirm vessel fuel usage during the petroleum activity

7.5 Light emissions

Source

Activities identified as having the potential to result in light emissions include:

- installation— navigation and operational lighting from the of FCS
- field support—navigation and operational lighting from vessels during the petroleum activity (including installation and pre-commissioning, or IMR activities) within the OA.

Potential impacts and risks

Impacts	C	Risks	C
Light emissions may result in: • localised change in ambient light.	6	A change in ambient light levels may result in: • change in fauna behaviour for light-sensitive species.	5

Consequence evaluation

Localised change in ambient light

Vessels will be present within the OA during all activities, including installation and pre-commissioning, and IMR. The duration of vessel presence will vary with activity, ranging from ~2 days (each rock dumping trip) to ~5–6 months for SCSt installation campaigns. As activities under this EP may be undertaken 24 hours a day, lighting is required at night for navigation and to ensure safe operations when working on the vessels.

Similarly lighting will be required on the FCS to maintain safe navigation for other marine users, as well as operational lighting during installation and pre-commissioning activities. The lighting required during hook-up and pre-commissioning for safe operations will be greater than during normal unmanned operations. The duration of manned activities under this EP are estimated at ~8 weeks for installation (Section 3.2.1.6), and ~8 weeks for pre-commissioning (Section 3.3.1).

Monitoring undertaken by Woodside (Ref. 67) indicates that light density from lighting on a drill rig attenuated to below 1.00 lux and 0.03 lux at distances of ~300 m and ~1.4 km, respectively. Light

densities of 1.00 lux and 0.03 lux are comparable to natural light densities experienced during deep twilight and during a quarter moon.

Previous modelling of light emissions from a pipelay vessel indicated that at distances ~1.8–5.7 km from the pipelay vessel, light may be visible, but is not expected to be biologically relevant and result in behavioural impacts (Ref. 268).

Lighting is expected to be similar or less on the FCS and installation vessels compared to a drill rig and/or pipelay vessel, therefore the use of previous monitoring (Ref. 67) and modelling is considered a conservative appropriate to inform this consequence evaluation.

Based on previous light monitoring and modelling (Ref. 67; Ref. 268), CAPL expects that its activities will result in changes to ambient light conditions in the order of kilometres from the emission sources. While the vessels will be a temporary light source (of varying duration), the FCS will be become a permanent light source offshore. However, during normal unmanned operations, the lighting on the FCS will predominantly be for safe navigation purposes and the associated exposure footprint is expected to be smaller than during lit conditions for operations (e.g. during installation, pre-commissioning, commissioning, and start-up). Therefore, the impacts associated with a direct change in ambient light levels were determined to be Incidental (6).

Change in fauna behaviour for light-sensitive species

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 and/or habitat critical to the survival of a species also overlap with the OA, including:

- Fairy Tern, Lesser Crested Tern, Roseate Tern, Wedge-tailed Shearwater (breeding BIAs)
- Whale Shark (foraging BIA)
- Flatback Turtle, Green Turtle, Hawksbill Turtle (internesting buffer BIA, and internesting habitat critical to the survival of a species).

The *National Light Pollution Guidelines* (Ref. 12) 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. 69; Ref. 70) and fledgling seabirds grounded in response to artificial light 15 km away (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. 72) and that lighting can attract birds from large catchment areas (Ref. 73).

Anthropogenic disturbance (including artificial lighting) is identified as a threat within the *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 75), and light pollution is identified as a threat within the *Wildlife Conservation Plan for Seabirds* (Ref. 236). It is possible that nocturnally active seabirds and/or migratory shorebirds may be affected by light-spill and make alterations to their normal behaviours. It is suggested that procellariforms (shearwaters, petrels and albatross) species that forage at night are instinctively attracted to light because they exploit bioluminescent prey (Ref. 269; Ref. 73). 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. 270). However, Marquenie (Ref. 271) 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 immediate vicinity of the vessel/s or FCS and affect only individuals (rather than populations). The seabirds with BIAs that intersect with the OA do not intersect with the offshore extent of the OA associated with the installation and pre-commissioning of the SCSt or FCS.

Fledglings are considered more vulnerable to artificial light 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. 236). At its closest, the OA is located ~5.5 km from the coast of Barrow Island (i.e. the 3 nm coastal waters limit). The part of the OA that occurs near Barrow Island is associated with the installation of the HVSC. As light emissions are expected to be visible, but not be biologically relevant or result in behavioural impacts at distances >1.8 km from a vessel, no coastal areas (and therefore fledgling seabirds) are expected to be exposed. In addition, the duration of activities occurring within this part of the OA closest to Barrow Island is expected to be relatively low, with vessels typically moving along the HVSC route and away from the island, and not remaining stationary for extended durations.

The Recovery Plan for Marine Turtles in Australia (Ref. 55) identifies light emissions as a key threat because it can disrupt critical behaviours, such as nesting, hatchling orientation, sea finding, and hatchling dispersal behaviour.

The *Recovery Plan for Marine Turtles in Australia* (Ref. 55) defines the nesting habitat critical for the survival of 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. 55). At its closest, the OA is located ~5.5 km from the coast of Barrow Island (i.e. the 3 nm coastal waters limit). The part of the OA that occurs near Barrow Island is associated with the installation of the HVSC. As light emissions are expected to be visible, but not be biologically relevant or result in behavioural impacts at distances >1.8 km from a vessel, no coastal areas (and therefore no adult nesting turtles, or turtle hatchlings) are expected to be exposed. In addition, the duration of activities occurring within this part of the OA closest to Barrow Island is expected to be relatively low, with vessels typically moving along the HVSC route and away from the island, and not remaining stationary for extended durations.

The *Recovery Plan for Marine Turtles in Australia* (Ref. 55) defines internesting habitat critical for survival of a species as a distance seaward from nesting habitat critical for the survival of a species of 60 km for Flatbacks and 20 km for Green and Hawksbill turtles. Recent studies (Ref. 74) have indicated that the internesting behaviour of Flatback Turtles on the NWS appears more spatially restricted than that suggested by the Recovery Plan (Ref. 55). Whittock et al (Ref. 74) reported that Flatback Turtles prefer habitats within proximity of the coast and at relatively shallow depths during their internesting periods. Unsuitable Flatback Turtle internesting habitat was defined as waters >25 m deep and >27 km from the coast (Ref. 74). This suggests that although the OA does overlap with some internesting habitat critical for the survival of the species, due to the OA being located offshore in water depths ranging between ~25–1,350 m, and that Flatback Turtle nesting is more common on the east coast beaches of Barrow Island (i.e. opposite side of the island to the OA), the majority of the OA may not present preferred internesting habitat for this species. Green and Hawksbill turtles have also demonstrated spatially restricted behaviour during internesting, and have been recorded as staying with within 5 km of Barrow Island and within shallow coastal waters (Ref. 199). Consequently, given observed behaviours and internesting habitat preferences, only a small number of marine turtles are expected to be present within the OA, and any disruption to their behaviour is expected to be spatially limited as light emissions are not expected to be biologically relevant or result in behavioural impacts at distances >1.8 km from a vessel. In addition, the duration of activities occurring within this part of the OA closest to Barrow Island is expected to be relatively low, with vessels typically moving along the HVSC route and away from the island, and not remaining stationary for extended durations.

Artificial light may result in varied ecological changes to fish, including changes to predatory behaviour and abundance (Ref. 272, Ref. 273), altering hatching success (Ref. 274), acting as an attractant for plankton (Ref. 275), or altering circadian behavioural rhythms (Ref. 273).

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. 56). Given the timing for the project (mid-2024 to mid-2026), the presence of Whale Sharks within this foraging BIA may coincide with vessel-based activity. The part of the OA that occurs near Barrow Island is associated with the installation of the HVSC, and as such vessels are expected to be moving along the HVSC route and, and not remaining stationary for extended durations. The OA associated with the installation and pre-commissioning of the FCS and SCSt does not intersect with the Whale Shark BIA. Light has also not been identified as a key threat for the Whale Shark (Ref. 56).

Cetaceans predominantly use acoustic senses rather than visual sources to monitor their environment (Ref. 68), so light is not considered to be a significant factor in cetacean behaviour or survival.

Given that light emissions have the potential to cause localised and temporary impacts to individuals over the course of the petroleum activity, CAPL has ranked the consequence associated this impact as Minor (5).

ALARP decision context justification

Offshore platform and commercial vessel operations and subsequent light emissions arising from these activities are commonplace in offshore environments nationally and internationally.

During relevant persons consultation, no objections or claims were raised regarding light emissions arising from the petroleum activity.

The impacts and risks associated with light emissions are well understood, and considered to be 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's *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 35) 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	The indicative schedule for the J-IC installation and pre-commissioning activities is from mid-2024 to mid-2026. Depending on activity-specific timing, activities may overlap with the predicted turtle nesting seasons, seabird breeding seasons, and Whale Shark migration and foraging periods. As a conservative management measure, vessels working at night will be required to reduce external lighting to the minimum required for safe operations (and where practicable have this lighting directed downwards). The vessels will also make use of window coverings (e.g. blinds) during night operations to shield internal lights from view. The OA is located ~5.5 km from the nearest coast (Barrow Island) and as such, no measurable change in light from the vessels will occur at coastal locations. This control measure is consistent with the following light management options identified within the *National Light Pollution Guidelines for Wildlife* (Ref. 12) for marine turtles, seabirds, and migratory shorebirds: • implement light management actions during nesting and hatchling (marine turtles), breeding (seabirds), or peak migration (migratory shorebirds) periods • aim lights downwards and direct them away from nesting areas (marine turtles, seabirds) • reduce unnecessary lighting at sea by restricting external lighting to the minimum required for safe operations and navigation, and using window blinds to shield internal lights.

Additional control measures and cost benefit analysis		
Control measure	**Benefit**	**Cost**
External vessel lighting to use: • flashing or intermittent lights instead of fixed beam • motion sensors to turn on lights only when needed • luminaires with spectral content appropriate for the species present • avoid high intensity light of any colour.	Replacing external lighting on vessels with lighting that is flashing, intermittent, or motion triggered, or of a particular spectral signature and/or intensity, may have the potential to further reduce the impact of artificial light on marine fauna. Light emissions from vessels are not expected to be biologically relevant or result in behavioural impacts at distances >1.8 km from a vessel; and at its closest, the OA is located ~5.5 km from any coast and potential nesting area. The implementation of these additional light management controls are considered to be of limited environmental benefit, and would not result in a reduction of risk consequence.	The cost of retrofitting external lighting of the vessels is considered grossly disproportionate to the limited environmental benefit (and no change in risk consequence) they may provide for marine fauna. Therefore, this control measure has not been adopted for use.
Use curfews to manage lighting	The *National Light Pollution Guidelines* (Ref. 12) suggests the use of curfews may assist in managing artificial lighting around nesting beaches (marine turtles), rookeries during fledgling period (seabirds), or near nocturnal	The cost of implementing lighting curfews, either by retrofitting external lighting with motion sensors (as considered above), or by implementing restricted night operations (e.g., no operations after 7 pm or 8 pm) is considered grossly disproportionate to the limited

	foraging and roosting areas in coastal habitats (migratory seabirds). One of the mechanisms for implementing this is the use of motion sensors—this has been considered in the above control measure, and is not repeated here. Other mitigation options refer to the user of timers to extinguish lighting around turtle nesting beaches after 8 pm, or near seabird or migratory shorebird rookeries after 7 pm. The intent of the curfews is to manage artificial light in coastal areas to minimise any disruption to biological important behaviours. Given that light emissions from vessels are not expected to be biologically relevant or result in behavioural impacts at distances >1.8 km from a vessel, and at its closest, the OA is located ~5.5 km from any coast, the implementation of curfews are considered to be of limited environmental benefit, and would not result in a reduction of risk consequence.	environmental benefit (and no change in risk consequence) they may provide for marine fauna. Therefore, control measure has not been adopted for use.
Likelihood and risk level summary		
Likelihood	Due to the nature and scale of this petroleum activity, including that vessel-based activities located closer to the coast are relatively short and discrete campaigns, and that the longer duration FCS and SCSt installation scopes are located >100 km from the nearest coast, the likelihood of exposing sensitive receptors resulting in the identified consequence was considered Remote (5).	
Risk level	Very low (9)	
Determination of acceptability		
Principles of ESD	The risk associated with this aspect is disruption to light-sensitive species behaviour, which given temporary nature of activities within shallow waters with broader activities occurring offshore, is not considered as having the potential to affect biological diversity and ecological integrity. The impact associated with this aspect is Minor (5). Therefore, no further evaluation against the Principles of ESD is required.	
Relevant environmental legislation and other requirements	Legislation and other requirements considered for this aspect include: • *Navigation Act 2012* (Cth) • *National Light Pollution Guidelines* (Ref. 12) • *Recovery Plan for Marine Turtles in Australia* (Ref. 55) • *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 75) • *Wildlife Conservation Plan for Seabirds* (Ref. 236) • *Conservation Advice Rhincodon typus Whale Shark* (Ref. 56) • *North-west Marine Parks Network Management Plan 2018* (Ref. 66) CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.	

	Requirement	Demonstration
	Navigation Act 2012 (Cth) Appropriate lighting, navigation and communication to inform other users	Legislative requirements have been incorporated into the **Marine Standard** control measure.
	National Light Pollution Guidelines Undertake an environmental impact assessment	This section provides an impact assessment and consideration of control measures as identified within the mitigation toolboxes for marine turtles, seabirds, and migratory shorebirds.
	Recovery Plan for Marine Turtles in Australia Management action A8.1: Artificial light within or adjacent to habitat critical to the survival of marine turtles will be managed such that marine turtles are not displaced from these habitats	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.*
	Wildlife Conservation Plan for Migratory Shorebirds No specific action identified.	N/A
	Wildlife Conservation Plan for Seabirds No specific action identified.	N/A
	Conservation Advice Rhincodon typus Whale Shark Conservation action: Assess the impacts of offshore installations and associated environmental changes (light spill, chronic noise, changed water temperature, localised nutrient levels) on whale sharks and mitigation options for these impacts	This section provides an impact assessment and consideration of control measures for vessel light spill. Therefore, this activity is not considered to be inconsistent with the *Conservation Advice Rhincodon typus Whale Shark.*
	North-west Marine Parks Network Management Plan No specific zone rules identified.	N/A
Internal context	These CAPL environmental performance standards or procedures were deemed relevant for this aspect: • *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 35) Control measures related to the above management processes have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.	
External context	During relevant persons consultation, no objections or claims were raised regarding light emissions arising from the petroleum 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	

<table>
<tr><td></td><td colspan="2">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 behaviours of marine turtles within biologically important areas such that it would prevent the long-term recovery of the species
• no disruption of biologically important behaviours of migratory shorebirds or seabirds within important habitats such that it would prevent the conservation of the species and their habitat
• no adverse change to the values of the Montebello Marine Park.
CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the risk to marine fauna, that the risk to values of the AMP are also subsequently managed to this acceptable level.</td></tr>
<tr><th>Environmental performance outcomes</th><th>Environmental performance standard</th><th>Measurement criteria</th></tr>
<tr><td rowspan="2">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 the petroleum activity

No adverse change to the values of</td><td>Marine Standard
Vessels will meet the lighting requirements of the Marine Standard</td><td>Records indicate that vessels meet lighting requirements of the Marine Standard</td></tr>
<tr><td>Light management
Vessels working at night will be required to:
• reduce external lighting to the minimum required for safe operations and navigation
• where practicable, operational lighting directed downwards to working deck area</td><td>Inspection records during night operations confirm only minimum lighting for safe operations and navigation is in use, where practicable operational lighting is directed downwards to working deck area, and internal window coverings are used (unless required for safe operations)</td></tr>
</table>

Australian Marine Parks from petroleum activity	• use window coverings to shield internal lights from view (unless windows are required to be uncovered for safe operations).	

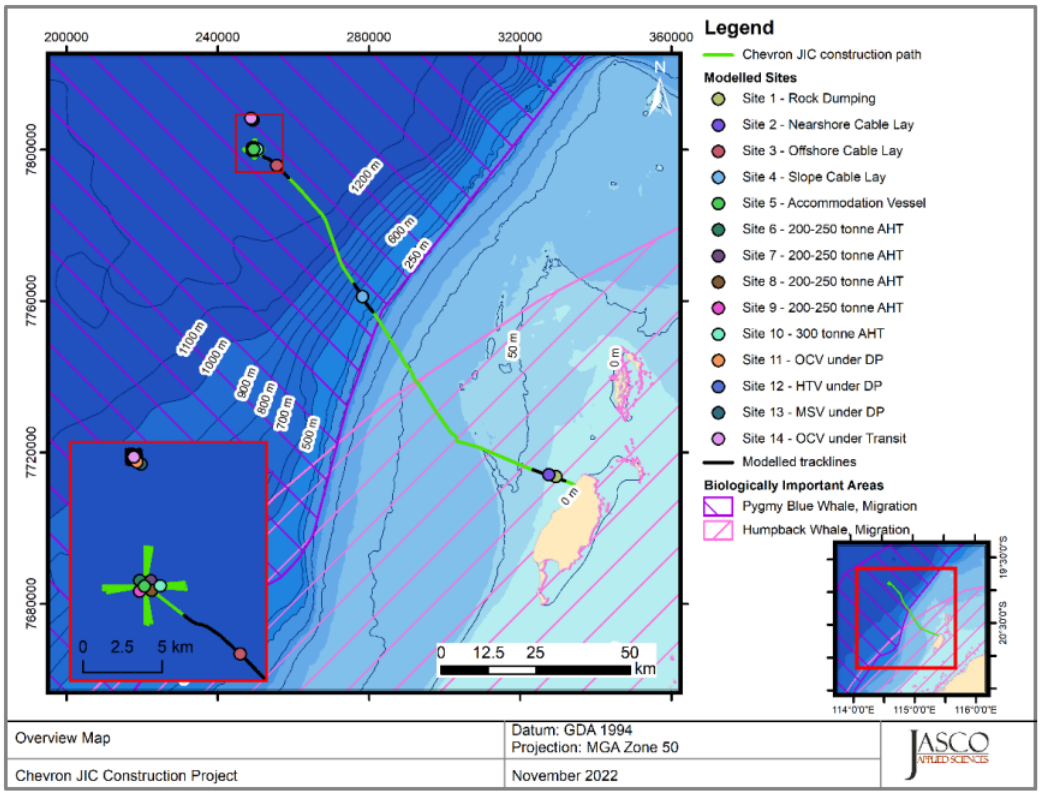
7.6 Underwater sound—continuous

7.6.1 Acoustic modelling

CAPL commissioned JASCO Applied Sciences to conduct acoustic modelling to inform the risk assessment associated with underwater sound exposure from vessel operations (Ref. 88). The modelling was undertaken to assist in understanding the potential acoustic impact on receptors including marine mammals, sea turtles, and fish.

The modelling methodology considered scenario specific source levels and range-dependent environmental properties. Estimated underwater acoustic levels for non-impulsive (continuous) sound sources are presented as sound pressure level (SPL), and as accumulated sound exposure levels (SEL) as appropriate for different noise effect criteria (Ref. 88).

The study included scenarios associated with cable lay, rock dumping, and offshore installation vessels that are relevant to the activities within scope of this EP (Figure 7-1; Table 7-2).



(Source: Ref. 88)

Figure 7-1: Locations for acoustic modelling

Table 7-2: Acoustic modelling sites and scenarios

Scenario	Associated sites	Scenario description	Approximate water depth
1	1	Near-shore rock dumping, under DP	24 m
2	2	Near-shore cable lay, under DP	27 m
3	3	Offshore cable lay, under DP	1,275 m
4	4	Continental slope cable lay, under DP	399 m
5	5, 6, 7, 8, 9, 10	Accommodation vessel with five anchor handling tugs, all under DP	1,288–1,293 m
6	11, 12, 13	Offshore construction vessel (OCV), with a heavy transport vessel and multi-purpose support vessel, all under DP	1,338 m
7	14	OCV, under slow transit	1,338 m

In the absence of modelling, the estimates of SPL from helicopter operations (149–162 dB re 1 µPa) (Ref. 60; Ref. 89) have 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 SEL criterions is not relevant.

7.6.2 Exposure criteria

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 have been 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 Southall et al (Ref. 276) for the onset of permanent threshold shift (PTS)[28] and temporary threshold shift (TTS)[29] in marine mammals (Table 7-3)
- un-weighted SPL for behavioural threshold for marine mammals based on the current interim US National Oceanic and Atmospheric Administration (NOAA) criteria (Ref. 277) (Table 7-3)
- frequency-weighted accumulated sound exposure levels (SEL_{24h}) from Finneran et al (Ref. 79) for the onset of PTS and TTS in marine turtles (Table 7-3)
- sound exposure guidelines for behavioural effects in marine turtles from Popper et al (Ref. 83) (Table 7-3)
- sound exposure guidelines for fish, fish eggs, and larvae from Popper et al(Ref. 83) (Table 7-3).

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. 84).

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

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

While sirenians were not included in the JASCO study, the relevant exposure criteria has been included in Table 7-3, so that a qualitative comparison can be made during the risk assessment.

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 μPa^2s	SEL_{24h}: 179 dB re 1 μPa^2s	N/A	SPL: 120 dB re 1 µPa
High-frequency cetaceans	N/A	N/A	SEL_{24h}: 198 dB re 1 μPa^2s	SEL_{24h}: 178 dB re 1 μPa^2s	N/A	SPL: 120 dB re 1 µPa
Very high-frequency cetaceans	N/A	N/A	SEL_{24h}: 173 dB re 1 μPa^2s	SEL_{24h}: 153 dB re 1 μPa^2s	N/A	SPL: 120 dB re 1 µPa
Sirenians	N/A	N/A	SEL_{24h}: 206 dB re 1 μPa^2s	SEL_{24h}: 200 dB re 1 μPa^2s	N/A	SPL: 120 dB re 1 µPa
Marine turtles	N/A	N/A	SEL_{24h}: 220 dB re 1 μPa^2s	SEL_{24h}: 200 dB re 1 μPa^2s	N/A	(N) High (I) Moderate (F) Low
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	170 dB SPL for 48 hours	N/A	158 dB SPL for 12 hours	(N) High (I) High (F) High	(N) High (I) Moderate (F) Low
Fish eggs and fish larvae	(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]).

7.6.3 Modelling outputs

Horizontal maximum distances (R_{max}) from sources associated with nearshore rock dumping, cable lay, FCS installation, and SCSt installation to the relevant noise effect criteria for marine mammals, turtles, and fish are shown in Table 7-4 to Table 7-7 (Ref. 88). Where distances to noise effect criteria varied between the modelled scenarios, the largest of these has been reported. The greatest horizontal distances are associated with Scenario 5 (associated with installation of the FCS) and Scenario 6 (associated with installation of the SCSt) where multiple vessels under DP are located in one area (Table 7-2).

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 the predicted noise levels at a fixed position. Marine fauna are not expected 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 auditory effects (either PTS or TTS) if they remained within the ensonified location for 24 hours.

Table 7-4: Modelled maximum horizontal distances (R_{max}) from nearshore rock dumping scenarios (Scenario 1) to reach noise effect criteria for continuous sound

Receptor	Recoverable injury	Permanent threshold shift	Temporary threshold shift	Behavioural
Low-frequency cetaceans	N/A	SEL_{24h}: 0.02 km	SEL_{24h}: 0.92 km	SPL: 3.9 km
High-frequency cetaceans	N/A	SEL_{24h}: –	SEL_{24h}: 0.02 km	SPL: 3.9 km
Very high-frequency cetaceans	N/A	SEL_{24h}: 0.02 km	SEL_{24h}: 0.26 km	SPL: 3.9 km
Marine turtles	N/A	SEL_{24h}: –	SEL_{24h}: 0.02 km	N/A
Fish (swim bladder involved in hearing)	SPL for 48 hours: –	N/A	SPL for 12 hours: –	N/A

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

Table 7-5: Modelled maximum horizontal distances (R_{max}) from cable lay scenarios (Scenarios 2, 3, and 4) to reach noise effect criteria for continuous sound

Receptor	Recoverable injury	Permanent threshold shift	Temporary threshold shift	Behavioural
Low-frequency cetaceans	N/A	SEL_{24h}: 0.05 km	SEL_{24h}: 0.17 km	SPL: 2.96 km
High-frequency cetaceans	N/A	SEL_{24h}: –	SEL_{24h}: 0.06 km	SPL: 2.96 km
Very high-frequency cetaceans	N/A	SEL_{24h}: 0.06 km	SEL_{24h}: 0.08 km	SPL: 2.96 km
Marine turtles	N/A	SEL_{24h}: –	SEL_{24h}: 0.05 km	N/A
Fish (swim bladder involved in hearing)	SPL for 48 hours: –	N/A	SPL for 12 hours: –	N/A

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

Table 7-6: Modelled maximum horizontal distances (R_{max}) from offshore FCS installation scenarios (Scenario 5) to reach noise effect criteria for continuous sound

Receptor	Recoverable injury	Permanent threshold shift	Temporary threshold shift	Behavioural
Low-frequency cetaceans	N/A	SEL_{24h}: 0.20 km	SEL_{24h}: 5.79 km	SPL: 18.7 km
High-frequency cetaceans	N/A	SEL_{24h}: –	SEL_{24h}: 0.10 km	SPL: 18.7 km
Very high-frequency cetaceans	N/A	SEL_{24h}: 0.12 km	SEL_{24h}: 3.12 km	SPL: 18.7 km
Marine turtles	N/A	SEL_{24h}: –	SEL_{24h}: 0.13 km	N/A
Fish (swim bladder involved in hearing)	SPL for 48 hours: –	N/A	SPL for 12 hours: 0.08 km	N/A

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

Table 7-7: Modelled maximum horizontal distances (R_{max}) from offshore SCSt installation scenarios (Scenarios 6 and 7) to reach noise effect criteria for continuous sound

Receptor	Recoverable injury	Permanent threshold shift	Temporary threshold shift	Behavioural
Low-frequency cetaceans	N/A	SEL_{24h}: 0.30 km	SEL_{24h}: 1.95 km	SPL: 17.1 km
High-frequency cetaceans	N/A	SEL_{24h}: 0.02 km	SEL_{24h}: 0.12 km	SPL: 17.1 km
Very high-frequency cetaceans	N/A	SEL_{24h}: 0.13 km	SEL_{24h}: 2.27 km	SPL: 17.1 km
Marine turtles	N/A	SEL_{24h}: 0.02 km	SEL_{24h}: 0.15 km	N/A
Fish (swim bladder involved in hearing)	SPL for 48 hours: –	N/A	SPL for 12 hours: 0.10 km	N/A

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

7.6.4 Pygmy Blue Whale and Humpback Whale exposure modelling

In addition to the acoustic modelling study, JASCO undertook an acoustic exposure analysis for migrating Pygmy Blue Whales and Humpback Whales (Ref. 88), which describes the modelled predictions of sound levels that individual Pygmy Blue Whales and Humpback Whales may receive during the petroleum activity.

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. 88). 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. 88).

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

through the predicted sound field. Biologically meaningful movement rules were applied to each animat in the model to represent whale behaviours. The parameters used for forecasting realistic behaviours (e.g. diving and foraging depth, swim speed, surface times) were determined and interpreted from marine mammal studies (e.g. tagging studies) where available, or reasonably extrapolated from related or comparable species (Ref. 88).

The same seven scenarios from the acoustic modelling were considered for animal movement modelling. Due to their locations, Scenarios 1 and 2 were run for migrating Humpback Whales, while Scenarios 3 to 7 were run for migrating Pygmy Blue Whales. All scenarios were run for migrating animats restricted to their respective migratory BIAs as well as unrestricted.

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

The modelled 95th percentile exposure ranges ($ER_{95\%}$) from sources associated with nearshore rock dumping, cable lay, FCS installation, and SCSt installation to the relevant noise effect criteria for Pygmy Blue Whales and Humpback Whales are shown in Table 7-8 to Table 7-11 (Ref. 88). For comparison, the horizontal maximum distances (R_{max}) for low-frequency cetaceans from the acoustic modelling in Section 7.6.3 are repeated in the tables.

Exposure ranges for SPL behavioural response criteria are typically comparable to the predicted acoustic ranges. Acoustic ranges are conservatively calculated using the maximum-over-depth sound fields while exposure ranges account for animats sampling the sound field vertically based on species-specific diving parameters, so exposure ranges are often slightly lower than acoustic ranges (Ref. 88).

Exposure ranges from animat modelling for PTS and TTS criteria are typically shorter than those predicted using acoustic propagation modelling because of the generally shorter time (‘dwell time’) to accumulate sound energy of the moving animats (Ref. 88).

Table 7-8: Modelled 95th percentile exposure ranges ($ER_{95\%}$) and probability of exposure (P_{exp}), compared to modelled maximum horizontal distances maximum horizontal distances (R_{max}) from nearshore rock dumping scenarios (Scenario 1) to reach noise effect criteria for continuous sound

Modelling	Parameter	Permanent threshold shift	Temporary threshold shift	Behavioural
Acoustic modelling	R_{max}	SEL_{24h}: 0.02 km	SEL_{24h}: 0.92 km	SPL: 3.9 km
Exposure modelling for Humpback Whale (mother and calf)^	$ER_{95\%}$	SEL_{24h}: –	SEL_{24h}: 0.02 km	SPL: 3.34 km
	P_{exp}	N/A	91%	>99%
Exposure modelling for Humpback Whale (mother [no calf])^	$ER_{95\%}$	SEL_{24h}: –	SEL_{24h}: 0.02 km	SPL: 3.34 km
	P_{exp}	N/A	>99%	>99%

A dash indicates no animat was exposed above the threshold.

P_{exp} is the probability of animats travelling within the ER95% being exposed above the threshold.

^ Results are shown for animats not restricted to within a BIA boundary.

Table 7-9: Modelled 95th percentile exposure ranges ($ER_{95\%}$) and probability of exposure (P_{exp}), compared to modelled maximum horizontal distances maximum horizontal distances (R_{max}) from cable lay scenarios (Scenarios 2, 3, and 4) to reach noise effect criteria for continuous sound

Modelling	Parameter	Permanent threshold shift	Temporary threshold shift	Behavioural
Acoustic modelling	R_{max}	SEL_{24h}: 0.05 km	SEL_{24h}: 0.17 km	SPL: 2.96 km
Exposure modelling for Humpback Whale (mother and calf)^	$ER_{95\%}$	SEL_{24h}: –	SEL_{24h}: 0.02 km	SPL: 2.47 km
	P_{exp}	N/A	89%	>99%
Exposure modelling for Humpback Whale (mother [no calf])^	$ER_{95\%}$	SEL_{24h}: –	SEL_{24h}: 0.02 km	SPL: 2.47 km
	P_{exp}	N/A	>99%	>99%
Pygmy Blue Whale (northern migration)^	$ER_{95\%}$	SEL_{24h}: –	SEL_{24h}: 0.01 km	SPL: 0.72 km
	P_{exp}	N/A	7%	87%

A dash indicates no animat was exposed above the threshold.

P_{exp} is the probability of animats travelling within the ER95% being exposed above the threshold.

^ Results are shown for animats not restricted to within a BIA boundary.

Table 7-10: Modelled 95th percentile exposure ranges ($ER_{95\%}$) and probability of exposure (P_{exp}), compared to modelled maximum horizontal distances maximum horizontal distances (R_{max}) from offshore FCS installation scenarios (Scenario 5) to reach noise effect criteria for continuous sound

Modelling	Parameter	Permanent threshold shift	Temporary threshold shift	Behavioural
Acoustic modelling	R_{max}	SEL_{24h}: 0.20 km	SEL_{24h}: 5.79 km	SPL: 18.7 km
Pygmy Blue Whale (northern migration)^	$ER_{95\%}$	SEL_{24h}: 0.01 km	SEL_{24h}: 0.05 km	SPL: 15.4 km
	P_{exp}	15%	79%	>99%

A dash indicates no animat was exposed above the threshold.

P_{exp} is the probability of animats travelling within the ER95% being exposed above the threshold.

^ Results are shown for animats not restricted to within a BIA boundary.

Table 7-11: Modelled 95th percentile exposure ranges ($ER_{95\%}$) and probability of exposure (P_{exp}), compared to modelled maximum horizontal distances maximum horizontal distances (R_{max}) from offshore SCSt installation scenarios (Scenarios 6 and 7) to reach noise effect criteria for continuous sound

Modelling	Parameter	Permanent threshold shift	Temporary threshold shift	Behavioural
Acoustic modelling	R_{max}	SEL_{24h}: 0.30 km	SEL_{24h}: 1.95 km	SPL: 17.1 km
Pygmy Blue Whale (northern migration)^	$ER_{95\%}$	SEL_{24h}: 0.01 km	SEL_{24h}: 0.05 km	SPL: 13.1 km
	P_{exp}	6%	64%	99%

A dash indicates no animat was exposed above the threshold.

P_{exp} is the probability of animats travelling within the ER95% being exposed above the threshold.

^ Results are shown for animats not restricted to within a BIA boundary.

7.6.5 Risk Assessment

Source

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

- field support—vessel or helicopter operations during the petroleum activity (including installation and pre-commissioning, or IMR activities) within the OA.

These activities result in the emission of continuous sound.

Potential impacts and risks

Impacts	C	Risks	C
Underwater sound emissions may result in:		A change in ambient underwater sound may result in:	
• localised and temporary change in ambient underwater sound.	5	• behavioural disturbance	5
		• auditory impairment, TTS, PTS, recoverable or non-recoverable injury to marine fauna	-
		• changes to values and sensitivities of marine protected areas	5
		• changes to cultural heritage values	5

Consequence evaluation

Localised and temporary change in ambient underwater sound

Anthropogenic underwater sound emitted during the petroleum activity will result in a change in ambient noise 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. 85). 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. 85).

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 1mPa at 405 m and ~3-4 km from the sound source respectively (Ref. 89). When underway at ~12 knots vessel sound of 120 dB re 1 µPa was recorded at 0.5–1 km (Ref. 89). Generally, during installation operations, the vessels will be moving at low speeds (<5 knots), producing lower underwater sound emissions than what were recorded by the study.

Sound emitted from helicopter operations is typically below 500 Hz (Ref. 90). 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. 60; Ref. 89). Richardson et al. (Ref. 60) 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 vessel or helicopter operations causing a change in ambient underwater sound has been assessed as Minor (5) as it will result in a localised environmental impact limited to the duration of vessel operations, and returning to ambient levels on completion.

Marine Mammals

Behavioural disturbance

Acoustic modelling for vessels associated with the installation of the HVSC (cable lay and rock dumping) indicate that the maximum radial distance in any direction from the source to the behavioural noise effect criteria was 3.9 km from the sound source (Table 7-4, Table 7-5). This maximum value was associated with the nearshore rock dumping activities, and was slightly smaller for cable lay activities with a maximum of 2.96 km predicted for nearshore, reducing with distance offshore to 1.78km at the slope, and 1.06 km for the offshore scenario (Ref. 88).

Acoustic modelling for vessels associated with the installation of the FCS indicate that the maximum radial distance in any direction from the source to the behavioural noise effect criteria was 18.7 km from the sound source (Table 7-6).

Acoustic modelling for vessels associated with the installation of the SCSt indicate that the maximum radial distance in any direction from the source to the behavioural noise effect criteria was 17.1 km from the sound source (Table 7-7).

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 high-frequency cetaceans (Section 4.3.3.1). A migration BIA for the Pygmy Blue Whale overlaps with the offshore extent of the Sound EMBA; with peak migration periods occurring April to August, and November to late-December. The Humpback Whale migration BIA also overlaps part of the Sound EMBA (associated with the installation of the HVSC); migration occurring between June and October. Very high-frequency cetaceans (e.g. *Kogia* spp.) were identified as species or species habitat that may occur within the OA (appendix b) but are not listed as threatened and/or migratory under the EPBC Act. The PMST database also indicated that dugongs may be present within the Sound EMBA. Except for Pygmy Blue Whales and Humpback Whales, there are no known BIAs for other cetacean species within or adjacent to the Sound EMBA; and it is expected that any presence of marine mammal species within the Sound EMBA would be of a transitory nature.

As the Sound EMBA overlaps a migration BIA for Humpback Whales, there is the potential for whales to be present within this area during the predicted migration periods (June to October). The part of the OA that intersects with the Humpback Whale BIA is associated with the installation of the HVSC. Given the indicative schedule for J-IC activities (from mid-2024 to mid-2026), there is the potential for overlap with Humpback Whale migration. Studies (Ref. 222) suggest that northbound Humpback Whales tend to travel around the 200 m water depth contour, while southbound Humpback Whales tend to travel closer to Barrow Island and generally occur between 50 m and 200 m water depths. Animat modelling for Humpback Whales indicated that the maximum distance to the behavioural noise effect criteria was ~3.34 km (Table 7-8), which is not dissimilar to the distance (~3.9 km; Table 7-4) from acoustic modelling for low-frequency cetaceans.

As the Sound EMBA overlaps a migration BIA for Pygmy Blue Whales, there is the potential for a larger number of this species to be present during migration periods (April to August, and November to December). The part of the OA that intersects with the Pygmy Bluw Whale BIA is associated with the installation of the HVSC (offshore extent only), FCS, and SCSt. Given the indicative schedule for J-IC activities (from mid-2024 to mid-2026), there is the potential for overlap with Pygmy Blue Whale migration. The Sound EMBA also intersects with areas that have been identified as most important areas for Pygmy Blue Whale migration along the west coast (Figure 4-7). However, it is expected based on satellite tracking and acoustic detection studies that Pygmy Blue Whales are likely to travel further offshore than the defined BIA, particularly on their southern migration (November to December), but also during the northern migration (April to August) (Section 4.3.3.1.2).

'Possible Foraging Areas' as defined within the *Conservation Management Plan for the Blue Whale* (Ref. 59), and characterised as foraging BIAs, occur >200 km southwest and >870 km northeast of the FCS and SCSt. Data from a recent study (Ref. 86) identified 'most important areas' for foraging for the Pygmy Blue Whale based on proxy indicators. There is some overlap between these 'most important areas' for foraging and the Sound EMBA associated with installation of the FCS and SCSt (Figure 4-8). Animat modelling for Pygmy Blue Whales indicated that the maximum distance to the behavioural noise effect criteria from scenarios associated with FCS and SCSt installation was ~15.4 km and ~13.1 km respectively (Table 7-10, Table 7-11), which is not dissimilar to the distances (~18.7 km and ~17.1 km; Table 7-6, Table 7-7) from acoustic modelling for low-frequency cetaceans.

The duration of underwater sound emissions from vessels within the OA will vary with activity, ranging from ~2 days (each nearshore rock dumping trip [associated with the HVSC installation]) to ~5–6 months for SCSt installation campaigns.

Estimates of SPL for helicopters range 149–162 dB re 1 µPa (Ref. 60; Ref. 89), 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. 60). The helicopter operations covered under this EP are short discrete trips (i.e. crew transfers). Frequency of helicopter flights will vary during the activities, but could be daily during FCS pre-commissioning, commissioning, and start-up (Section 3.5.2). 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 for vessels associated with the installation of the HVSC (cable lay and rock dumping) indicated that the R_{max} from the source to TTS and PTS criteria for low-frequency cetaceans was 0.92 km and 0.05 km respectively; for high-frequency cetaceans was 0.06 km and the PTS threshold was not met; and for very high-frequency cetaceans was 0.26 km and 0.06 km respectively (Table 7-4, Table 7-5). Animat exposure modelling indicated that the maximum distance to the TTS noise effect criteria for Pygmy Blue Whales was 0.01 km from the acoustic source, and the PTS noise effect criteria was not predicted to be exceeded (Table 7-9). The maximum distance to the TTS noise effect criteria for Humpback Whales was 0.02 km and exceedance of the PTS noise effect criteria was not predicted (Table 7-8, Table 7-9). Given that SEL is a cumulative metric, this would require Humpback Whales to remain within ~20 m of the sound source for at least a 24-hour period before TTS auditory impairments may occur.

Acoustic modelling for vessels associated with the installation of the FCS indicated that the R_{max} from the source to TTS and PTS criteria for low-frequency cetaceans was 5.79 km and 0.20 km respectively; for high-frequency cetaceans was 0.10 km and the PTS threshold was not met; and for very high-frequency cetaceans was 3.12 km and 0.12 km respectively (Table 7-6). Animat exposure modelling indicated that the maximum distance to the TTS and PTS noise effect criteria for Pygmy Blue Whales was 0.05 km and 0.01 km from the acoustic source respectively (Table 7-9). For Pygmy Blue Whales, this requires them to remain within ~10–50 m of the sound source for at least a 24-hour period before TTS or PTS auditory effects may occur.

Acoustic modelling for vessels associated with the installation of the SCSt indicated that the R_{max} from the source to TTS and PTS criteria for low-frequency cetaceans was 1.95 km and 0.30 km respectively; for high-frequency cetaceans was 0.12 km and 0.02 km respectively; and for very high-frequency cetaceans was 0.15 km and 0.02 km respectively (Table 7-7). Animat exposure modelling indicated that the maximum distance to the TTS and PTS noise effect criteria for Pygmy Blue Whales was 0.05 km and 0.01 km from the acoustic source respectively (Table 7-11). For Pygmy Blue Whales, this requires them to remain within ~10–50 m of the sound source for at least a 24-hour period before TTS or PTS auditory effects may occur.

The noise effect criteria for sirenians (dugongs) for TTS is equivalent to that of marine turtles, so the estimated distance to the SEL_{24} for TTS is ~0.05 km. The noise effect criteria for sirenians for PTS is between that of marine turtles and low-frequency cetaceans, and as such the estimated distance to the SEL_{24} for PTS may be up to ~0.05 km.

Given that behavioural disturbances are predicted at distances much larger (in the scale of kilometres) than within ~50 m of a vessel sound source, it is unlikely that marine mammals will remain within the immediate proximity of the installation vessel fleet for extended durations so that auditory impairment or injury would occur. As such the risk of TTS or PTS to marine mammals is not considered credible and has not been evaluated further.

The helicopter operations covered under this EP are short discrete trips (i.e. crew transfers). Frequency of helicopter flights will vary during the activities, but could be daily during FCS pre-commissioning, commissioning, and start-up (Section 3.5.2). Given the short duration of helicopter presence within the OA, 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

Behavioural disturbance

Continuous sound sources have been identified as a high risk of causing behavioural changes within the near (tens of metres), a moderate risk within intermediate (hundreds of metres) vicinity of a sound source for marine turtles; this risk decreases with increasing distance from the source (Table 7-3). Continuous sound of any level that is detectable by turtles can mask signal detection, and thus may have a pervasive effect on behavior; however, the consequences of this masking and any attendant behavioral changes for the survival turtles are unknown (Ref. 83).

As identified in Section 4.3.3.2, marine turtle species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Sound EMBA. Internesting buffer BIAs and internesting habitat critical for the survival of Flatback, Green, and Hawksbill turtles also overlap with the Sound EMBA.

The Recovery Plan for Marine Turtles in Australia (Ref. 55) identifies noise interference as a key threat. Marine turtles do not have external ears, but potentially use sound for navigation, locating prey and avoiding predators (Ref. 55). Exposure to chronic (continuous) loud noise in the marine environment may lead to avoidance of important habitat (Ref. 55).

The *Recovery Plan for Marine Turtles in Australia* (Ref. 55) defines the nesting habitat critical for the survival of each species at a stock level. The closest nesting habitat critical to the survival of a species to the OA includes Barrow, Montebello, and Lowendal islands, which have been identified as nesting habitat for Flatbacks, Greens, and/or Hawksbill turtles (Ref. 55). At its closest, the OA is located ~5.5 km from the coast of Barrow Island (i.e. the 3 nm coastal waters limit). The part of the OA that occurs near Barrow Island is associated with the installation of the HVSC. As potential behaviour effects are predicted to be restricted to distances within hundreds of metres of a sound source, no coastal areas (and therefore no adult nesting turtles, or turtle hatchlings) are expected to be exposed. In addition, the duration of activities occurring within this part of the OA closest to Barrow Island is expected to be relatively low, with vessels typically moving along the HVSC route and away from the island, and not remaining stationary for extended durations.

The *Recovery Plan for Marine Turtles in Australia* (Ref. 55) defines internesting habitat critical for survival of a species as a distance seaward from nesting habitat critical for the survival of a species of 60 km for Flatbacks and 20 km for Green and Hawksbill turtles. Recent studies (Ref. 74) have indicated that the internesting behaviour of Flatback Turtles on the NWS appears more spatially restricted than that suggested by the Recovery Plan (Ref. 55). Whittock et al (Ref. 74) reported that Flatback Turtles prefer habitats within proximity of the coast and at relatively shallow depths during their internesting periods. Unsuitable Flatback Turtle internesting habitat was defined as waters >25 m deep and >27 km from the coast (Ref. 74). This suggests that although the OA does overlap with some internesting habitat critical for the survival of the species, due to the OA being located offshore in water depths ranging between ~25–1,350 m, and that Flatback Turtle nesting is more common on the east coast beaches of Barrow Island (i.e. opposite side of the island to the OA), the majority of the OA may not present preferred internesting habitat for this species. Green and Hawksbill turtles also demonstrate spatially restricted behaviour during internesting, and have been recorded as staying with within 5 km of Barrow Island and within shallow coastal waters (Ref. 199). Consequently, given observed behaviours and internesting habitat preferences, only a small number of marine turtles are expected to be present within the OA, and any disruption to their behaviour is expected to be spatially limited as potential behaviour effects are predicted to be restricted to distances within hundreds of metres of a sound source. In addition, the duration of activities occurring within this part of the OA closest to Barrow Island is expected to be relatively low, with vessels typically moving along the HVSC route and away from the island, and not remaining stationary for extended durations.

TTS and PTS

Acoustic modelling for vessels associated with the installation of the HVSC (cable lay and rock dumping) indicate that the maximum radial distance in any direction from the source to the TTS noise effect criteria was 0.05 km from the sound source, and the PTS noise effect criteria was not predicted to be exceeded (Table 7-4, Table 7-5). TTS for marine turtles from these vessels 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 therefore not been considered further.

Acoustic modelling for vessels associated with the installation of the FCS indicate that the maximum radial distance in any direction from the source to the TTS noise effect criteria was 0.13 km from the sound source, and the PTS noise effect criteria was not predicted to be exceeded (Table 7-6).

Acoustic modelling for vessels associated with the installation of the SCSt indicate that the maximum radial distance in any direction from the source to the TTS and PTS noise effect criteria was 0.15 km and 0.02 km from the sound source respectively (Table 7-7). PTS for marine turtles from these vessels is not considered credible as it requires turtles to remain in the immediate vicinity (~20 m) of the vessel over a 24-hour period; and therefore not been considered further.

The FCS and SCSt are located >100 km from the nearest coast (Montebello Islands), and >50 km further offshore than any BIA or habitat critical to the survival for any of the marine turtle species (Flatback, Green, Hawksbill turtles) that are known to nest on Montebello and Barrow islands. Any presence of marine turtles in these deep offshore waters is expected to be of a transitory nature only. If present, the turtle would need to remain within ~130–150 m of the installation vessel fleet before auditory effects would start to occur. Given Popper et al (Ref. 83) indicates that within these sorts of distances (i.e. hundreds of metres from a continuous sound source) there is a moderate risk of behavioural effects on marine turtles, it is unlikely that turtles will remain within ~130–150 m of the installation vessel fleet for extended durations.

The helicopter operations covered under this EP are short discrete trips (i.e. crew transfers). Frequency of helicopter flights will vary during the activities, but could be daily during FCS pre-commissioning, commissioning, and start-up (Section 3.5.2). Given the short duration of helicopter presence within the OA, 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.

Given that the ensonified area for SEL_{24h} TTS is not predicted to overlap with the habitat suitable for internesting, and that if marine turtles did occur offshore within the OA, only localised short-term behavioural impacts to individuals have the potential to arise from these activities and have therefore been evaluated as Incidental (6).

Fish, including sharks and rays

Behavioural disturbance

Continuous sound sources have been identified as a moderate or high risk of causing behavioural changes, and a high risk of causing masking changes, within the near (tens of metres) and intermediate (hundreds of metres) vicinity of a sound source for all fish groups, including eggs and larvae (Table 7-3); these risks decrease with increasing distance from the source. Continuous sound of any level that is detectable by fish 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. 83). 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.

Whale Shark migration along the WA coast occurs mainly between July and November (Section 4.3.3.3.1). Based on the indicative activity schedule (mid-2024 to mid-2026), there is potential for temporal overlap with the Whale Shark migration period. The part of the OA (and therefore Sound EMBA) that intersects with this Whale Shark BIA is associated with HVSC installation activities, and as such vessels are expected to be moving along the HVSC route and, and not remaining stationary for extended durations. The OA associated with the installation and pre-commissioning of the FCS and SCSt does not intersect with the Whale Shark BIA. 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 likely 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. 91). 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 most of the Sound EMBA, the predicted sound levels at the seabed are expected to be below impact thresholds.

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 low risk of causing recoverable injury or mortal or potential mortality to fish with no swim bladders, those with bladders not involved in hearing, or to fish eggs and larvae (Table 7-3).

For fish species with a swim bladder involved in hearing, acoustic modelling for all scenarios indicates that the criterion for recoverable injury was not predicted to be exceeded, and as such has not been evaluated further.

For fish species with a swim bladder involved in hearing, acoustic modelling for vessels associated with the installation of the HVSC (cable lay and rock dumping) also indicated that the TTS criterion was not reached within the limits of the modelling resolution (Table 7-4, Table 7-5), and therefore this has not been considered further.

For fish species with a swim bladder involved in hearing, acoustic modelling for vessels associated with the installation of the FCS and the SCSt indicate that the maximum radial distance in any direction from the source to the TTS noise effect criteria was 0.08 km and 0.10 km from the sound source respectively (Table 7-6, Table 7-7).

The FCS and SCSt are located >50 km further offshore than the Whale Shark foraging BIA, and in deep waters (~1,290–1,345 m) with no known emergent features. Any presence of fish or sharks in these deep offshore waters is expected to be of a transitory nature only. If present, the fish would need to remain within ~80–100 m of the installation vessel fleet before auditory effects would start to occur. Given Popper et al (Ref. 83) indicates that within these sorts of distances (i.e. tens to hundreds of metres from a continuous sound source) there is a moderate to high risk of behavioural effects on fish, it is unlikely that they will remain within close proximity of the installation vessel fleet for extended durations. The helicopter operations covered under this EP

are short discrete trips (i.e. crew transfers). Frequency of helicopter flights will vary during the activities, but could be daily during FCS pre-commissioning, commissioning, and start-up (Section 3.5.2). Given the short duration of helicopter presence within the OA, 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.

Given that the ensonified area for SEL_{24h} TTS is not predicted to overlap with the Whale Shark BIA, and that if fish (including sharks and rays) did occur offshore within the OA, only localised short-term behavioural impacts to individuals have the potential to arise from these activities and have therefore been evaluated as Incidental (6).

Changes to values and sensitivities of marine protected areas

The Sound EMBA overlaps with the Commonwealth Montebello Marine Park. The part of the Sound EMBA that overlaps with the marine park is associated with installation of the HVSC. The FCS and SCSt are located >50 km further offshore from the Montebello Marine Park.

The Montebello Marine Park is zoned as a Multiple Use Zone (IUCN VI), which is a zone "managed to allow ecologically sustainable use while conserving ecosystems, habitats and native species. The zone allows for a range of sustainable uses, including commercial fishing and mining where they are consistent with park values" (Ref. 66).

The 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.

Potential impacts to the values of the Montebello Marine Park may occur due to impacts on marine fauna. The consequence evaluations to these receptors are provided above, and were risk assessed as Minor (5). It is therefore expected that there would also be no long-term or significant impacts to the values of the Montebello Marine Park.

CAPL consider that the petroleum activity can be undertaken in a manner that is not inconsistent with the objectives of the *North-west Marine Parks Network Management Plan* (Ref. 66).

As such, CAPL has ranked the consequence for cultural values consistent with that for marine fauna, as Minor (5).

Changes to cultural heritage values

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

Based on the outcomes of relevant persons consultation, CAPL considers that indirect impacts to intangible First Nations cultural values may occur due to impacts on marine fauna. The consequence evaluations to these receptors are provided above, and were risk assessed as Minor (5). Given the offshore location of the OA (~5.5 km from Barrow Island, and ~70–200 km from the mainland; Figure 3-1) and duration of the campaigns (~2 days to ~5–6 months), 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 for cultural values consistent with that for marine fauna, as Minor (5).

ALARP decision context justification

Offshore commercial vessel 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 petroleum activity.

Although some species that are known to be sensitive to underwater sound have the potential to be exposed to underwater sound 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.	
Additional control measures and cost benefit analysis		
Control measure	**Benefit**	**Cost**
Adaptive management for Pygmy Blue Whales (Bridge-watch Marine Fauna Observers)	The J-IC installation and pre-commissioning activities may overlap with the predicted peak Pygmy Blue Whale migration periods (April to August, and November to December). In recognition of this temporal and spatial overlap, marine fauna observations from the bridge-watch crew on the vessels will be used These observations are not intended as a dedicated Marine Fauna Observer (MFO) role, as bridge-watch crew will also be required to fulfil their primary responsibilities onboard the vessel. However, any observations will assist in reducing the risk of hearing impairment impacts to cetaceans. The following will be implemented (irrespective of activity timing) while in transit within the OA: • where practicable (given primary crew duties), the bridge-watch from the vessel/s will record observations for whales • maintain caution and no approach zones (as per EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans).	No additional personnel costs. However, the detection of cetaceans may lead to increased activity duration and overall costs due to transit deviations. However, the benefit of reducing impacts to cetaceans is considered to outweigh the financial costs from not implementing this control. Therefore, control measure has been adopted for use.
Adaptive management for Pygmy Blue Whales (pre start-up visual observation period)	The predicted ensonified areas do not intersect with any Foraging Areas (annual high use, known, or possible) as defined within the *Conservation Management Plan for the Blue Whale 2015–2025* (Ref. 59). Based on proxy indicators, a recent study suggests that the 'most important areas' for foraging along the WA coast include discontinuous use of the shelf edge from Ningaloo Reef to Rowley Shoals (Ref. 86). The predicted ensonifed area for behavioural disturbance to Pygmy Blue Whales during FCS and SCSt	No additional personnel costs. However, the detection of cetaceans may lead to increased activity duration and overall costs due to delayed start-ups of the activity. However, the benefit of reducing impacts to cetaceans is considered to outweigh the financial costs from not implementing this control. Therefore, control measure has been adopted for use.

	installation activities may extend up to 15.4 km and 13.1 km respectively. These predicted ensonifed areas for the installation activities associated with the FCS and SCSt do intersect with part of these 'most important areas' for foraging. In accordance with Australian Government guidance (Ref. 84), activities occurring outside designated Foraging Areas must adopt adaptive management approaches should indicators of whale foraging be evident. The following adaptative measures will be implemented if FCS or SCSt installation activities occur during the predicted peak migration periods for Pygmy Blue Whales: • pre start-up visual observation period – during daylight hours, visual observations for the presence of whales will be undertaken for at least 30 minutes prior to commencement of activities.	
Likelihood and risk level summary		
Likelihood	Due to the nature and scale of the vessel activities within scope of this EP, the prediction of localised and temporary behaviour disturbance, and the overlap with known BIAs for some fauna, the likelihood of exposing receptors resulting in the identified consequence was considered Seldom (3).	
Risk level	Low (7)	
Determination of acceptability		
Principles of ESD	The risk associated with this aspect is a 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. As such, this aspect is not considered as having the potential to affect biological diversity and ecological integrity. The consequence associated with this aspect is Minor (5). Therefore, no further evaluation against the Principles of ESD is required.	
Relevant environmental legislation and other requirements	Legislation and other requirements considered applicable for this aspect include: • EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans • *Conservation Management Plan for the Blue Whale 2015–2025* (Ref. 59) • *Recovery Plan for Marine Turtles in Australia* (Ref. 55) • *Conservation Advice for the Whale Shark 2015–2020* (Ref. 56) • *North-west Marine Parks Network Management Plan* (Ref. 66). CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.	

	Requirement	Demonstration
	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.	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.
	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	The Sound EMBA does not intersect with designated Foraging Areas for the Pygmy Blue Whale. The nearest foraging BIA is located offshore from North West Cape peninsula; and as such is not exposed to underwater sound emissions resulting from the petroleum activity. A recent study has indicated areas of probable foraging along the NWS based on proxy indicators (Section 4.3.3.1.2), and there is a small overlap with the Sound EMBA associated with installation activities for the FCS and SCSt. In accordance with Australian Government guidance (Ref. 84), activities occurring outside designated Foraging Areas must adopt adaptive management approaches should indicators of whale foraging be evident. Adaptive management control measures have been considered and adopted for use within this risk assessment. TTS and PTS from accumulated SEL_{24h} exposures to continuous sounds from vessels or helicopters is not predicted to occur. Therefore, continued use of the BIA without injury is expected. Therefore, this activity is not considered to be inconsistent with the *Conservation Management Plan for the Blue Whale*.
	Recovery Plan for Marine Turtles in Australia Management action A1.5: Manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to the survival Management action A1.6: Manage anthropogenic activities in Biologically Important Areas to ensure that biologically important behaviour can continue	TTS and PTS from accumulated SEL_{24h} exposures to continuous sounds from vessels or helicopters 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. Therefore, this activity is not considered to be inconsistent with

<table>
<tr><td></td><td></td><td>the Recovery Plan for Marine Turtles in Australia.</td></tr>
<tr><td></td><td>Conservation Advice for the Whale Shark 2015–2020
No specific conservation action identified.</td><td>N/A</td></tr>
<tr><td></td><td>North-west Marine Parks Network Management Plan 2018
The class approval for mining operations within a multiple use zone requires a NOPSEMA-accepted EP to be in place before activities commence.</td><td>This EP has been submitted to NOPSEMA for assessment.
Therefore, the petroleum 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">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 petroleum 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 associated with the petroleum activity are not inconsistent with any recovery plan, conservation advice, or relevant bioregional plan.
However, in alignment with Section 5.6.2, where the aspect is listed as threat to a protected matter, or identified as a concern to a listed conservation value, CAPL will define an acceptable level of impact that aligns with the objectives of these documents.
Objectives of the relevant documents are shown below:
<table>
<tr><th>Plan</th><th>Objective</th></tr>
<tr><td>Conservation Management Plan for the Blue Whale 2015–2025</td><td>Recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 4 Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td>Recovery Plan for Marine Turtles in Australia</td><td>Recovery objective: The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 3: Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td>North-west Marine Parks Network Management Plan 2018</td><td>As per Section 4.5.1</td></tr>
</table>
Therefore, CAPL has defined the following acceptable level of impact such that it is not inconsistent with these documents:
• no auditory injury (TTS or PTS) to Pygmy Blue Whales within a BIA resulting from underwater sound from the petroleum activityno displacement of Pygmy Blue Whales from foraging areas resulting from underwater sound from the petroleum activity such that it would prevent the long-term recovery of the species
• no displacement of marine turtles from habitat critical to the survival of a species resulting from underwater sound from the petroleum</td></tr>
</table>

	activity such that it would prevent the long-term recovery of the species • no disruption of biologically important behaviours of marine turtles within biologically important areas resulting from underwater sound from the petroleum activity such that it would prevent the long-term recovery of the species • no adverse change to the values of the Montebello Marine Park. CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the risk to marine fauna, that the risk to values of the AMP are also subsequently managed to this acceptable level.	
Environmental performance outcomes	**Environmental performance standard**	**Measurement Criteria**
No injury to marine fauna from underwater sound emissions associated with the petroleum activity within the OA 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 underwater sound emissions within the OA 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; 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 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. ***Exception**: does not apply to vessels when operating with constrained maneuverability (e.g. actively deploying subsea infrastructure); or to any vessel in the event of an emergency.*	Induction materials include relevant marine fauna caution and no approach zone requirements
		Training records confirm offshore personnel involved in the petroleum activity 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: • not operate 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. ***Exception:** does not apply during helicopter take-off or landing (on the vessel) if these cannot be delayed due to safe operation requirements; or to any helicopter in the event of an emergency*	Helicopter records show if marine fauna interaction occurred, and what mitigation (e.g. divert) measure was implemented

	Adaptive management for Pygmy Blue Whales (Bridge-watch Marine Fauna Observers) When vessels are under transit within the OA: • where practicable (given primary crew duties), the bridge-watch from the vessel/s will record observations for whales • maintain caution and no approach zones (as per EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans).	Induction records show vessel bridge-watch crew were provided with whale observations and reporting guidelines Whale observation reports from vessels during the petroleum activity
	Adaptive management for Pygmy Blue Whales (pre start-up visual observation period) If FCS or SCSt installation activities occur during the predicted peak migration periods for Pygmy Blue Whales, the following pre start-up visual observation will be implemented: • during daylight hours, visual observations for the presence of whales will be undertaken for at least 30 minutes prior to commencement of activities	Records demonstrate that pre start-up visual observations were undertaken for any FCS or SCSt installation activities during predicted peak Pygmy Blue Whale migration periods

7.7 Underwater sound—impulsive

Source

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

- installation—acoustic surveys (MBES and SSS) associated with the pre-, as-trench, and post-lay surveys, as well as during rock stabilisation
- IMR— acoustic surveys (MBES and SSS).

Survey techniques are expected to emit various frequencies between 12 and 500 kHz (Ref. 76). Examples of sound levels emitted from the equipment include:

- MBES
  - SPL 218–221 dB re 1 µPa RMS @ 1 m (Ref. 77; Ref. 278)
  - per-pulse SEL 173–188 dB re 1 μPa^2s @ 1 m (Ref. 278)
- SSS
  - SPL 229–234 dB re 1 µPa RMS @ 1 m (Ref. 77; Ref. 278)
  - per-pulse SEL 200 dB re 1 μPa^2s @ 1 m (Ref. 278).

Potential impacts and risks

Impacts	C	Risks	C
Underwater sound emissions may result in:		A change in ambient underwater sound may result in:	
• localised and temporary change in ambient underwater sound.	6	• behavioural disturbance	6
		• auditory impairment, TTS, PTS, recoverable or non-recoverable injury to marine fauna	–

		• changes to values and sensitivities of marine protected areas.	6
		• changes to cultural heritage values	6

Consequence evaluation

Localised and temporary change in ambient underwater sound

Anthropogenic underwater sound emitted during acoustic surveys will result in a temporary and highly localised change in ambient 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. 85). 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. 85).

Survey techniques are expected to emit various frequencies between 12 and 500 kHz; with a maximum SPL up to ~234 dB re 1 µPa RMS @ 1 m for SSS (Ref. 278).

The duration of underwater impulsive sound emissions from acoustic surveys within the OA will vary with activity, ranging from ~2 consecutive days (during each rock dumping trip or for each pre- or post- lay survey) to up to ~21 consecutive days if used consistently during trenching activities to complete the as-trenched survey.

Given the details above, the consequence of acoustic surveys causing a change in ambient underwater sound has been assessed as Incidental (6) as it will result in limited changes that are very localised and short-term in nature.

Marine Mammals

Behavioural disturbance

The noise effect criteria for marine mammals for behavioural disturbance from impulsive sound is an SPL of 160 dB re 1 µPa (Ref. 277). Acoustic modelling undertaken for geophysical survey equipment in a sandy seabed environment predicted the maximum distance to reach this noise effect criteria from a MBES and SSS source was ~290 m and ~682 m respectively (Ref. 278).

Several marine mammal species have the potential to occur within the predicted ensonified area, including listed threatened and/or migratory low and mid frequency cetaceans, and sirenians. The predicted ensonified area for behavioural disturbance also overlaps with a migration BIA for Humpback Whales and Pygmy Blue Whales. There are no other known areas of aggregation or biologically important behaviours for other cetacean species within the predicted ensonified area; as such it is expected that the presence of any marine mammal species would be of a transitory nature.

Given the indicative timing of the J-IC installation and pre-commissioning activities (i.e. from mid-2024 to mid-2026), there is the potential for overlap with the migration period for Humpback Whales. The part of the OA that intersects with the Humpback Whale BIA is associated with the installation of the HVSC. Studies (Ref. 222) suggest that northbound Humpback Whales tend to travel around the 200 m water depth contour, while southbound Humpback Whales tend to travel closer to Barrow Island and generally occur between 50 m and 200 m water depths.

Similarly, there is the potential for overlap with the migration period for Pygmy Blue Whales. The part of the OA that intersects with the Pygmy Blue Whale BIA is associated with the installation of the HVSC (offshore extent only), FCS, and SCSt. The predicted ensonifed area also intersects with areas that have been identified as most important areas for Pygmy Blue Whale migration along the west coast. However, it is expected based on satellite tracking and acoustic detection studies that Pygmy Blue Whales are likely to travel further offshore than the defined BIA, particularly on their southern migration (November to December), but also during the northern migration (April to August) (Section 4.3.3.1.2).

The duration of underwater impulsive sound emissions from acoustic surveys within the OA will vary with activity, ranging from ~2 consecutive days (during each rock dumping trip or for each pre- or post- lay survey) to up to ~21 consecutive days if used consistently during trenching activities to complete the as-trenched survey.

Given the limited spatial and temporal exposures to marine mammals from underwater impulsive sound above the noise effect criteria for acoustic surveys, limited environmental impacts are expected to occur and therefore have been evaluated as Incidental (6).

PTS and TTS

The noise effect criteria for marine mammals for TTS and PTS from impulsive sound is an SEL_{24h} of 140–170 dB re 1 μPa^2s and 155–185 dB re 1 μPa^2s respectively depending on frequency hearing group (Ref. 78).

Acoustic modelling undertaken for geophysical survey equipment in a sandy seabed environment predicted the maximum distance to a per-pulse SEL for within these ranges was <20 m for MBES, and between <20 m and 31 m for SSS (Ref. 278). The modelling study also showed that for a 2.5 hour MBES survey, the accumulated SEL would not exceed an unweighted 171 dB re 1 μPa^2s more than 2 m from the source (Ref. 278). Similarly, for a 2.5 hour SSS survey, the accumulated SEL would not exceed an unweighted 171 dB re 1 μPa^2s more than 3 m from the source (Ref. 278).

Given the small predicted distances, and need for fauna to be exposed at these levels for extended durations before auditory impairments or injuries occur, TTS and PTS to marine mammals from acoustic survey techniques is not considered credible and is not evaluated further.

Turtles

Behavioural disturbance

The noise effect criteria for marine turtles for behavioral response and behavioral disturbance from impulsive sound is an SPL of 166 dB re 1 µPa (Ref. 80) and 175 dB re 1 µPa (Ref. 81; Ref. 82). Acoustic modelling undertaken for geophysical survey equipment in a sandy seabed environment predicted the maximum distance to reach these sound levels from a MBES and SSS source was ~71–290 m and ~257–682 m respectively (Ref. 278).

Several listed threatened and/or migratory marine turtle species have the potential to occur within the predicted ensonified area. The predicted ensonified area for also overlaps with a internesting buffer BIAs and habitat critical to the survival of a species for Flatback, Green and Hawksbill turtles.

Given the indicative timing of the J-IC installation and pre-commissioning activities (i.e. from mid-2024 to mid-2026), there is the potential for overlap with summer nesting seasons on Barrow Island. Green and Hawksbill turtles are known to nest on the west coast of Barrow Island, whereas Flatback Turtles nest on the east coast of the island (i.e. away from the OA and predicted ensonifed area). It is also noted that acoustic surveys will occur in waters >5.5 km from Barrow Island, whereas studies suggest that Green and Hawksbill turtles prefer internesting within shallow waters and within 5 km of Barrow Island (Ref. 199).

The duration of underwater impulsive sound emissions from acoustic surveys within the OA will vary with activity, ranging from ~2 consecutive days (during each rock dumping trip or for each pre- or post- lay survey) to up to ~21 consecutive days if used consistently during trenching activities to complete the as-trenched survey.

Given the limited spatial and temporal exposures to marine reptiles from underwater impulsive sound above the noise effect criteria for acoustic surveys, limited environmental impacts are expected to occur and therefore have been evaluated as Incidental (6).

PTS and TTS

The noise effect criteria for marine turtles for TTS and PTS from impulsive sound is an SEL_{24h} of 189 dB re 1 μPa^2s and 204 dB re 1 μPa^2s respectively (Ref. 79).

Acoustic modelling undertaken for geophysical survey equipment in a sandy seabed environment predicted the maximum distance to a per-pulse SEL for within these ranges was <20 m for SSS; and that exposure was not predicted to occur from an MBES (Ref. 278).

Given the small predicted distances, and need for fauna to be exposed at these levels for extended durations before auditory impairments or injuries occur, TTS and PTS to marine turtles from acoustic survey techniques is not considered credible and is not evaluated further.

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; high at both near and intermediate vicinity for fish that use their swim bladder for hearing, and moderate for fish eggs and larvae within the near vicinity (Ref. 83). There is a low risk of causing masking behaviours for all fish groups from impulsive noise sources (Ref. 83).

Several fish species have the potential to occur within the predicted ensonified area, including listed threatened and/or migratory species. The predicted ensonified area for behavioural disturbance also overlaps with a foraging BIA of Whale Sharks. There are no other known areas

of aggregation or biologically important behavious for other fish species within the predicted ensonified area; as such it is expected that the presence of any fish species would be of a transitory nature.

Given the indicative timing of the J-IC installation and pre-commissioning activities (i.e. from mid-2024 to mid-2026), there is the potential for overlap with the seasonal presence of Whale Sharks within the foraging BIA (July to November).

The duration of underwater impulsive sound emissions from acoustic surveys within the OA will vary with activity, ranging from ~2 consecutive days (during each rock dumping trip or for each pre- or post- lay survey) to up to ~21 consecutive days if used consistently during trenching activities to complete the as-trenched survey.

Given the limited spatial and temporal exposures to fish from underwater impulsive sound, limited environmental impacts are expected to occur and therefore have been evaluated as Incidental (6).

TTS

The noise effect criteria for marine turtles for TTS from impulsive sound is an SEL_{24h} of equal to or greater than 186 dB re 1 μPa^2s (Ref. 83).

Acoustic modelling undertaken for geophysical survey equipment in a sandy seabed environment predicted the maximum distance to a per-pulse SEL for within these ranges was <20 m for both MBES and SSS (Ref. 278).

Given the small predicted distances, and need for fauna to be exposed at these levels for extended durations before auditory impairments or injuries occur, TTS to fish from acoustic survey techniques is not considered credible and is not evaluated further.

Mortal or potential mortal injury, and recoverable injury

The noise effect criteria for marine turtles for recoverable injury and mortal or potential mortal injury from impulsive sound is an SEL_{24h} of 203–216 dB re 1 μPa^2s and of 207–219 dB re 1 μPa^2s respectively, depending on swim bladder hearing group (Ref. 83).

Acoustic modelling undertaken for geophysical survey equipment in a sandy seabed environment predicted that a per-pulse SEL at these levels was not predicted to occur (Ref. 278). As such a cumulative exposure is not credible and this type of impact is not evaluated further.

Changes to values and sensitivities of marine protected areas

The predicted ensonified area from the use of acoustic survey equipment overlaps with the Commonwealth Montebello Marine Park. The part of the ensonified area that overlaps with the marine park is associated with installation of the HVSC. The FCS and SCSt are located >50 km further offshore from the Montebello Marine Park.

The Montebello Marine Park is zoned as a Multiple Use Zone (IUCN VI), which is a zone "managed to allow ecologically sustainable use while conserving ecosystems, habitats and native species. The zone allows for a range of sustainable uses, including commercial fishing and mining where they are consistent with park values" (Ref. 66).

The 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.

Potential impacts to the values of the Montebello Marine Park may occur due to impacts on marine fauna. The consequence evaluations to these receptors are provided above, and were risk assessed as Incidental (6). It is therefore expected that there would also be no long-term or significant impacts to the values of the Montebello Marine Park.

CAPL consider that the petroleum activity can be undertaken in a manner that is not inconsistent with the objectives of the *North-west Marine Parks Network Management Plan* (Ref. 66).

As such, CAPL has ranked the consequence for cultural values consistent with that for marine fauna, 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).

Based on the outcomes of relevant persons consultation, CAPL considers that indirect impacts to intangible First Nations cultural values may occur due to impacts on marine fauna. The consequence evaluations to these receptors are provided above, and were risk assessed as Incidental (6). Given the offshore location of the OA (~5.5 km from Barrow Island, and ~70–200 km from the mainland; Figure 3-1) and duration of the campaigns (~2 days to ~5–

6 months), 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 for cultural values consistent with that for marine fauna, as Incidental (6).		
ALARP decision context justification		
Offshore acoustic surveys 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 petroleum activity. Although some species that are known to be sensitive to underwater sound have the potential to be exposed to underwater sound 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 whales are not harmed during offshore interactions with people. While this legislative requirement is for vessels (and not specifically acoustic survey equipment), by implementing the caution and approach zones, the potential for interaction with marine fauna, and any subsequent environmental impact, is reduced.	
Additional control measures and cost benefit analysis		
Control measure	**Benefit**	**Cost**
N/A	N/A	N/A
Likelihood and Risk Level Summary		
Likelihood	Due to the nature and scale of the acoustic surveys within scope of this EP, the prediction for localised and temporary behaviour disturbance, and the overlap with known biologically important areas for some fauna, the likelihood of exposing receptors resulting in the identified consequence was considered Unlikely (4).	
Risk level	Very low (9)	
Determination of acceptability		
Principles of ESD	The risk associated with this aspect is a localised and temporary behaviour disturbance to individuals, which is not expected to result in effects at a population level that would prevent their long-term recovery or survival. 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 Incidental (6). Therefore, no further evaluation against the Principles of ESD is required.	
Relevant environmental legislation and other requirements	Legislation and other requirements considered applicable for this aspect include: • EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans • *Conservation Management Plan for the Blue Whale 2015–2025* (Ref. 59) • *Recovery Plan for Marine Turtles in Australia* (Ref. 55) • *Conservation Advice for the Whale Shark 2015–2020* (Ref. 56) • *North-west Marine Parks Network Management Plan* (Ref. 66).	

	CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.	
	Requirement	**Demonstration**
	EPBC Regulations 2000 – Part 8 Division 8.1 interacting with cetaceans Caution and no approach zones for interacting with cetaceans from vessels	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.
	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	The Sound EMBA does not intersect with designated Foraging Areas for the Pygmy Blue Whale. The nearest foraging BIA is located offshore from North West Cape peninsula; and as such is not exposed to underwater sound emissions resulting from the petroleum activity. A recent study has indicated areas of probable foraging along the NWS based on proxy indicators (Section 4.3.3.1.2). The predicted ensonified areas from acoustic surveys does not intersect with these 'most important areas' for foraging. TTS and PTS is not predicted to occur for marine turtles; however some small (up to ~682 m from a source) area of potential behavioural disturbance is possible. Therefore, this activity is not considered to be inconsistent with the *Conservation Management Plan for the Blue Whale*.
	Recovery Plan for Marine Turtles in Australia Management action A1.5: Manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to the survival Management action A1.6: Manage anthropogenic activities in Biologically Important Areas to ensure that biologically important behaviour can continue	Auditory impairment (TTS and PTS) is not predicted to occur for marine turtles; however some small (up to ~682 m from a source) area of potential behavioural disturbance is possible. Studies indicate the Green and Hawksbill turtles (the species that nest on the east coast of Barrow Island) are more likely to stay in shallow waters within ~5 km of Barrow Island during their internesting period. As such, even though there is a small predicted overlap between the ensonifed area for behavioural disturbance and the internesting habitat critical to the survival of a species, displacement from these areas is not predicted to occur. Therefore, this activity is not considered to be inconsistent with the *Recovery Plan for Marine Turtles in Australia.*

<table>
<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
The class approval for mining operations within a multiple use zone requires a NOPSEMA-accepted EP to be in place before activities commence.</td><td>This EP has been submitted to NOPSEMA for assessment.
Therefore, the petroleum 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">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 petroleum 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 associated with the petroleum activity are not inconsistent with any recovery plan, conservation advice, or relevant bioregional plan.
However, in alignment with Section 5.6.2, where the aspect is listed as threat to a protected matter, or identified as a concern to a listed conservation value, CAPL will define an acceptable level of impact that aligns with the objectives of these documents.
Objectives of the relevant documents are shown below:
<table>
<tr><th>Plan</th><th>Objective</th></tr>
<tr><td>Conservation Management Plan for the Blue Whale 2015–2025</td><td>Recovery objective: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 4 Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td>Recovery Plan for Marine Turtles in Australia</td><td>Recovery objective: The long-term recovery objective for marine turtles is to minimise anthropogenic threats to allow for the conservation status of marine turtles to improve so that they can be removed from the EPBC Act threatened species list.
Interim objective 3: Anthropogenic threats are demonstrably minimised.</td></tr>
<tr><td>North-west Marine Parks Network Management Plan 2018</td><td>As per Section 4.5.1</td></tr>
</table>
Therefore, CAPL has defined the following acceptable level of impact such that it is not inconsistent with these documents:
• no auditory injury (TTS or PTS) to Pygmy Blue Whales within a BIA resulting from underwater sound from the petroleum activity
• no displacement of Pygmy Blue Whales from foraging areas resulting from underwater sound from the petroleum activity such that it would prevent the long-term recovery of the species
• no displacement of marine turtles from habitat critical to the survival or a species resulting from underwater sound from the petroleum</td></tr>
</table>

	activity such that it would prevent the long-term recovery of the species • no disruption of biologically important behaviours of marine turtles within biologically important areas resulting from underwater sound from the petroleum activity such that it would prevent the long-term recovery of the species • no adverse change to the values of the Montebello Marine Park. CAPL considers that the petroleum activity, with the control measures as described for this aspect in place, meet this acceptable level. In particular that by managing the risk to marine fauna, that the risk to values of the AMP are also subsequently managed to this acceptable level.	
Environmental performance outcomes	**Environmental performance standard**	**Measurement criteria**
No injury to marine fauna from underwater sound emissions associated with the petroleum activity within the OA 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 underwater sound emissions within the OA 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** Survey 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. ***Exception**: does not apply to vessels when operating with constrained maneuverability (e.g. actively deploying subsea infrastructure); or to any vessel in the event of an emergency.*	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

7.8 Invasive marine pests

Source
Activities identified as having the potential to result in the introduction of an invasive marine pest (IMP) are: • installation—presence of biofouling on subsea equipment used within the OA • field support—planned discharged of ballast water or the presence of biofouling on vessels undertaking activities within the OA.

Potential impacts and risks			
Impacts	**C**	**Risks**	**C**
N/A	–	An introduction of an IMP may result in: • displacement of, or compete with, native species.	2

Consequence evaluation

IMPs are likely 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 introduced marine pests, and that approximately one in six introduced marine species becomes a pest (Ref. 110).

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 deep ocean waters away from coastal habitats or shallow benthic 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. 111) estimates that the median risk of establishment[30] at 3 nm, 12 nm and 24 nm is ~40%, ~28%, and ~9% respectively.

The OA is in waters ranging ~25–1,350 m, and as such low light levels are expected at the seabed, particularly in the further offshore areas of the OA. The OA is also located >5 km offshore from the closest island (Barrow Island), and >85 km (>45 nm) from the mainland coast and large ports.

The particular values and sensitivities within the OA with the potential to be impacted by the introduction of a marine pest include the following KEFs:

- ancient coastline at 125 m depth contour
- continental slope demersal fish communities

Although KEFs have been identified as having the potential to be exposed, as described in Section 4.3.1.1, the benthic habitats within the OA mostly comprise unvegetated, soft, and unconsolidated sediments. Recent survey over parts of the Jansz pipeline showed the predominant benthic habitat was bare substrate, with either a smooth (mostly flat) or irregular (mostly flat with minor features) surface (Ref. 261). The only area identified as a high likelihood of biota being present was some patches over the scarp (Ref. 261). The study also indicated that habitat within the ancient coastline at 125 m depth contour KEF in proximity to the OA consisted of smooth seabed with bioturbation and appeared devoid of biota (Ref. 261; Table 4-14). Similarly habitat within the continental slope demersal fish communities KEF in proximity to the OA comprise irregular and smooth seabed with bare substrates, discrete depressions of bare substrate, and scarps with bare substrate, were the most dominant benthic features (Ref. 261; Table 4-14).

The location of the OA, and the benthic habitat within the OA, is not likely to be suitable for IMP establishment. The OA is in water depths of ~25–130 m, is located offshore from the mainland coast and large ports, and the seabed is dominated by soft sediments such as sand and clay. Thus, the more favourable requirements of expansive hard substrate and sufficient light for IMP survival are not common within the OA.

Once established, some IMPs can be difficult to eradicate (Ref. 112) and therefore there is the potential for a long-term change in habitat structure. Highly disturbed shallow water and coastal marine environments (such as marinas) 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. 113; Ref. 114; Ref. 115; Ref. 116). Although marine pests are identified as being of concern to marine reptile species under the *North-west Marine Bioregional Plan* (Ref. 87), the risk is associated with terrestrial based IMPs thus is not relevant to the activities covered under this EP.

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

[30] In this context, establishment refers to an organism being able to find suitable habitat and survive.

ALARP decision context justification
Offshore commercial vessel operations, and subsequent planned discharges, are commonplace and well-practiced locally, nationally, and internationally. The causes resulting in an introduction of an IMP from a planned release of ballast water or hull or equipment biofouling are well understood by the industry and CAPL. The control measures to manage the risk 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. 40*) 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. 8) • undertaking biofouling risk assessments in line with the with the *National Biofouling Management Guidance for the Petroleum Production and Exploration Industry* (Ref. 11) 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. 10) and *Australian Biofouling Management Requirements* (Ref. 9). As described in Section 8.3.3.2, all vessels operating in title areas must comply with applicable Australian biofouling and ballast water requirements to prevent the introduction and spread of marine pests. 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 authorization to mobilise via the *Quarantine Certificate – Vessel Mobilisation*.
Ballast water management	The *Australian Ballast Water Management Requirements* (Ref. 8) 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* (Cth) enacts Marine Order 98 (Marine pollution – anti-fouling systems). This marine order describes the conditions for when an antifouling certificate is required.
Maritime Arrivals Reporting System (MARS)	Under the *Biosecurity Act 2015 (*Cth*)*, pre-arrival information must be reported through MARS before a vessel arrives in Australian waters. In accordance with the *Australian Biofouling Management Requirements* (Ref. 9), from 15 June 2022, all operators of vessels intending to enter

<table>
<tr><td></td><td colspan="2">Australian territorial waters must also provide information relating to biofouling management as part of the pre-arrival reporting via MARS.</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">As vessel and installation activities are occurring within areas that are unlikely to provide benthic habitat suitable for IMP establishment, 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.</td></tr>
<tr><td>Risk level</td><td colspan="2">Low (7)</td></tr>
<tr><td colspan="3">Determination of acceptability</td></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential risks associated with this aspect is a widespread long-term impact to benthic 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.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered relevant for this aspect include:
• Biosecurity Act 2015 (cth)
• Protection of the Sea (Harmful Anti-fouling Systems) Act 2006 (Cth) (enacted by Marine Order 98 [Marine pollution – anti-fouling systems])
• Australian Ballast Water Management Requirements (Ref. 8)
• Australian Biofouling Management Requirements (Ref. 9)
• Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Biofouling Guidelines) MPEC.207(62)) 2011 (Ref. 10)
• National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (Ref. 11)
• North-west Marine Parks Network Management Plan (Ref. 66).
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>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</td><td>Requirement for ballast water exchange has been incorporated</td></tr>
</table>

	Best practice guidance for ballast water management within Australian seas, including legislative obligations under *Biosecurity Act 2015* (Cth)	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
	Australian Biofouling Management Requirements Best practice guidance for biofouling management within Australian seas, including legislative obligations under *Biosecurity Act 2015* (Cth)	Requirement for pre-arrival reporting has been incorporated into the **MARS** control measure Proactive management of biofouling (e.g. use of biofouling management plan) has been incorporated into the **quarantine procedure** control measure
	Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species (Biofouling Guidelines) A biofouling management plan and record book to be available and maintained	Proactive management of biofouling (e.g. use of biofouling management plan) has been incorporated into the **quarantine procedure** control measure
	National Biofouling Management Guidance for the Petroleum Production and Exploration Industry Undertake a biofouling risk assessment	Biofouling risk assessments for vessels have been incorporated into the **quarantine procedure** control measure
	North-west Marine Parks Network Management Plan The Plan requires that "[b]allast water discharge and exchange must be compliant with Australian ballast water management requirements administered by the Australian Maritime Safety Authority".	The Montebello Marine Park is a multiple use zone (IUCN VI). The control measures identified for the management of ballast water are in accordance with Australian requirements, and therefore also in accordance with the requirements of the multiple use zone of an Australian Marine Park.
Internal context	This CAPL environmental management process or procedure was deemed relevant for this aspect: • *Quarantine Procedure Marine Vessels* (*Ref. 40*). 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 IMPs arising from the petroleum activity.	
Defined acceptable level	These risks are inherently acceptable as they are considered lower-order impacts 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, 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.		
Environmental performance outcome	**Environmental performance standard**		**Measurement criteria**
No introduction and establishment of invasive marine pests within the OA due to the petroleum activity No adverse change to the values of Australian Marine Parks from the petroleum activity	**Quarantine procedure** All marine vessels undertaking activities in the OA must meet the relevant requirements of the *Quarantine Procedure Marine Vessels*, including that where required: • *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.		*The Quarantine Certificate – Vessel Mobilisation* issued by CAPL confirm that relevant vessels meet requirements of the *Quarantine Procedure Marine Vessels*
	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.		For international marine vessels, records show compliance with the *Australian Ballast Water Management Requirements*
	Anti-fouling certificate Marine vessels greater than 400 GT with an anti-foul coating are to maintain up-to-date international antifouling coating certification in accordance with *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006 (Cth)* and/or the International Convention on the Control of Harmful Anti-fouling Systems on Ships		Inspection reports confirm that international antifouling coating certifications are up-to-date
	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 2016), in accordance with the *Biosecurity Act 2015 (Cth)*		Records confirm that international vessels completed pre-arrival reporting (or can demonstrate meeting conditions for an exception)

7.9 Planned discharges—surface

Source

Activities identified as having the potential to result in planned discharges are:

- installation—FCS operations during installation and pre-commissioning
- field support—vessel operations during the petroleum activity (including installation and pre-commissioning, or IMR activities) within the OA.

The types of planned discharges from vessels include deck wash-water, fire-fighting foam, sewage, greywater, food wastes, cooling water, and oily bilge water.

As described in Section 3.2.1, sewage (macerated, but untreated) and grey water may be discharged while the FCS is attended during pre-commissioning, commissioning, and start-up, as well as during any campaign maintenance.

Potential impacts and risks

Impacts	C	Risks	C
Planned discharges from vessels may result in: • localised and temporary reduction in water quality.	6	A change in ambient water quality may result in: • changes to predator-prey dynamics.	6

Consequence evaluation

Localised and temporary reduction to water quality

Open marine waters are typically influenced by regional wind and ocean currents resulting in the mixing of surface and near-surface waters—where vessel discharges would occur (Ref. 100). Discharges from the vessels and FCS would occur in these surface and near-surface waters. Therefore, nutrients from sewage, or other similar, discharges will not accumulate or lead to eutrophication due to the highly dispersive environment (Ref. 100). This outcome was verified by sewage discharge monitoring for another offshore project (Ref. 67), 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 exceed volumes expected during vessel operations. Therefore, the extent of impacts is expected to be localised to the discharge location.

Discharge of untreated sewage can create a health hazard, however given the volumes and expected dilution and dispersion upon release, this is not expected to occur. The FCS is also located >100 km (>54 nm) from a coast, which is much greater than the minimum >12 nm requirement for a vessel to discharge untreated sewage when en route.

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. 67).

A vessel's bilge system Is designed to safely collect, contain and dispose of oily water so that discharge of hydrocarbons to the marine environment is minimized 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 or the FCS may lead 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. 101; Ref. 102). 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. 103; Ref. 104) and further dilution of the foam mixtures in dispersive aquatic environments may then occur before there is any substantial demand for dissolved oxygen (Ref. 105).

Consequently, CAPL believes that the change in water quality from these standard discharges is limited to a localized area and returns to ambient 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)
- Fish communities (associated with the various KEFs).

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. 100).

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. 106) 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 localized, typically returning to background conditions within tens to a few hundred metres of the discharge location (Ref. 107; Ref. 108; Ref. 109).

As described above, plankton communities are not affected by sewage discharges, but if they are, such effects would be highly localized (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 are not expected, and thus are not considered further.

Although fish are likely to 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 localized impacts to species. Any increased predation is not expected to result in more than a limited environmental impact; therefore, the consequence is Incidental (6).

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.

During relevant persons consultation, no objections or claims were raised regarding vessel discharges arising from the petroleum activity.

The impacts and risks associated with these discharges are lower-order impacts and risks in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.

Good practice control measures

Control measure	Description
MARPOL 73/78 sewage discharge	Marine Order 96 (Sewage) gives effect to MARPOL 73/78 Annex IV. MARPOL is the International Convention for the Prevention of Pollution from Ships is aimed at preventing both accidental pollution and pollution from routine operations.
MARPOL 73/78 food waste discharge	Marine Order 95 (Marine pollution prevention – garbage) gives effect to MARPOL 73/78 Annex V, which details the conditions in which macerated and unmacerated food waste can be discharged to the environment.
MARPOL 73/78 oily bilge discharge	Marine Order 91 (Marine pollution prevention – oil) gives effect to MARPOL 73/78 Annex I, which details the conditions by which oily bilge is authorized to be discharged to the environment.

<table>
<tr><th colspan="3">Additional control measures and cost benefit analysis</th></tr>
<tr><th>Control measure</th><th>Benefit</th><th>Cost</th></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">Given the nature and scale of this activity with standard control measures in place, it is considered Rare (6) that these discharges would result in any impact to the ecological function of the particular values and sensitivities present within the OA.</td></tr>
<tr><td>Risk level</td><td colspan="2">Very low (10)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential impacts and risks associated with this aspect 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 broader biological diversity and ecological integrity.
Accordingly, 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 to 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 (Ref. 66).
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>
</table>

<table>
<tr><td>Internal context</td><td colspan="2">These CAPL environmental performance standard / procedures were deemed relevant for this aspect:
Hazardous Materials Management Procedure (Ref. 36)
Marine Standard Non Tankers: Corporate OE Standard (Ref. 35).
Control measures related to each of the above management processes or procedures have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.</td></tr>
<tr><td>External context</td><td colspan="2">During relevant persons consultation, no objections or claims were raised regarding planned discharges from vessel or FCS operations arising from the petroleum 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">Planned discharges from vessel operations within the OA during the petroleum activity will meet MARPOL requirements</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</td><td>Records show food waste is discharged in accordance with MARPOL 73/78 Annex V</td></tr>
</table>

	with these MARPOL 73/78 Annex V requirements: • 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; and • 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 petroleum activity	**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 petroleum activity	Records demonstrate that spatial data for the boundary of the Commonwealth Montebello Marine Park have been provided to the support vessel contractors
		Records show planned discharges from vessels during the petroleum activity were outside the Montebello Marine Park

7.10 Planned discharges—subsea

Source

Activities identified as having the potential to result in planned subsea discharges are:

- installation—potential displacement of MEG from spools or SCSt piping; potential release of production fluids during tie-in to existing Jansz infrastructure; potential release of treated seawater (e.g. including biocide, corrosion inhibitor, etc.) from FCS ballast; acid wash or similar cleaning agent used to clean subsea infrastructure
- IMR—acid wash or similar cleaning agent used to clean subsea infrastructure
- pre-commissioning—discharge of MEG, fluorescein dye, and barrier fluids during testing.

Potential impacts and risks

Impacts	C	Risks	C
Planned subsea operational discharges may result in: • localised and temporary reduction in water quality.	6	A change in ambient water quality may result in: • alteration to benthic communities and habitats	6

Consequence evaluation

Localised and temporary reduction in water quality

The release of minor quantities of MEG, production fluids, acid-water mix, fluorescein dye, and barrier fluids during installation and pre-commissioning or IMR activities will result in a localised and temporary reduction in water quality around the discharge point.

These discharges are intermittent, non-continuous, and of short duration, and as such frequency of exposure is limited. The discharges are planned to occur in the deep offshore waters (>1,200 m) at the Jansz field.

Discharge of small volumes of these fluids are predicted to disperse and dilute while mixing through the water column. The spatial extent is likely to be limited to the water column, and only in a range of meters from the discharge point.

As subsea discharges are highly influenced by natural dispersion and dilution processes, the extent of exposure is most influenced by the volume of the release. Consequently, the planned discharges are expected to result in a limited environmental impact, and the consequence level was determined as Incidental (6).

Alteration to benthic communities and habitats

Subsea discharges are expected to result in temporary reductions in water quality within the immediate surroundings of the release location. The extent of this water quality reduction is limited to around the new J-IC infrastructure, within the deep waters of the Jansz field. An indirect impact to benthic communities and habitats may occur through toxicity impacts.

As described in Section 4.3.1.1, benthic habitats within the OA mostly comprise unvegetated, soft, and unconsolidated sediments. Recent survey over parts of the Jansz pipeline showed the predominant benthic habitat was bare substrate, with either a smooth (mostly flat) or irregular (mostly flat with minor features) surface (Ref. 261). The only area identified as a high likelihood of biota being present was some patches over the scarp (Ref. 261); this does not coincide with where planned subsea discharges will occur.

The largest volume of subsea discharges are associated with MEG (estimated to be a cumulative volume of ~500 m^3 during installation and pre-commissioning). However, these discharges will occur as multiple smaller and discrete discharges during the installation and/or tie-in of individual components (sliding spools, SCSt modules, and seabed spools). The aquatic toxicity of MEG is very low, has a low bioaccumulation potential, and it is on the OSPAR list of substances that are considered to pose little or no risk to the environment once released (PLONOR), and is not expected to result in adverse impacts to habitats or fauna. Concentrated MEG is weakly negatively buoyant, however is not expected to accumulate in sediments.

Similarly, the barrier fluids used will be a water-based hydraulic fluid with low toxicity and is not known to bioaccumulate; and are therefore not expected to result in adverse impacts to habitats or fauna. Barrier fluids are also weakly negatively buoyant. The estimated cumulative volume of barrier fluid discharges is ~2 m^3; noting the discharges occur as multiple smaller and discrete discharges during the pre-commissioning of SCSt modules.

The estimated cumulative volume of production fluid discharges is ~0.5 m^3; noting the discharges actually occur as multiple smaller and discrete discharges during the tie-in of the J-IC spools to the existing Jansz MPTS. Jansz production fluids (refer to Section 7.16.2.1 for discussion on characteristics of Jansz condensate) will be buoyant and will rapidly rise and mix through the water column. As such they are not expected to result in adverse impacts to habitats or fauna.

Given the rapid dilution and dispersion conditions of the open ocean, and intermittent, non-continuous, and of short duration of discharges, adverse impacts the existing benthic communities and habitats are not expected. Consequently, the release of subsea discharges are expected to result in a limited environmental impact to benthic communities and habitats, and the consequence level was determined as Incidental (6).

ALARP decision context justification

Subsea discharges associated with the installation of subsea infrastructure are commonplace and well-practiced within the industry. The control measures to manage the risk associated with these planned discharges are considered standard industry practice. These are well understood and implemented by the petroleum industry and CAPL.

During relevant persons consultation, no objections or claims were raised regarding planned subsea discharges arising from the petroleum activity.

The impacts and risks associated with these discharges are 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. 36)

Additional control measures and cost benefit analysis		
Control measure	**Benefit**	**Cost**
N/A	N/A	N/A
Likelihood and risk level summary		
Likelihood	Given the nature and scale of this activity, and with standard control measures in place, it is considered Rare (6) that this discharge would result in any impact to the ecological function of the particular values and sensitivities present within the OA.	
Risk level	Very low (10)	
Determination of acceptability		
Principles of ESD	The potential impacts and risks 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. Accordingly, the consequence associated with this aspect is Incidental (6). Therefore, no further evaluation against the Principles of ESD is required.	
Relevant environmental legislation and other requirements	No legislation or other requirements were considered relevant to this aspect.	
Internal context	This CAPL environmental performance standard/procedure was deemed relevant for this aspect: • *Hazardous Materials Management Procedure* (Ref. 36). Control measures related to the above management procedure have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.	
External context	During relevant persons consultation, no objections or claims were raised regarding planned subsea discharges arising from the petroleum activity.	
Defined acceptable level	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.	
Environmental performance outcome	**Environmental performance standard**	**Measurement criteria**
No impacts to marine habitats, or marine fauna outside of the OA from subsea discharges during the petroleum activity	**Hazardous materials selection process** Subsea 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)

7.11 Electromagnetic emissions

Source

Activities identified as having the potential to result in the generation of an electromagnetic field include:

- pre-commissioning—testing of the HVSC, start-up and operation of the HVSC.

Potential impacts and risks

Impacts	C	Risks	C
N/A	-	An electromagnetic field may result in: • behavioural disturbance of marine fauna	6

Consequence evaluation

Behavioural disturbance of marine fauna

While in use, the HVSC will generate a small electromagnetic field (EMF). The field strength produced as a result of the operation of electricity transmission decreases rapidly with distance away from the source (the decay curve follows the inverse square law; Ref. 250).

Previous modelling studies indicate that EMFs are limited spatially (both vertically and horizontally); however, are likely to reach at minimum up to a number of meters in the water column, possibly more (Ref. 293). Previous modelling of the magnetic fields from a 132kV cable and found that the EMF (B field) decreased to background levels within 20 m of the cable (Ref. 294). Given that the HVSC is either rock-dumped or trenched within waters shallower of ~100 m (Figure 3-2) this is expected to further reduce the EMF (by increasing the distance between the EMF source and any receptors) in these areas.

Magnetic and/or electric receptors have been reported for a wide range of taxa (Ref. 252). Many organisms, including elasmobranchs, some bony fish, decapods, marine mammals and turtles can detect both natural and artificial electric and/or magnetic fields and use them to navigate, orientate, and sense prey, mates and predators (Ref. 295; Ref. 296).

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 or habitat critical to the survival of a species also overlap with the OA, including:

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

Collins (Ref. 250) and Michel et al (Ref. 251) concluded that EMF may cause very localised disturbance within metres of the cable.

Given the HVSC is situated on the seabed in water depths of ~25–1,290 m, EMF exposure would require the cetacean to either be demersally foraging or diving within very close (~20 m) proximity of the HVSC. Most of the cetacean species that may occur within the OA (including Humpback Whales) are epipelagic species that are unlikely to demersally forage; however some species (such as Pygmy Blue Whales are known to feed and dive at depth) (Ref. 297).

The anticipated EMF emitted from the HVSC would be unlikely to have a significant impact (i.e. physiological or behavioural) to most bony fish, particularly when consideration is given to the high mobility of the species (Ref. 297). Sharks use E and/or B fields as their primary mode of locating food, finding mates, and navigating (Ref. 297). Whale Sharks are known to spend considerable time close to the surface. Whale Sharks tagged off WA (Ref. 64, Ref. 65) spent ~25% of their time <2 m from the surface and >40% of their time in the upper 15 m of the water column. The Whale Shark BIA is situated along the 200 m. Given Whale Sharks preference to remain in the upper layers of the water column, exposure to an EMF field from the seabed is expected to have limited effect on foraging effort or ability.

Studies have demonstrated that turtles have magnetosensitivity and behavioural responses to field intensities for Loggerhead and Green turtles (Ref. 252). While the HVSC occurs within internesting BIAs and internesting habitat critical to the survival of marine turtles (Section 4.3.3.2), high use of the OA as internesting habitat is not expected by any of the species (Green, Hawksbill, or Flatback turtles) given their internesting habitat preference for shallower nearshore areas. With consideration given to the HVSC profile and stabilisation techniques (rock dumping

and trenching), the anticipated B field emitted from the HVSC is likely to have a negligible impact to migration and orientation movements of the marine turtle species (Ref. 297).

Given the predicted small disturbance radius of the EMF (i.e. within metres) of the HVSC, significant adverse effects to marine fauna behaviour are not expected to occur. Within the shallower waters (<100 m) of the OA, the HVSC is either trenched or rock dumped, thereby further reducing the distance of EMF into the ocean. In areas where the HVSC is exposed there may be a localised change in the EMF and this may cause a very localised and temporary behavioural responses to fauna within close proximity to the HVSC, however the worst case response identified is minor movement deviation (Ref. 252). As such, CAPL has ranked the consequence associated this risk as Incidental (6).

ALARP decision context justification

Anthropogenic sources of EMFs are becoming increasingly common in the marine environment and are generally a result of offshore infrastructure, including subsea power cables.

During relevant persons consultation, no objections or claims were raised regarding EMF arising from the petroleum activity.

The risks associated with seabed disturbance 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
Cable design	EMFs exist wherever electric current flows, the types of EMFs generated by electrical cables are classified as extremely low frequency E and B fields. The field strength decreases rapidly with distance away from the source (the decay curve follows the inverse square law). The occurrence of electric fields may be controlled by application of shielding such as steel plates or sheaths within the cable insulating the conductor. The HVSC is designed to include an outer insulation layer (Section 3.2.2).
Secondary stabilisation	Secondary stabilisation methods (including rock dumping and trenching) will be undertaken along part of the HVSC route (Sections 3.2.2.4 and 3.2.2.6). This will reduce the area potential exposed to the generated EMF by increasing the distance to the EMF source.

Additional control measures and cost benefit analysis

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

Likelihood and risk level summary

Likelihood	Due to the nature and scale of the EMF generated by the activities within the scope of this EP, the likelihood of causing a behavioural disturbance to marine fauna is considered low. As such, the likelihood of incidental consequences to values and sensitivities from the generation of an EMF is considered Unlikely (4).
Risk level	Very low (9)

Determination of acceptability

Principles of ESD	The potential risk associated with this aspect is highly localised and limited to individual occurrences and is therefore not expected to affect biological diversity and ecological integrity. The consequence associated with this aspect is Incidental (6). Therefore, no further evaluation against the Principles of ESD is required.
Relevant environmental legislation and other requirements	Legislation and other requirements considered for this aspect include: • *North-west Marine Parks Network Management Plan* (Ref. 66) CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.

	Requirement	Demonstration
	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 seabed disturbance 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.	

Environmental performance outcome	Environmental performance standard	Measurement criteria
Reduce the risk of impacts to sensitive environmental receptors within the OA from petroleum activity	**Cable design** HVSC will be designed to include an outer insulation layer.	Review of HVSC design specifications confirms that HVSC includes an outer insulation layer.
	Secondary stabilisation Rock dumping and trenching will be undertaken as planned along the HVSC.	Post-lay surveys verify rock dumping and trenching are completed.

7.12 Unplanned seabed disturbance

Source

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

- installation— dropped object (e.g. infrastructure) or incorrect positioning of infrastructure
- field support—dropped object (e.g. tools or equipment) from vessels, ROVs or AUVs (during installation and pre-commissioning, or IMR activities).

Operator error, bad weather events or failure of equipment may lead to object loss, including tools and equipment overboard from the vessels or subsea from ROVs/AUVs at any point during the petroleum activity. The maximum footprint associated with this is expected to be ~10 m^2.

During installation activities, if infrastructure is positioned incorrectly there is a potential for seabed disturbance outside the planned disturbance footprint. The extent of seabed disturbance resulting from incorrect installation and positioning is dependent on the infrastructure. The maximum footprint associated with this is expected to be ~1,300 m^2 (based on the largest individual piece of equipment; a mudmat).

Potential impacts and risks

Impacts	C	Risks	C
N/A	-	Unplanned seabed disturbance may result in: • alteration of benthic communities and habitats.	6

Consequence evaluation

Alteration of benthic communities and habitats

In the event of object loss or incorrect infrastructure installation, potential environmental impacts would be limited to physical disturbance to benthic communities and habitats in the OA.

As described in Section 4.3.1.1, benthic habitats within the OA mostly comprise unvegetated, soft, and unconsolidated sediments. Recent survey over parts of the Jansz pipeline showed the predominant benthic habitat was bare substrate, with either a smooth (mostly flat) or irregular

(mostly flat with minor features) surface (Ref. 261). The only area identified as a high likelihood of biota being present was some patches over the scarp (Ref. 261).

The particular values and sensitivities within the OA with the potential to be impacted by seabed disturbance include the following KEFs:

- continental slope demersal fish communities
- ancient coastline at 125 m depth contour.

The intersection between the OA and the above KEFs occurs through the parts of the OA associated with the installation of HVSC (Figure 4-17). Recent surveys indicated that habitat within the ancient coastline at 125 m depth contour KEF in proximity to the OA consisted of smooth seabed with bioturbation and appeared devoid of biota (Ref. 261; Table 4-14). Similarly habitat within the continental slope demersal fish communities KEF in proximity to the OA comprise irregular and smooth seabed with bare substrates, discrete depressions of bare substrate, and scarps with bare substrate, were the most dominant benthic features (Ref. 261; Table 4-14).

As identified in Section 4.5.1, the OA overlaps with the Montebello Marine Park. The overlap between the marine park and the OA occurs at the shallower (typically <50 m) end of the OA, which has been 228tilized228ized by sands, clays, or gravels overlying subcropping cemented sediments (Figure 4-2). The habitat within the shallower parts of the OA are expected to be predominantly unvegetated sand, with patches of seagrass and macroalgae, and no associated sessile biota (Section 4.3.1.1).

The potential impacts to benthic communities and habitats as a result of unplanned seabed disturbance would be limited to individual occurrences and localised impacts (i.e. area of impact limited to the size of dropped object or equipment). Thus, CAPL ranked this consequence as Incidental (6).

ALARP decision context justification

Offshore installation and vessel operations from petroleum activities are common; the activities causing this aspect are utilized nationally and internationally. The control measures to manage the risks associated with unplanned seabed disturbance are well understood and implemented by the industry.

During relevant persons consultation, no objections or claims were raised regarding seabed disturbance arising from the petroleum activity.

The risks associated with unplanned seabed disturbance 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	In the event of a loss of equipment that results in a navigational hazard, other marine users within the vicinity will be notified via very high frequency radio (VHF).
Marine incident report	Reporting marine incidents is an important part of ensuring the safety of people and vessels. In the event of a loss of equipment meeting the requirements of a marine incident, an incident alert report must be issued to AMSA within 4 hours of the incident.
Lost equipment	In the event of an unplanned loss of equipment, prior to the completion of the activity, the lost equipment will be recovered where considered safe and practicable to do so. Considerations for determining if equipment retrieval is safe and practicable include: • risk to personnel • whether the location of the equipment is in recoverable water depths • equipment's proximity to subsea infrastructure • ability to recover the equipment (e.g. nature of equipment, lifting equipment, suitable weather, etc.).
Lifting procedure	Prior to commencement of the petroleum activity, the *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 35) is used to verify that all vessels undertaking complicated, complex, or heavy lifts have a Lifting

<table>
<tr><td></td><td colspan="2">Procedure (or equivalent) in place that complies with the requirements of the Managing Safe Work (MSW) ABU Standardised OE Process (Ref. 34).</td></tr>
<tr><td>Crossing agreements</td><td colspan="2">As described in Section 3.2.2.1, the HVSC will need to cross existing umbilicals and pipelines. Prior to the petroleum activity commencing, CAPL will ensure that crossing agreements are in place with the other petroleum operators.</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">Loss of equipment has occurred previously in the industry but is not considered likely to occur during these activities, given the control measures in place. As such, the likelihood of incidental consequences to values and sensitivities from an unplanned loss of equipment is considered 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 potential risk associated with this aspect is likely to be highly localised and limited to individual occurrences and is therefore 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 colspan="2">Legislation and other requirements considered for this aspect include:
• North-west Marine Parks Network Management Plan (Ref. 66).
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.
<table><tr><td>Requirement</td><td>Demonstration</td></tr><tr><td>North-west Marine Parks Network Management Plan
No specific zone rules identified.</td><td>N/A</td></tr></table></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 seabed disturbance arising from the petroleum 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.
However, in alignment with Section 5.6.2. Where the aspect is listed as a 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><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</td></tr>
</table>

	that by managing the risk to marine fauna, that the risk to values of the AMP are also subsequently managed to this acceptable level.

Environmental performance outcome	Environmental performance standard	Measurement criteria
No unplanned seabed disturbance from activities within the OA during the petroleum activity No adverse change to the values of Australian Marine Parks from the petroleum activity	**Relevant persons engagement** In the event of a loss of equipment that results in a navigational hazard, other marine users within the vicinity will be notified via VHF	Vessel records confirms notification to other marine users
	Marine incident report In the event of a loss of equipment meeting the requirements of a marine incident, an incident alert report must be issued to AMSA within 4 hours of the incident	Records confirm incident alert issued to AMSA within 4 hours of a marine incident occurring
	Lifting procedure If a vessel is undertaking complicated, complex, or heavy lifts, a Lifting Procedure (or equivalent) will be in place prior to activities commencing that complies with the requirements of the *Managing Safe Work (MSW) ABU Standardised OE Process*	Records confirm that a Lifting Procedure (or equivalent) is in place prior to complicated, complex, or heavy lifts being undertaken.
	Crossing agreements CAPL will ensure that crossing agreements with other petroleum operators are in place prior to activities commencing	Records confirm that crossing agreements are in place prior to activities commencing
Reduce the risk of impacts to the environment from the unplanned loss of equipment during the petroleum activity	**Lost equipment** Lost equipment will be retrieved, where safe and practicable to do so	Records show that where assessed as safe and practicable, the lost equipment has been retrieved

7.13 Unplanned release—waste

Source

Activities identified as having the potential to result in an unplanned release of waste to the environment:

- Field support—waste lost overboard from vessels during installation and pre-commissioning, or IMR activities within the OA.

Inappropriate management and storage of waste generated on board vessels has the potential to be released to the environment.

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/mortality of marine fauna.	6

Consequence evaluation

Marine pollution resulting in injury and entanglement of marine fauna

If hazardous or non-hazardous waste is lost overboard, the extent of exposure to the environment is limited.

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. 281). However, the National Threat Abatement Plan (Ref. 281) 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".

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 and habitat critical to the survival of a species also overlap with the OA, including:

- Humpback Whale (migration BIA)
- Pygmy Blue Whale (migration BIA)
- Flatback Turtle, Green Turtle, Hawksbill Turtle (internesting buffer BIA, internesting habitat critical to the survival of a species)
- Whale Shark (foraging BIA)
- Fairy Tern, Lesser Crested Tern, Roseate Tern, Wedge-tailed Shearwater (breeding BIAs).

The southern extent of the OA is ~1 km from foraging BIAs for the Flatback Turtle, Green Turtle and Hawksbill Turtle.

The *Recovery Plan for Marine Turtles in Australia* (Ref. 55), the *Conservation Advice for Whale Sharks* (Ref. 56), and the *Wildlife Conservation Plan for Seabirds* (Ref. 236) identifies marine debris as a threat. Several species, including cetaceans, marine reptiles, and birds are also identified in the *Threat Abatement Plan for the Impacts of Marine Debris* (Ref. 281) as species adversely impacted by marine debris.

Marine debris ingested by marine reptiles may result in ecotoxicological effects, physical blockage and internal injuries. The throat structure of marine turtles prevents the turtles regurgitating swallowed items and therefore swallowed items are trapped in the gut where they decompose and leak gases into the body cavity, resulting in injury or mortality (Ref. 118).

Many species of seabirds ingest considerable quantities of plastic and other marine debris, which has a wide range of lethal or sublethal effects (Ref. 236). This debris can cause physical damage to the body, or perforate, block or impair the digestive system, resulting in starvation (Ref. 236).

Given the restricted exposures and the small quantity of waste with the potential to cause marine pollution that is expected to be generated from this petroleum activity, it is expected that any impacts from marine pollution would result in impacts to a few individual fauna. 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 an accidental 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.

During relevant persons consultation, no objections or claims were raised regarding waste management arising from the petroleum activity.

An unplanned release of waste is a lower-order risk in accordance with Table 5-3. As such, CAPL applied ALARP Decision Context A for this aspect.

<table>
<tr><th colspan="3">Good practice control measures</th></tr>
<tr><th>Control measure</th><th colspan="2">Description</th></tr>
<tr><td>Marine Order 95 (Marine pollution prevention – garbage)</td><td colspan="2">MARPOL 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 Annex V requires that a garbage / waste 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 Annex V.</td></tr>
<tr><th colspan="3">Additional control measures and cost benefit analysis</th></tr>
<tr><th>Control measure</th><th>Benefit</th><th>Cost</th></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td></tr>
<tr><th colspan="3">Likelihood and risk level summary</th></tr>
<tr><td>Likelihood</td><td colspan="2">Marine pollution arising from mismanaged waste offshore has occurred previously in the industry but is not expected to occur during these activities, given the control measures in place. As such, the likelihood of incidental consequences to values and sensitivities from an unplanned release of waste is considered Remote (5).</td></tr>
<tr><td>Risk level</td><td colspan="2">Very low (10)</td></tr>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The 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 additional evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements considered relevant for this aspect include:
Marine Order 95
MARPOL 73/78
Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia’s coasts and oceans (2018) (Ref. 281)
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 59)
Recovery Plan for Marine Turtles in Australia (Ref. 55)
Conservation Advice Rhincodon typus whale shark (Ref. 56)
National Recovery Plan for Threatened Albatrosses and Giant Petrels 2011–2016 (Ref. 117)
Wildlife Conservation Plan for Migratory Shorebirds (Ref. 75)
Wildlife Conservation Plan for Seabirds (Ref. 236)
North-west Marine Parks Network Management Plan (Ref. 66).
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.</td></tr>
<tr><td></td><td>Requirement</td><td>Demonstration</td></tr>
<tr><td></td><td>Marine Order 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>
</table>

<table>
<tr><td></td><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></td><td>Recovery Plan for Marine Turtles in Australia
No specific management action identified.</td><td>N/A</td></tr>
<tr><td></td><td>Conservation Advice for the Whale Shark 2015–2020
No specific action identified.</td><td>N/A</td></tr>
<tr><td></td><td>National Recovery Plan for Threatened Albatrosses and Giant Petrels
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>Wildlife Conservation Plan for Seabirds
No specific action identified.</td><td>N/A</td></tr>
<tr><td></td><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>
<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 waste management arising from the petroleum 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.
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><u>Recovery objective</u>: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list.</td></tr>
</table>

		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 minimize 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 minimized.
	National Recovery Plan for Threatened Albatrosses and Giant Petrels 2011–2016	Overall objective: To ensure the long term survival and recovery of albatross and giant petrel populations breeding and foraging in Australian jurisdiction by reducing or eliminating human related threats at sea and on land
	Wildlife Conservation Plan for Migratory Shorebirds	Objective 3: Anthropogenic threats to migratory shorebirds in Australia are minimised or, where possible, eliminated.
	Wildlife Conservation Plan for Seabirds	Objective 2: Seabirds and their habitats are identified, protected and managed in Australia.
	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 resulting from unplanned release of solid wastes from the petroleum activity 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 outcomes	Environmental performance standard	Measurement criteria
No unplanned release of waste to the environment during the petroleum activity No injury or mortality to marine fauna from an unplanned release of waste associated with the petroleum activity within the OA No adverse change to the values of Australian Marine	**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	Current International Air Pollution Prevention (IAPP) Certificate (for marine vessels >400 T or certified to carry >15 persons)

Parks from the petroleum activity	incinerator is to be IMO-approved and the waste incinerated is to be recorded 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).

7.14 Unplanned release—loss of containment

Source

The operation of vessels includes handling, using, and transferring hazardous materials, and has the potential to result in a 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]
- hydraulic line failure from equipment (~2 m^3)[2]
- failure during vessel refuelling (50 m^3)[3]

[1]A range of hydrocarbons and other hazardous chemicals / materials are likely to be present during onboard the vessels and FCS; 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] The volume of an unplanned release associated with a hydraulic line failure will vary with the equipment in use; however, the maximum credible volume associated with failure of a hydraulic power unit was estimated to be ~2 m^3 based on the loss of the full volume.

[3] AMSA (Ref. 119) 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.

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

Indirect impacts to fauna arising from chemical toxicity

Upon release, a loss of 50 m^3 of marine fuel would be expected to result in a localised and short-term change the water quality within surface waters. Given the surface release, and the known weathering and fate behaviour of MDO (Section 7.15.2.1), the small 50 m^3 volume is expected to form a film on the surface and rapidly evaporate and disperse following release. The environmental impacts associated with a surface release of 50 m^3 of MDO are expected to be much less than those associated with a loss of MDO from a vessel collision, and thus are not evaluated further in this section given that this risk is evaluated in Section 7.15.

The remaining LOC scenarios are limited to very small (~1–2 m^3) releases of hydraulic fluid or other chemicals.

The particular values and sensitivities with the potential to be exposed to decreased water quality from an unplanned LOC release with the OA include:

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

Based on the nature of these unplanned releases, which are which are very small (<2 m^3), instantaneous and intermittent, the extent and severity of any potential impact is expected to be be spatially and temporally 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 operations including subsea infrastructure installation are commonplace and well-practised offshore 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 managed these are well understood and implemented by the petroleum industry and CAPL.

During relevant persons consultation, no objections or claims were raised regarding waste management arising from the activity.

An unplanned LOC is a 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	Chevron's *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 35) 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.
Ship Oil Pollution Emergency Plan (SOPEP) / Shipboard Marine Pollution Emergency Plan	MARPOL 73/78 Annex I and Marine Order 91 (Marine pollution prevention – oil) requires that vessels (as appropriate to vessel class) 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)

<table>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential risk associated with this aspect would be short term, apply to some individuals, and consequently is not expected to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Minor (5).
Therefore, no additional evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant Environmental Legislation and Other Requirements</td><td colspan="2">Legislation and other requirements considered relevant for this aspect include:
• MARPOL 73/78
• Marine Order 91, Marine pollution prevention – oil
• North-west Marine Parks Network Management Plan (Ref. 66).
CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.</td></tr>
<tr><td></td><td>Requirement</td><td>Demonstration</td></tr>
<tr><td></td><td>Marine Order 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></td><td>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.”</td><td>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">These CAPL environmental performance standards or procedures were deemed relevant for this aspect:
• Marine Standard Non Tankers: Corporate OE Standard (Ref. 35)
Control measures related to the above management processes 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 LOC management arising from the petroleum 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.
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>
</table>

	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.	

Environmental Performance Outcomes	Environmental performance standard	Measurement Criteria
No unplanned release of hydrocarbons or hazardous materials to the environment during the petroleum activity No adverse change to the values of Australian Marine Parks from the petroleum activity	**Marine Standard** Prior to commencement of installation 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.	OVIS report / ABU Marine OE Inspection Checklist confirms that equipment and hydraulic hoses are visually free of defects, dry-break couplings or similar are available for use, and, and secondary containment is available on the deck of the marine vessel
	Marine Standard Refuelling is undertaken in accordance with CAPL-approved refuelling / bunkering procedures, which include the appropriate weather / sea / visibility conditions, as determined by the Vessel Master.	Records confirm that refuelling is undertaken in accordance with CAPL-approved refuelling/bunkering procedure
	SOPEP Marine vessels (as appropriate to vessel class) will carry on board a Shipboard Oil Pollution Emergency Plan (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

7.15.1 Credible scenario

A vessel collision event within the OA is considered an unlikely but credible unplanned event. A major marine spill because of vessel collision is only likely to occur due to a combination of exceptional circumstances (e.g. loss of DP, navigational error, inclement weather conditions). Given the location, water depths, and lack of shallow submerged features within the OA, grounding is not considered credible, and as such has not considered further.

Based upon the types of vessels and fuel type likely to be utilised for the activities in this EP, CAPL was able to identify the following credible worst case scenarios (as per AMSA guidelines; Ref. 119):

- surface release of ~446 m^3 of MDO resulting from a vessel collision event at the State waters boundary
- surface release of ~1,150 m^3 of MDO resulting from a vessel collision event in the Jansz-Io fields.

Therefore, as a conservative approach to risk assessment for activities covered under this EP, previous modelling of a ~1,750 m^3 spill has been used for the vessel collision scenario within the Jansz field. Additional modelling was completed for a 450 m^3 spill at the State waters boundary.

7.15.2 Spill modelling

CAPL commissioned RPS to conduct spill modelling to inform the risk assessment associated with the vessel collision events (Ref. 121, Ref. 122).

A three-dimensional oil spill model (SIMAP) was used to simulate the drift, spread, weathering and fate of the spilled oil (Ref. 121, Ref. 122). 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 MDO, and the modelled environmental impact thresholds are described in Table 7-14.

Table 7-12: Vessel collision credible spill scenario inputs

Parameter	Details	
Release Location	Jansz-Io	State water boundary
Latitude	19°51’8.7” S	20°40’10.9” S
Longitude	114°30’57.8” E	115°21’51.5” E
Water Depth	~1,350 m	~25 m
Oil type	MDO	
Simulation spill type	Surface	
Simulation spill volume	1,750 m^3	450 m^3
Simulation spill duration	24 hours	6 hours
Total simulation duration	50 days	40 days

Parameter	Details	
Number of randomly selected spill simulation start times	100 per season (300 total)	
Seasons modelled	Summer (December to February) Transitional (March, October and November) Winter (April to September)	Summer (September to the following March) Transitional (April and August) Winter (May to July)

Table 7-13: 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 7-14: Hydrocarbon spill impact thresholds^

Environmental impact threshold	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA	Justification
Surface ≥1 g/m^2 (low)		✓	In accordance with NOPSEMA's oil spill modelling bulletin (Ref. 124), CAPL has set the ≥1 g/m^2 surface impact threshold for social, economic, and cultural receptors. 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. 125) 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. 124), CAPL has set the≥10 g/m^2 surface impact threshold for ecological receptors. This threshold is equivalent to ~10,000 L/km^2 or a layer thickness of ~10 µm. The Bonn Agreement Oil Appearance Code (Ref. 125) 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. 124). This threshold is consistent with observations ranging from physical oiling to toxicity effects for marine fauna within literature, including French et al. (Ref. 126), French-McCay (Ref. 127), Engelhardt (Ref. 128), Clark (Ref. 129), Geraci and St. Aubin (Ref. 130) and Jenssen (Ref. 131).

Environmental impact threshold	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA	Justification
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. 132], Nordtug et al. [Ref. 133], Redman [Ref. 134]). 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. 124), CAPL has set the ≥50 ppb in-water (dissolved) impact threshold for sublethal ecological effects and for social, economic, and cultural receptors. This threshold is considered by NOPSEMA to approximate potential toxic effects, particularly sublethal effects to sensitive species (Ref. 124). 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. 124), CAPL has set the≥100 ppb in-water (entrained) impact threshold for sublethal ecological effects and for social, economic, and cultural receptors. This threshold is considered by NOPSEMA as appropriate for informing risk evaluation (Ref. 124). 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. 135) 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. 124), CAPL has set the ≥10 g/m^2 shoreline impact threshold for social, economic, and cultural receptors. 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. 124), CAPL has set the≥100 g/m^2 shoreline impact threshold for ecological receptors. This threshold is equivalent to ~100 mL/m^2 or 20 teaspoons/m^2. French et al. (Ref. 126) and French-McCay (Ref. 127) 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.

Environmental impact threshold	Hydrocarbon Ecological EMBA	Hydrocarbon Social EMBA	Justification
			Impacts on vegetated habitats (such as saltmarsh and mangroves) have been observed at higher concentrations of shoreline oil. Observations by Lin and Mendelssohn (Ref. 136) 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. 137], Suprayogi and Murray [Ref. 138]).

^ Hydrocarbon spill impact thresholds have been used to define the Hydrocarbon Ecological and Hydrocarbon Social EMBAs, 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 Hydrocarbon EMBAs are used as part of the environmental impact and risk assessment presented below.

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 (API of 37.6) and a low pour point (−14 °C). 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 (BP <180 °C); a further 34.6% should evaporate within the first 24 hours (BP180 °C-265 °C); and an additional 54.4% should evaporate over several days (BP 265 °C-380 °C). Approximately 5% (by mass) of MDO will not evaporate at atmospheric temperatures. These compounds will persist in the environment.

7.15.2.2 Modelling outputs

Stochastic modelling outputs from RPS (Ref. 121, Ref. 122) are summarised in Table 7-15 and Table 7-16 having regard to the particular values and sensitivities identified in Section 4.

For the 1,750 m^3 MDO release within the Jansz-Io field:

- The maximum distance from the release location to the ≥1 g/m^2 and ≥10 g/m^2 surface impact thresholds was ~208 km east-northeast (transitional) and ~120 km northeast (transitional), respectively.
- No shoreline contact was predicted to occur during any season.
- Dissolved oil at ≥50 ppb impact thresholds was predicted to occur. However, dissolved oil was predicted to remain in the surface layers only (no predicted exposure at depths >10 m below the surface).
- 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.

For the 450 m^3 MDO release at the State water boundary:

- The maximum distance from the release location to the ≥1 g/m^2 and ≥10 g/m^2 surface impact thresholds was 66.3 km south-southwest (transitional), 32.4 km south-southwest (winter), respectively.
- The probability of accumulation on any shoreline at, or above, the low threshold (≥ 10 g/m^2) was greatest during summer at 79%, while the minimum time before shoreline accumulation was 0.25 days (or 6 hours) predicted during winter. The maximum volume of oil ashore was predicted to occur on the west coast of Barrow Island during the transitional period with 227.2 m^3. Multiple coastal areas were predicted to be potentially exposed above the ≥100 g/m^2 impact threshold, with the highest probability of occurrence being 23% at the Montebello Islands during summer. The probabilities for exposures above the ≥100 g/m^2 impact threshold was low for adjacent shorelines e.g. 15% at Barrow Island, 2% at Boodie Island, Flat Island, 17% at Lowendal Island, 3% at Middle Island, 1% at Bessieres Island, and 3% at Serrurier Island).
- Dissolved oil at ≥50 ppb impact thresholds was predicted to occur. No dissolved oil at ≥ 400 ppb impact thresholds was predicted to occur during any season. Dissolved oil was predicted to remain in the surface layers, with no exposure at depths >20 m below the surface reported.
- Entrained oil at ≥100 ppb impact thresholds was predicted to occur. Entrained oil was predicted to remain in the surface layers, with no exposure at depths >20 m below the surface reported.

Table 7-15: Jansz-Io 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	—	—	—	7–10%	—	—
	Montebello	—	—	—	0–1%	—	—
	Ningaloo	—	—	—	—	—	—
KEF	Ancient coastline at 125 m depth contour	—	—	—	0–1%	—	—
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	—	—	—	4–5%	—	—
	Commonwealth waters adjacent to Ningaloo Reef	—	—	—	—	—	—
	Continental slope demersal fish communities	0–1%, 50 days	—	—	3–12%	—	—
	Exmouth Plateau	5–10%, 16–27 days	0–1%, 18 days	0–1%	12–14%	—	—
World Heritage Properties / National Heritage Places	The Ningaloo Coast *(inferred from Cape Range IBRA, Exmouth shoreline)*	—	—	—	—	—	—
Commonwealth Heritage Properties	Ningaloo Marine Area – Commonwealth Waters *(inferred from Ningaloo IMCRA)*	—	—	—	—	—	—

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

Table 7-16: State waters boundary 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	—	—	—	0-3%	—	—
	Montebello	99-100%, 0.04 days	74-89%, 0.04 days	6-15%	76-89%	—	—
	Ningaloo	—	—	—	0-6%	—	—
KEF	Ancient coastline at 125 m depth contour	—	—	—	3-10%	—	—
	Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula	—	—	—	0-6%	—	—
	Commonwealth waters adjacent to Ningaloo Reef	—	—	—	0-6%	—	—
	Continental slope demersal fish communities	—	—	—	1-3%	—	—
	Exmouth Plateau	—	—	—	—	—	—
World Heritage Properties / National Heritage Places	The Ningaloo Coast *(inferred from Cape Range IBRA, Exmouth shoreline)*	14-18%, 0.29-0.38 days	1-7%-0.38-0.63	—	21-31%	4-23%, 3.58-13.25 days, 1.5-5.1 km	—
Commonwealth Heritage Properties	Ningaloo Marine Area – Commonwealth Waters *(inferred from Ningaloo Coast World Heritage)*	—	—	—	1-6%	4-23%, 3.58-13.25 days, 1.5-5.1 km	—

^ *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 during the petroleum activity (including installation and pre-commissioning, or IMR activities) within the OA.

A vessel collision event may occur due to a combination of circumstances (e.g. loss of DP, navigational error, or inclement 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	4
		• indirect impacts to commercial fisheries	5
		• reduction in amenity resulting in impacts to tourism and recreation	5
		• changes to values and sensitivities of marine protected areas	4
		• changes to cultural heritage values	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. 130; Ref. 139).

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. 139). 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. 139). French-McCay (Ref. 127) 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 to marine mammals given feeding behaviours (such as surface skimming or gulp feeding for cetacean species) which can lead to the ingestion of oil from within the water column or from the surface. However, as highly mobile species, in general it is very unlikely 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. 282).

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; thesecould lead to inflammation/infections that then affect their ability to feed or breed (Ref. 141). 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. 282).

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. 139).

As identified in Section 4.3.3.1, several marine mammal species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Hydrocarbon Ecological EMBA. The following BIAs for marine mammals intersect the Hydrocarbon Ecological EMBA (Table 4-6):

- Humpback Whale (migration)
- Pygmy Blue Whale (foraging and migration)
- Dugong (breeding, calving, foraging, and nursing).

As these species are considered most sensitive to surface and entrained exposures, deterministic analyses were utilised to understand the potential extent and duration of exposure.

Deterministic analysis for the largest sea surface swept area (from the State waters boundary scenario), predicts that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~9 km^2 occurring ~1 day after the spill commenced. This deterministic scenario is considered most relevant for nearshore waters and subsequent impacts to nearshore BIA's. Using the Humpback migration BIA as an example, modelling indicates that the extent of surface exposure was predicted to be limited to ~0.006% 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, as behaviours for some marine mammals in nearshore waters (e.g. dugongs within calving and nursing BIAS around Exmouth and North West Cape peninsula) are likely to result in increased sensitivity to hydrocarbon exposures as species are less likely to be transient, impacts to nearshore environments will potentially be higher than those associated with offshore exposures. However, it is also noted that these areas of aggregations are further from the potential spill locations, and the concentrations and durations of exposure are reduced from those in closer proximity (e.g. Barrow Island), where presence of marine mammals is expected to be transitory (e.g. migration pathway for Humpback Whales).

While no deterministic analyses were conducted for the spill modelling at the Jansz field (Ref. 121), based on other offshore MDO modelling completed for CAPL in the adjacent Gorgon field (e.g. Ref. 120), the largest areas of surface hydrocarbon intersected with only a small (~0.005%) proportion of the Pygmy Blue Whale BIA.

The deterministic analysis for the largest area of entrained hydrocarbon (from the State waters boundary scenario) indicates that entrained hydrocarbons concentrations ≥100 ppb are present for <10 days following the spill event, with a maximum area of coverage of ~75 km^2 occurring ~4 days after the spill commenced. This deterministic scenario is considered most relevant for nearshore waters, and subsequent impacts to nearshore BIA's. Using the Humpback Whale migration BIA as an example, modelling indicates that the extent of entrained exposures was predicted to be limited to ~0.05% of the entire BIA.

Based on an assessment of the predicted magnitude and duration 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. 140).

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. 141). 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. 140).

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 Hydrocarbon Ecological EMBA. BIAs for the

Flatback Turtle, Loggerhead Turtle, Green Turtle, and Hawksbill Turtle may be exposed to hydrocarbon concentrations greater than the impact thresholds. The behaviours associated with these BIAs include: aggregation, basking, foraging, internesting, mating, and nesting.

Stochastic modelling of the State waters boundary scenario indicated that the Montebello Islands had the highest probability of being exposed to shoreline hydrocarbons accumulation of ≥100 g/m^2, with a probability of occurrence being 23% during summer. The deterministic model for the longest length of shoreline accumulation area above ≥100 g/m^2 (from the State waters boundary scenario) predicted the largest volume of oil ashore as 118.9 m^3, and the maximum length of shoreline exposed to ≥100 g/m^2 was ~22 km occurring ~9 days after the spill commenced. The Montebello Islands are identified as habitat critical to the survival of Flatback, Green and Hawksbill turtles (Section 4.3.3.2). As such nesting adult turtles and hatchlings may be exposed as they traverse the intertidal area, resulting in potential smothering and acute impacts to some hatchlings during that nesting season.

The deterministic analysis for the largest sea surface swept area (from the State waters boundary scenario), predicts that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~9 km^2 occurring ~1 day after the spill commenced. This deterministic scenario is considered most relevant for nearshore waters and subsequent impacts to nearshore BIA's. Using the Flatback Turtle internesting BIA around Barrow 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 vessel spill event occurred during the nesting season, it is unlikely to impact entire local internesting 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.

Fish, 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. Fish species are expected to have higher sensitivity to exposures of in-water (entrained) oil components.

Potential effects include damage to the liver and lining of the stomach and intestine, and toxic effects on embryos (Ref. 142). 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. 143; Ref. 144; Ref. 145).

Demersal fish are not expected to be impacted given the presence of entrained oil is predicted in the surface layers <20 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. 146). Pelagic species are also generally highly mobile and as such are not likely 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. 147). Fish that have been exposed to dissolved hydrocarbons can eliminate the toxicants once placed in clean water; hence, individuals exposed to a spill are likely to recover once they are outside of the exposure area (Ref. 148).

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 Hydrocarbon Ecological EMBA. The following BIAs intersect the Hydrocarbon Ecological EMBA:

- Whale Shark (foraging).

As fish species are most sensitive to surface and entrained exposures, deterministic analyses were utilised to understand the potential extent and duration of exposure.

Deterministic analysis for the largest sea surface swept area (from the State waters boundary scenario), predicts that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~9 km^2 occurring ~1 day after the spill commenced. This deterministic scenario is considered most relevant for nearshore waters and subsequent impacts to nearshore BIA's. Using the Whale Shark foraging BIA as an example, modelling indicates that the extent of surface exposures was predicted to be limited to ~0.004% of the entire BIA.

While no deterministic analyses were conducted for the spill modelling at the Jansz field (Ref. 121), based on other offshore MDO modelling completed for CAPL in the adjacent Gorgon field (e.g. Ref. 120), the largest areas of surface hydrocarbon also intersected with only a small (~0.007%) proportion of the Whale Shark BIA.

The deterministic analysis for the largest area of entrained hydrocarbons (from the State waters boundary scenario) indicates that entrained hydrocarbons concentrations ≥100 ppb are present for <10 days following the spill event, with a maximum area of coverage of ~75 km^2 occurring ~4 days after the spill commenced. This deterministic scenario is considered most relevant for nearshore waters, and subsequent impacts to nearshore BIA's. Using the Whale Shark foraging BIA as an example, modelling indicates that the extent of entrained exposures was predicted to be limited to ~0.03% of the entire BIA.

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 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 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. 129; Ref. 141). Damage to external tissues, including skin and eyes, can occur, along with internal tissue irritation in lungs and stomachs (Ref. 149). Acute and chronic toxic effects may result where the product is ingested as the bird attempts to preen its feathers (Ref. 149).

As identified in Section 4.3.3.4, several bird species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Hydrocarbon Ecological EMBA. Breeding BIAs for the Fairy Tern, Lesser Crested Tern, Roseate Tern, and Wedge-tailed Shearwater may be exposed to hydrocarbon concentrations greater than impact thresholds.

Stochastic modelling from the State waters boundary scenario indicated that the Montebello Islands had the highest probability of being exposed to shoreline hydrocarbons accumulation of ≥100 g/m^2, with a probability of occurrence being 23% during summer. The deterministic model for the longest length of shoreline accumulation area above ≥100 g/m^2 (from the State waters boundary scenario) predicted the largest volume of oil ashore as 118.9 m^3, and the maximum length of shoreline exposed to ≥100 g/m^2 was ~22 km occurring ~9 days after the spill commenced.

Deterministic analysis for the largest sea surface swept area (from the State waters boundary scenario), predicts that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~9 km^2 occurring ~1 day after the spill commenced. This deterministic scenario is considered most relevant for nearshore waters and subsequent impacts to nearshore BIA's. Using the Roseate Tern breeding BIA surrounding Lowendal Islands as an example, modelling indicates that the extent of surface exposures was predicted to be limited to <3% of the entire BIA. This information indicates that if a vessel spill event occurred during the breeding season, it is unlikely to impact entire local nesting populations.

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)

Direct contact of hydrocarbons to subtidal habitats can cause smothering. 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. 283; Ref. 284), act as a barrier to diffusion of CO_2 across cell walls in macroalgae (Ref. 285), and a decline in metabolic rate, bleaching or partial mortality in corals (Ref. 150; Ref. 151) and impair respiration and photosynthesis by symbiotic zooxanthellae (Ref. 286; Ref. 287). 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. 288).

Stochastic modelling predicted coral reefs associated with the following particular values or sensitivities within the Hydrocarbon EMBAs have the potential to be exposed to hydrocarbon concentrations above impact thresholds:

- Ningaloo Coast (World Heritage Property, National Heritage Place).

The Ningaloo marine area is known to support coral reef and macroalgae habitat (Section 4.6.1). Coral, seagrass, and macroalgae habitats are also known to occur around the Barrow and Montebello islands, as well as other Pilbara inshore islands.

The probability of exposure to entrained oil (≥100 ppb) at the Ningaloo Coast heritage area was 1–6% from the State waters boundary scenario (Table 7-16), and was not predicted to occur from the Jansz field scenario (Table 7-15). Stochastic modelling showed that in-water (entrained or dissolved) hydrocarbons above impact thresholds (≥100 ppb and ≥50 ppb respectively) were predicted to remain within the surface layers (≤20 m water depth) only. Therefore, exposure to coral reefs or other subtidal habitat types in waters deeper than 20 m are not predicted to occur.

Nearshore benthic habitats (e.g. coral, sponges, seagrass, macroalgae)

Smothering of benthic habitat communities within shallow water environments may occur if a surface slick or in-water entrained oil above impact thresholds occurs in the intertidal area.

No surface exposure at the ≥10 g/m^2 impact threshold was predicted for the Ningaloo Coast heritage area for any of the modelled scenarios (Table 7-15; Table 7-16). Therefore, impacts from smothering within Ningaloo intertidal areas due to surface oil is not expected to occur.

However, stochastic modelling indicated that the west coast of Barrow Island may be exposed to surface oil at the ≥10 g/m^2 impact threshold. Subtidal and intertidal habitats off Barrow Island include coral, macroalgae and seagrass. Deterministic analysis for the largest sea surface swept area (from the State waters boundary scenario), predicts that surface hydrocarbons concentrations ≥10 g/m^2 are present for <2 days following the spill event, with a maximum area of coverage of ~9 km^2. The deterministic model for the longest length of shoreline accumulation area above ≥100 g/m^2 (from the State waters boundary scenario) predicted the largest volume of oil ashore as 118.9 m^3, and the maximum length of shoreline exposed to ≥100 g/m^2 was ~22 km occurring ~9 days after the spill commenced. These deterministic scenarios are considered most relevant for nearshore waters and subsequent impacts to nearshore corals or other intertidal habitats. 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. 152). 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. 152).

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. 213) 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 for the Jansz field scenario indicated that no shoreline accumulation was predicted to occur, and as such shoreline exposure to coastal habitats from an offshore vessel spill event is not discussed further.

Stochastic modelling from the State waters boundary scenario indicated that the Montebello Islands had the highest probability of being exposed to shoreline hydrocarbons accumulation of ≥100 g/m^2, with a probability of occurrence being 23% during summer. The deterministic model for the longest length of shoreline accumulation area above ≥100 g/m^2 (from the State waters boundary scenario) predicted the largest volume of oil ashore as 118.9 m^3, and the maximum length of shoreline exposed to ≥100 g/m^2 was ~22 km occurring ~9 days after the spill commenced.

Based on an assessment of the predicted magnitude of shoreline exposure, it is expected that only a small proportion of any coastal habitat would be exposed above the defined impact thresholds. However, it is acknowledged that the habitats on the offshore islands represent important habitats for fauna (e.g. turtles, birds), or that particular habitas (e.g. mangroves) are considered regionally significant. Therefore, the potential impacts of oil to cause smothering was ranked as Moderate (4).

Indirect impacts to commercial fisheries

As identified in Section 4.4.1, commercial fisheries have management areas and recent fishing effort recorded within the Hydrocarbon EMBAs. Direct impacts to commercially targeted fish species are expected to occur from in-water exposures.

Stochastic modelling showed that dissolved and entrained oil above impact thresholds (≥50 ppb and 100 ppb respectively) was predicted to occur; however, was predicted to remain in the surface layers, with no exposure at depths >20 m below the surface predicted to occur during any season.

Although exposures above impact thresholds have the potential to affect the recruitment of targeted commercial and recreational fish species, any acute impacts are expected to be limited, given this event is singular, non-continuous, and will result in a limited volume of hydrocarbon being released over a short time. On this basis recruitment of targeted species is not expected to be impacted significantly given the extent of exposure to concentrations above impact thresholds are expected to be limited due to rapid dilution and dispersion upon release.

Spill events also have the potential to impact commercial fisheries through indirect impacts associated with tainting. Tainting is a change in the characteristic smell or flavour and renders the catch unfit for human consumption or sale. 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. 153). Regardless of the small potential for tainting, if tainting occurs, or there is a customer perception that tainting has occurred, this 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, actual or perceived occurrences of tainting 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 likely be short term in duration. Therefore, CAPL assesses the consequence to commercial fisheries as localized and short term and it is ranked as Minor (5).

Reduction in amenity resulting in impacts to tourism and recreation

Stochastic modelling predicts shoreline exposure ≥10 g/m^2 (visible impact threshold) from a vessel spill event has the potential to occur along the Montebello and Barrow islands, with smaller/patchier occurrences along some of the other Pilbara inshore islands, and North West Cape peninsula and Cape Preston mainland coasts, depending on the environmental conditions at the time of the event.

The deterministic model for the largest volume of oil ashore above ≥10 g/m^2 (from the State waters boundary scenario) predicted the largest volume of oil ashore as 227.2 m^3 on Barrow Island occurring ~2 days after the spill commenced. Stochastic modelling also showed that the longest length of shoreline with exposure of ≥10 g/m^2 is ~36 km.

Shoreline loading can impact the visual amenity of coastal areas and limit beach access for users, impacting tourism and recreation activities. However, given the short-term and localised disturbance to marine tourism and recreation activities, CAPL has ranked the consequence as Minor (5).

Changes to values and sensitivities of marine protected areas

Stochastic modelling for the State waters boundary scenario predicts surface exposure ≥10 g/m^2 and entrained exposure ≥100 ppb from a vessel spill event as having a high probability (74-89% and 76-89% respectively) of occurrence within the Commonwealth Montebello Marine Park (Table 7-16). Modelling predicted a low probability (<6%) of entrained oil exposure within the Gascoyne and Ningaloo Marine Parks (Table 7-16).

Modelling also predicted a moderate probability (11-50%) of entrained oil exposure within the 0 – 10 m water depth layer during summer, winter and transitional seasons to the State Montebello Island Marine Park (Table 7-16).

Given the much higher probability of exposure, the following evaluation is focused on the Commonwealth Montebello Marine Park.

As identified in Section 4.5.1, 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 for 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 Moderate (4).

Changes to cultural heritage value

As discussed in Section 4.6 there are heritage listed places or sites within the Hydrocarbon EMBAs, including 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.

Underwater cultural heritage sites have been identified within the EMBA; these sites are related to shipwrecks, with no other types (e.g. aircraft or other artefacts) identified (Section 4.6.2). At the time of writing this EP, CAPL understands through consultation with the relevant First Nations groups that there are no known artefacts or specific sites of cultural values associated with the seabed within the EMBA (Section 4.6.2 and 6). 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.

Stochastic modelling predicts shoreline exposure ≥10 g/m^2 (visible impact threshold) has the potential to occur along parts of Barrow and Montebello islands, with smaller/patchier occurrences along some of the other Pilbara inshore islands and North West Cape peninsular and Cape Preston mainland coasts, depending on the environmental conditions at the time of the event. Deterministic analysis for the largest volume of oil ashore (from the State waters boundary scenario) indicates that the minimum time before shoreline hydrocarbons concentrations ≥10 g/m^2 are present, was <1 day following the spill event, with a maximum volume ashore of ~227.2 m^3. Stochastic modelling also showed that the longest length of shoreline with exposure of ≥10 g/m^2 is ~36 km. 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).

ALARP decision context justification

Offshore vessel operations are commonplace 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.

During relevant persons consultation, no objections or claims were raised regarding vessel collision scenarios arising from the petroleum activity.

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's *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 35) 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 nearby safety exclusion zones.
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* (Cth), 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 vessels (as appropriate to vessel class) 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.
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 an OPEP (Ref. 1) to support all spill response activities across all its assets.
OSMP	The OSMP details the arrangements and capability in place for operational and scientific monitoring. Operational monitoring collects information about the oil spill to aid planning and decision making for executing spill response or clean-up operations. Scientific monitoring focuses on the environmental impact attributable to the spill or the associated response activities and informs requirements for remediation (if required). CAPL has developed an OSMP (Ref. 2) 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

Likelihood and risk level summary	
Likelihood	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)
Risk level	Low (8)

<table>
<tr><th colspan="3">Determination of acceptability</th></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential risk associated with this aspect 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 Moderate (4), and subsequently the potential for serious or irreversible environmental damage is not expected.
Therefore, no additional evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements relevant for this aspect include:
Navigation Act 2012 (Cth)
Marine Order 91, Marine Pollution Prevention – oil
Marine Order 30, Prevention of collisions
Conservation Management Plan for the Blue Whale 2015–2025 (Ref. 59)
Conservation Advice Balaenoptera borealis Sei Whale (Ref. 58)
Conservation Advice Balaenoptera physalus Fin Whale (Ref. 57)
Conservation Advice for the Whale Shark 2015–2020 (Ref. 56)
Recovery Plan for Marine Turtles in Australia (Ref. 55)
Conservation Advice for Dermochelys coriacea (Leatherback Turtle) (Ref. 14)
North-west Marine Parks Network Management Plan (Ref. 66).
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
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>
<tr><td>Conservation Advice Balaenoptera borealis Sei Whale
No specific conservation action identified.</td><td>N/A</td></tr>
<tr><td>Conservation Advice Balaenoptera physalus Fin Whale
No specific conservation action identified.</td><td>N/A</td></tr>
<tr><td>Conservation Advice Rhincodon typus Whale Shark
No specific conservation action identified.</td><td>N/A</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><td></td><td>Recovery Plan for Marine Turtles in Australia
<u>Management action A4.2</u>: 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</td><td>Assessment of spill risk strategies is within scope of the OPEP (Ref. 1).
Response and recovery of habitats and marine fauna is within the scope of the OSMP (Ref. 2).
Therefore, this activity is not considered to be inconsistent with the Recovery Plan for Marine Turtles in Australia.</td></tr>
<tr><td></td><td>Approved Conservation Advice for Dermochelys coriacea (Leatherback Turtle)
No specific conservation action identified.</td><td>N/A</td></tr>
<tr><td></td><td>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.”</td><td>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">These CAPL environmental performance standards or procedures were deemed relevant for this aspect:
Marine Standard Non Tankers: Corporate OE Standard (Ref. 35)
OPEP (Ref. 1)
OSMP (Ref. 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 relevant persons consultation, no objections or claims were raised regarding a vessel collision event arising from the petroleum 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.
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><u>Recovery objective</u>: Minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list.</td></tr>
</table>

		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 Whale or marine turtles from an unplanned hydrocarbon release 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, 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 hydrocarbons or hazardous materials to the environment during the petroleum activity No adverse change to the values of Australian Marine Parks from the petroleum activity	**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
	Maritime safety information Notify relevant agency of activities, vessel movements, and requested safety exclusion zone, to enable them to generate radio-navigation warnings and/or Notice to Mariners prior to commencing offshore activities	Record of lodgement of notification to relevant agency
Reduce the risk of impacts to the environment from the unplanned release of hydrocarbons or hazardous materials during the petroleum activity	**SOPEP** Marine vessels (as appropriate to vessel class) will carry on board a Shipboard Oil Pollution Emergency Plan (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
		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	Records confirm the OPEP has been implemented

	In the event of a spill occurring, the OPEP will be 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—hydrocarbon system

7.16.1 Scenario

A dropped object risk assessment was completed (Ref. 280) to understand the potential outcomes of a dropped object within the vicinity of existing third-party subsea infrastructure (i.e. Wheatstone trunkline, East Spar pipeline; Table 3-2) during the installation of the shallow water crossings. The following potential dropped objects scenarios were determined to have the impact energy required to potentially cause a hydrocarbon release:

- dropped mattress installation frame
- dropped crane swivel block and hook.

Given the loss of containment is associated with third-party infrastructure, no consequence evaluation (or associated spill response preparation or capabilities) has been carried forward in this EP. However, CAPL has included control measures within Section 7.12 addressing dropped object management (including lifting procedures and crossing agreements).

A dropped object risk assessment was also completed (Ref. 279) to understand the potential outcomes of a dropped object within the vicinity of existing GFP infrastructure. The following dropped object scenario was determined to have the impact energy required to potentially cause a hydrocarbon release:

- dropped infrastructure at the Jansz MPTS.

This identified LOC risk is associated with the existing Jansz production pipeline. As a conservative approach for this risk assessment, a full-bore rupture of the Jansz pipeline (at the approximate location of the Jansz MPTS) has been selected for use as a worst-case event. This scenario has been carried forward for further assessment.

Previous modelling was undertaken by Intecsea (Ref. 290) to understand potential volumes released during a full-bore pipeline rupture. Model calculations were based upon:

- maximum allowable operating pressure (MAOP) of the pipeline
- water depth at the release location (and subsequent pressure differential)
- time to detect defect and enact emergency procedures
- time for pipeline to equalise with the ambient pressure at the release location.

The outcomes of this modelling determined that for a pipeline rupture event at the approximate location of the Jansz MPTS, the estimated volume of condensate released was 276 m^3 (Ref. 290).

7.16.2 Spill modelling

CAPL commissioned RPS to conduct spill modelling to inform the risk assessment associated with a full-bore rupture event of the Jansz pipeline at the approximate location of the Jansz MPTS.

Two models were used as part of the spill modelling (Ref. 123):

- OILMAP-DEEP was used to simulate the nearfield multiphase plume rise dynamics from the subsea release
- SIMAP, a three-dimensional oil spill model was used to simulate the drift, spread, weathering and fate of the spilled oil.

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 7-17 summarises the model settings; Table 7-18 summarises the hydrocarbon properties for Gorgon condensate; and Table 7-14 (in Section 7.15) describes the modelled environmental impact thresholds.

Table 7-17: Pipeline rupture spill scenario model settings

Parameter	Details
Release Location	Jansz-Io field
Latitude	19º48'34.09" S
Longitude	114º36'26.52" E
Water Depth	1,345 m
Oil type	Jansz condensate
Simulation spill type	Subsea
Simulation spill volume	276 m^3
Simulation spill duration	7.2 hours
Total simulation duration	28 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 7-18: Physical properties and boiling point ranges for Jansz condensate

Characteristic	Value			
Density	772.8 kg/m^3 (at 25 °C)			
Dynamic viscosity	1.2 cP (at 25 °C)			
Pour point	-81 °C			
API gravity	51.4 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
	72.5%	13.0%	14.0%	0.5%

7.16.2.1 Weathering and fate

Jansz condensate is non-persistent oil, with a density of 772.8 kg/m^3, an API of 51.4, and a low pour point (−81 °C) (Table 7-18). The low viscosity (1.2 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, 72.5% of the Jansz condensate mass should evaporate within the first 12 hours (boiling point <180 °C); a further 13.0% should evaporate within the first 24 hours (boiling point 180°C–265 °C); and an additional 14% should evaporate over several days (boiling point 265°C–380 °C). Approximately 0.5% (by mass) of Jansz condensate will not evaporate at atmospheric temperatures. These compounds will persist in the environment.

7.16.2.2 Modelling outputs

A summary of the stochastic modelling outcomes (Ref. 123) from the the modelled 276 m^3 Jansz pipeline rupture within the Jansz-Io field:

- the maximum distance from the release location to the ≥1 g/m^2 visible impact threshold was ~28 km west-northwest (summer)
- no surface oil was predicted to occur at the ≥10 g/m^2 ecological impact threshold
- no shoreline accumulation above visible (≥10 g/m^2) or ecological (≥100 g/m^2) impact thresholds was predicted to occur during any season
- no dissolved oil above the impact threshold (50 ppb) was predicted to occur during any season
- no entrained oil above the impact threshold (100 ppb) was predicted to occur during any season.

7.16.3 Risk assessment

Source

Activities identified as having the potential to result in an unplanned release from the hydrocarbon system are:

- installation—dropped infrastructure during installation activities at the Jansz field.

Potential impacts and risks

Impacts	C	Risks	C
N/A	—	The potential environmental impacts associated with hydrocarbon exposures from a hydrocarbon system event are: • reduction in amenity resulting in impacts to tourism and recreation.	–

Consequence evaluation

Reduction in amenity resulting in impacts to tourism and recreation

Stochastic modelling predicted a visible (≥10 g/m^2) surface exposure extending up to ~28.5 km from the discharge location in the Jansz field. No shoreline contact was predicted to occur.

Given the location of the Jansz field is >100 km from the closest coast (Montebello Islands), negligible tourism and recreational activities are expected to be occurring in this area. As such, the visible surface sheen is not expected to impact on the visual amenity or adversely affect tourism or recreational activities, and therefore has not been evaluated further.

ALARP decision context justification		
The operation of subsea production systems offshore is a well-practised nationally and internationally activity. The control measures to manage the risk associated with a pipeline rupture 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. During relevant persons consultation, no objections or claims were raised regarding unplanned hydrocarbon release events arising from the petroleum activity. The risks associated with an unplanned hydrocarbon release 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**	
Lifting procedure	Prior to commencement of the petroleum activity, the *Marine Standard Non Tankers: Corporate OE Standard* (Ref. 35) is used to verify that all vessels undertaking complicated, complex, or heavy lifts have a Lifting Procedure (or equivalent) in place that complies with the requirements of the *Managing Safe Work (MSW) ABU Standardised OE Process* (Ref. 34).	
Source control	Source control is part of the first actions taken stabilize the volume of hydrocarbon released and therefore reduce potential impacts and risks to the environment. CAPL has developed Emergence Operating Procedures (EOPs) (Ref. 154) that provides guidance to operations personnel to detect, isolate and stabilize non-routine events such as trunkline/flowline loss of containment scenarios.	
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 an OPEP (Ref. 1) to support all spill response activities across all its assets.	
OSMP	The OSMP details the arrangements and capability in place for operational and scientific monitoring. Operational monitoring collects information about the oil spill to aid planning and decision making for executing spill response or clean-up operations. Scientific monitoring focuses on the environmental impact attributable to the spill or the associated response activities and informs requirements for remediation (if required). CAPL has developed an OSMP (Ref. 2) 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
Likelihood and risk level summary		
Likelihood	Analysis of the 2001 PARLOC database (Ref. 155) was used to evaluate the likelihood of a loss of containment from an individual offshore pipeline, which was determined to be equivalent to 0.189% per year (Ref. 156). This frequency was used as a guide to inform the likelihood of consequence. Given these statistics are based on incident history, largely for North Sea and European operations, their use is considered conservative given the geographically remote location of the Gorgon and Jansz Feed Gas Pipeline and the reduced risk of potential external interference.	

<table>
<tr><td></td><td colspan="2">Because of the low probability of a pipeline rupture event, and the control measures in place, the likelihood of the worst-case environmental consequence occurring as described above was assessed as Remote (5).</td></tr>
<tr><td>Risk level</td><td colspan="2">Very low (9)</td></tr>
<tr><td colspan="3">Determination of acceptability</td></tr>
<tr><td>Principles of ESD</td><td colspan="2">The potential impact associated with this aspect would be short term, apply to some individuals, and consequently is not expected to affect biological diversity and ecological integrity.
The consequence associated with this aspect is Minor (5). Therefore, no additional evaluation against the Principles of ESD is required.</td></tr>
<tr><td>Relevant environmental legislation and other requirements</td><td colspan="2">Legislation and other requirements relevant for this aspect include:
• Marine Order 91, Marine Pollution Prevention – oil
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 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></table></td></tr>
<tr><td>Internal context</td><td colspan="2">These CAPL environmental performance standards or procedures were deemed relevant for this aspect:
• OPEP (Ref. 1)
• OSMP (Ref. 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 relevant persons consultation, no objections or claims were raised regarding major defect events arising from the petroleum 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 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>
<tr><td>Environmental performance outcome</td><td>Environmental performance standard</td><td>Measurement criteria</td></tr>
<tr><td>No unplanned release of hydrocarbons or hazardous materials to the environment during the petroleum activity</td><td>Lifting procedure
If a vessel is undertaking complicated, complex, or heavy lifts, a Lifting Procedure (or equivalent) will be in place prior to activities commencing that complies with the requirements of the Managing Safe Work (MSW) ABU Standardised OE Process</td><td>Records confirm that a Lifting Procedure (or equivalent) is in place prior to complicated, complex, or heavy lifts being undertaken.</td></tr>
<tr><td>Reduce risk of impacts to the environment from the unplanned release of hydrocarbons or hazardous materials</td><td>Source control
The isolation steps of the source control / isolation procedures implemented within</td><td>Records demonstrate relevant isolation components of the source control procedures are implemented if a spill is detected from the hydrocarbon system</td></tr>
</table>

during the petroleum activity	30 minutes if a spill is detected from the hydrocarbon system	
	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 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. 157) 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 (IFO) (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. 158). 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. 159) 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. 159) 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. 159) aligns with Western Australian (WA) Department of Transport (DoT) PPP (Ref. 160) 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. 159)) 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.159), 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 7-19 below. 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 7-19: Priority planning areas for MDO spill scenario*

Potential Area of Impact	Distance from Source of Spill	Shoreline Values	Planned Response Tactics
DoT Shoreline Cell # 320 and #321 (Barrow Island)	~5 km	Turtles – BIAs including nesting Seabirds – BIAs including breeding Coral and reef communities Marine protected areas	Monitor, Evaluation and Surveillance Shoreline Protection and Deflection Shoreline Clean-up Oiled Wildlife Response
Dot Shoreline Cell # 318 (Montebello Islands) and #319 (Lowendal Islands)	~20 km	Turtles – BIAs including nesting Seabirds – BIAs including breeding Mangroves Coral and reef communities Marine protected areas	Monitor, Evaluation and Surveillance Shoreline Clean-up Oiled Wildlife Response

* Note that the modelling for both Gorgon and Jansz-Io vessel collision did not predict any impact to High and Very High ranked areas within 4 days.

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 – Jansz condensate
- Group 2 –MDO.

The outcomes of the Strategic NEBA are outlined in Table 6-1 of the OPEP (Ref. 1). Taking into account the priority planning areas identified in Table 7-19 the outcomes of the Strategic NEBA determined that the recommended response options proposed to be used for the spill scenarios associated with this EP include:

- 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 as Appendix C of the OPEP (Ref. 1).

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. 157) 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. 157), 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 every spill to water as soon as the spill is identified. This may range from very simplistic visual observation only, through to more involved monitoring and evaluating tactics. Appendix C of the OPEP (Ref. 1) has documented the arrangements that CAPL have in place to implement all the required MES tactics; therefore, this technique is not discussed further.

Implement an SPD response

For a spill event such as this (a non-continuous release), deterministic analysis indicates shoreline accumulation can occur rapidly. CAPL will implement strategies to protect prioritised values and sensitivities; however, these strategies may be targeted and/or limited pending location and environmental conditions.

Deterministic analysis for the largest volume of oil ashore (from the State waters boundary scenario) indicates that 227.2 m^3 may wash ashore within ~2 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. 1), each protection team is expected to recover 15.6 m^3 of hydrocarbon per day. On the assumption that 227.2 m^3 washes ashore on the second day, CAPL would need up to 15 SPD packages available on day two to implement the SPD response. However, modelling suggests there would only be a very short window to implement SPD on the west coast of Barrow Island (<2 days). This short timeframe, coupled with the remoteness, access constraints and the high energy environment of the west coast of Barrow Island would likely result in limited effectiveness. Regardless, a SPD response could be targeted at accessible areas of lower energy with known environmental sensitives, such as turtle nesting beaches. Based upon these conditions, from a tactical planning perspective, CAPL would likely deploy 3 SPD teams on day 2, and ramp up these resources if required to 5 SPD by the end of the first week.

Confirmation that CAPL has the arrangements in place to implement the required number of packages is provided in Table 7-20.

Implement an 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 would be on SHC operations.

Deterministic analysis for the largest volume of oil ashore (from the State waters boundary scenario) indicates that 227.2 m^3 may wash ashore within ~2 days after release. This scenario predicted exposure to the west coast of Barrow Island.

The west-coast of Barrow Island comprises:

- high energy wave environment
- high / steep rocky cliffs
- very limited vehicle access.

From a tactical planning perspective, based upon these conditions, it is unlikely that a shoreline clean-up would be feasible along most of the west coast.

Consequently, priority areas for clean-up would be those west coast bays / beaches accessible by vehicles or vessels and those that support turtle nesting populations. Regardless, a conservative planning approach taken by CAPL is that it would attempt to clean up the entire volume of oil washed ashore.

Based on Appendix C of the OPEP (Ref. 1), each SHC team is expected to recover 1.6 m^3 of hydrocarbon per day. If four clean-up teams are mobilised on day 3 and used each day, all hydrocarbons can be recovered within 35 days. If required, these efforts could be ramped up as directed and informed by MES activities.

Table 7-20: Major defect 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	1	1	1	
Does CAPL have the required capability?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
No. packages – planned SPD	0	3	3	3	3	3	5					
Does CAPL have the required capability?		Y	Y	Y	Y	Y	Y					
No. packages – planned SHC	0	4	4	4	4	4	4	4	4	4	4	
Does CAPL have the required capability?		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

7.17.3.3 CAPL planned response: hydrocarbon system release

In accordance with the Strategic NEBA (Ref. 157), the response strategies proposed to be used for this spill scenario and response package calculations are described below. As hydrocarbon exposure above impact thresholds (except for a visible surface threshold) were not predicted to occur, no active response strategies (Offshore CAR, SPD, SHC) are proposed.

Implement MES response

A MES response will commence for a subsea release as soon as the spill is identified. This may range from very simplistic visual observation only, through to more involved monitoring and evaluating tactics. Appendix C of the OPEP (Ref. 1) has documented the arrangements that CAPL have in place to implement all the required MES tactics; therefore, this technique is not discussed further.

7.17.4 Spill response environmental risk assessment

7.17.4.1 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 (vessel collision resulting in a release of MDO), 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 or 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.

During relevant persons consultation, no objections or claims were raised regarding spill response activities.

The risks arising from implementing shoreline response techniques in the event of a spill are extremely low, and CAPL consider these to be lower-order risks in accordance with Table 5-3.

As such, CAPL considers ALARP Decision Context A should be applied for this aspect.

Good practice control measures	
Control measure	**Description**
OSMP	The OSMP details the arrangements and capability in place for operational and scientific monitoring. Operational monitoring collects information about the oil spill to aid planning and decision making for executing spill response or clean-up operations. Scientific monitoring focuses on the environmental impact attributable to the spill or the associated response activities and informs requirements for remediation (if required). CAPL has developed an NOPSEMA-accepted OSMP (Ref. 2) to support all spill monitoring activities across all its assets. 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 oiled wildlife response (OWR) required.
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)
Determination of acceptability	
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	This CAPL environmental performance standard / procedure was considered relevant for this aspect: • OSMP (Ref. 2). Control measures related to the above management process or procedure have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.
External context	During relevant persons consultation, no objections or claims were raised regarding spill response activities.
Defined acceptable level	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.

Environmental performance outcomes	Environmental performance standard	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

7.17.4.2 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 (vessel collision resulting in a release of MDO), 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 Ningaloo coast and Barrow and 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.

During relevant persons consultation, no objections or claims were raised regarding OWR activities.

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 to this aspect.

Good practice control measures		
Control measure	**Description**	
OSMP	The OSMP details the arrangements and capability in place for operational and scientific monitoring. Operational monitoring collects information about the oil spill to aid planning and decision making for executing spill response or clean-up operations. Scientific monitoring focuses on the environmental impact attributable to the spill or the associated response activities and informs requirements for remediation (if required). CAPL has developed an NOPSEMA-accepted OSMP (Ref. 2) to support all spill monitoring activities across all its assets. Specifically, Operational Study 6 – Rapid Seabird and Shorebird Assessment and Operational Study 7 – Rapid Marine Megafauna Assessment provide information on the presence of wildlife with regards to predicted trajectory to understand the level of OWR required.	
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)	
Determination of acceptability		
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 considered relevant to this aspect were identified.	
Internal context	The CAPL environmental performance standard / procedure considered relevant for this aspect is: • OSMP Control measures related to the above management process or procedure have been described for this aspect. As such, CAPL considers that impact and risk management is consistent with company policy, culture, and standards.	
External context	During relevant persons consultation, no objections or claims were raised regarding spill response activities.	
Defined acceptable level	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.	
Environmental performance outcome	**Environmental performance standard**	**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 activity are continuously reduced to ALARP and the environmental performance outcomes and standards detailed in Section 7 are achieved.

CAPL, as nominated titleholder, is responsible for ensuring the petroleum activity within scope of this EP is managed in accordance with this implementation strategy. The vessel contractors will be required to comply with the requirements of this EP to ensure that the environmental performance outcomes and standards are achieved.

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 system - Requirements with guidance for use* (Ref. 33) 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.

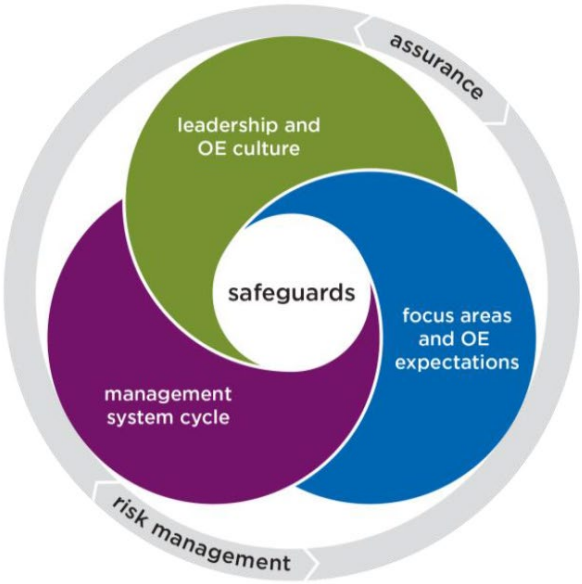


Figure 8-1: Overview of Chevron Corporation's OEMS

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.

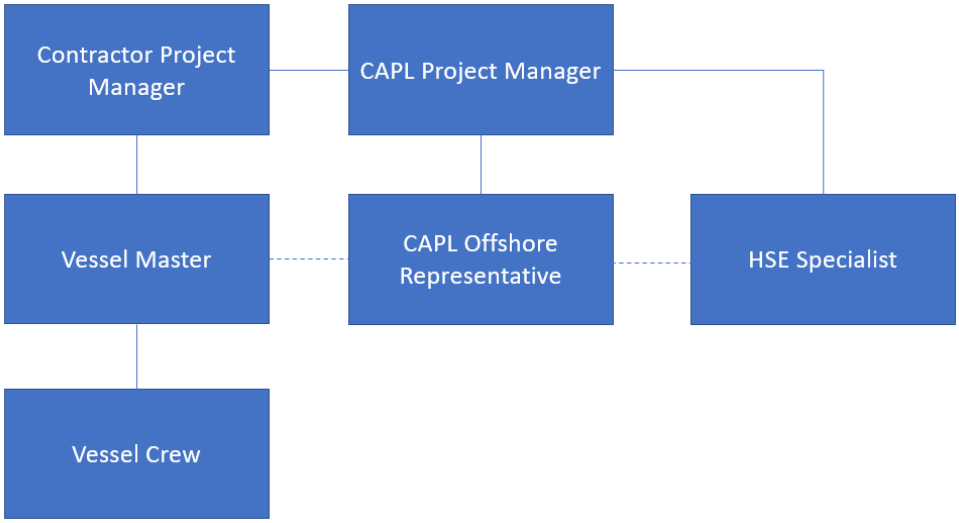


Figure 8-2: Chain of command—petroleum activity

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 are detailed in Section 6, and are summarised in Table 8-1.

Table 8-1 Key roles and responsibilities—petroleum activity

Roles	Responsibilities
CAPL Project Manager	• Overall responsibility for implementing, managing, and reviewing this EP Ensure that: • 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 8.3.4.1 • any MoC is conducted in accordance with Section 8.3.2.2, and notify the CAPL Offshore Representative and HSE Specialist 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
Contractors Project Manager	• Overall responsibility for contractors implementing requirements under this EP Ensure that: • all contractor personnel are aware of their requirements within this EP, including completion of relevant inductions as per Section 8.2.1.3 • sufficient resources are provided to enable compliance with the requirements of this EP • confirm vessels comply with relevant legislative requirements • corrective actions identified during environmental inspections are implemented (as required) • assist with review, investigation, and reporting of environmental incidents (as required)
CAPL Offshore Representative	Ensure that: • All CAPL personnel have completed necessary inductions which includes awareness of the requirements under this EP • impacts and risks are continually reduced to ALARP and an acceptable level by implementing this EP in accordance with Sections 7 • pre-mobilisation inspections of vessels are undertaken to confirm they comply with all requirements under this EP • corrective actions identified during environmental inspections are closed out in accordance with Section 8.3.6 • all incidents, including breaches of environmental performance standards, are reported to Project Manager
CAPL HSE Specialist	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 8.3.6, including: – environmental inspections – collection of evidence against environmental performance standards

Roles	Responsibilities
	– regularly review compliance with environmental performance standards – preparation of environmental performance report following completion of activity • assist with review, investigation, and reporting of environmental incidents (as required) • this EP is reviewed in accordance with Section 8.5.
Vessel Master	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 • establish and maintain radio contact with other vessels in the OA and adjacent waters • vessels implement cetacean interaction requirements in accordance with EPBC Regulations 2000 • all incidents are immediately reported to CAPL Offshore Representative • all emissions and discharges are monitored and recorded in accordance with Sections 7
Vessel crew	• Undertake the activity in a professional and safe manner with attention to good housekeeping procedures and work practices • Immediately report any incidents to the Vessel Master • Immediately report any environmental incidents or spills to the 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 vessel contractors will provide marine crew who are trained and competent to undertake their respective activities on board the 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) were included during the internal review of this EP and are 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).

Table 8-2: Inductions—petroleum activity

Training/ competency	Required personnel	Scope
Induction	All relevant personnel	Before commencing operations, all personnel, including subcontractors, 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 • cetacean interaction requirements under Part 8 of the EPBC Regulations 2000 • good 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. 34) • *Chevron Marine Standard Non Tankers: Corporate OE Standard* (Ref. 35) • *ABU Hazardous Materials Management Procedure: ABU Standardised OE Procedure* (Ref. 36)
Process safety, reliability and integrity	• *OE Information Management: ABU Standardised OE Process* (Ref. 37) • *Management of Change for Facilities and Operations: ABU Standardised OE Process* (Ref. 38) •
Environment	• *Environmental Stewardship: ABU Standardised OE Process (*Ref. 39*)* • *Quarantine Procedure Marine Vessels. ABU Standardised OE Process (*Ref. 40*)*
Stakeholders	• *Stakeholder Engagement and Issues Management: ABU Standardised OE Process* (Ref. 21)
Common expectation	
Risk management	• *ABU OE Risk Management Process* (Ref. 13)
Assurance	• *OE Assurance Corporate Process* (Ref. 41) • *OE Corporate Standard Incident Investigation* (Ref. 42) • *OE Data Reporting Standard (Ref. 43)*
Incident investigation and reporting	• *Incident Investigation and Reporting (II&R) Execution Manual* (Ref. 44)
Emergency management	• *Emergency Management OE Process* (Ref. 45) • OPEP (Ref. 1) • OSMP (Ref. 2)

8.3.1 Workforce safety and health

8.3.1.1 Managing safe work

The 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. 34) 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 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 Health, Safety, and environment (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. 35) identifies the requirements and activities necessary to deliver safe, reliable, and efficient third-party marine operations. This standard 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. 36) 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. 46).
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. 37) 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 installation 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 vessel certificates, plans and log book records.

8.3.2.2 Management of change

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. 38) 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 relevant petroleum regulations, as detailed below, this EP will be revised, and changes recorded in the EP without resubmission.

For J-IC installation and pre-commissioning activities, the following would trigger an MoC:

- change to the activity scope (e.g. timing, method, 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, First Nations cultural heritage, 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 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. 39) 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. 40) 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.

All vessels operating in title areas must comply with applicable Australian biofouling and ballast water requirements to prevent the introduction and spread of marine pests. Regardless of the origin of the vessel or where it will be operating, all vessels must be free from marine pests when mobilised and the contractor must demonstrate the vessel meets low risk rating for biofouling.

As per the *Quarantine Procedure Marine Vessels* (Ref. 40), CAPL undertakes a risk assessment before any vessel is mobilised to title areas to confirm the vessel meets the requirements for approaching and accessing these areas. For this purpose, each vessel contractor submits a completed Marine Vessel Questionnaire with supporting evidence to CAPL for assessment.

This risk assessment will consider the vessel's attributes and history, including wetsides cleaning, application of antifoul coating, and recent transit history, including time in known high-risk waters.

If the vessel's history is unknown or if there is a moderate risk of IMP presence, additional actions must be undertaken. These action items (which may include requirements such as dry-dock, hull cleaning, etc.) will be issued to the contractor to implement. The contractor must also submit the vessel details to the Vessel Check online risk assessment tool (https://www.vessel-check.com/) and provide CAPL with a copy of the resulting Risk Assessment Report demonstrating the vessel has achieved low risk rating. Only once a vessel has met the requirements of the *Quarantine Procedure Marine Vessels* (Ref. 40), will CAPL issue a Vessel Mobilisation Certificate.

8.3.4 Stakeholders

Stakeholder engagement expectations are to manage social, political, and reputational risks to CAPL (and Chevron), address potential business impacts, and generate business value by:

- identifying, assessing, and prioritising issues
- building and maintaining relationships with external stakeholders, including governments and the communities where CAPL operates
- developing and executing issue management and stakeholder engagement plans, tracking engagements and issues, and validating the effectiveness of plans.

The *Stakeholder Engagement and Issues Management Process* (Ref. 21) details an integrated approach for engaging stakeholders and managing external stakeholder issues. This process describes key roles and responsibilities for stakeholder engagement, establishes measurement and verification activities designed to monitor the effectiveness of the stakeholder engagement process and to promote continual improvement.

8.3.4.1 Ongoing consultation with relevant persons

In accordance with regulation 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 8-5.

Through co-design of consultation, CAPL will agree processes for ongoing consultation with relevant persons. This may include consultation on the ongoing environmental performance of the petroleum activity and review of applicable control measures with the relevant persons. Engagement agreements, information on grants and social benefit investments (e.g. funding for ranger programs and training opportunities to support CAPL's activities), and consultation plans with relevant persons are included in the sensitive information report. Records for ongoing consultation with relevant persons will be recorded and maintained in CAPL's online tracking engagements system.

Any objections or claims arising from ongoing consultation that have merit and have the potential to result in changes to the description of environment, impact or risk assessment, or control measures, will be subject to CAPL's Management of Change (MoC) process, in accordance with Section 8.3.2.2.

If a new relevant person is identified during the in-force period of the EP, CAPL will provide sufficient information to that relevant person (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). Notifications to be made in the event of an emergency are detailed in Section 8.3.4.2.

Table 8-5: Notifications and ongoing consultation

Relevant person	Notification or ongoing consultation requirement	Timing	Frequency
Notifications			
AHO	Provide information to enable promulgation of Notice to Mariners Notify AHO via datacentre@hydro.gov.au	At least four weeks before commencing the petroleum activity, or as otherwise agreed with AHO	Once, prior to the petroleum activity commencing
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 the petroleum activity, or as otherwise agreed with AMSA	Once, prior to the petroleum activity 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 the petroleum activity	Once, prior to the petroleum activity commencing
	CAPL will provide notification following completion of the petroleum activity	Within two weeks of completion of the petroleum activity	Once post petroleum activity completion
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

Relevant person	Notification or ongoing consultation requirement	Timing	Frequency
	CAPL to advise of any new or significant changes to activities or impacts/risks within the scope of the EP, following an evaluation as per Section 8.3.2.2, that may potentially impact the functions, interests and activities of First Nations people and/or representative bodies	Prior to new or significant changes to activities or impacts/risks occurring	As required

8.3.4.2 Consultation in the event of an emergency

In the event of an emergency hydrocarbon spill event, CAPL will commence oil spill trajectory modelling using the actual inputs associated with the spill event to predict trajectory, as described in the OPEP (Ref. 1).

Once oil spill trajectory modelling is completed, CAPL will start engaging with potentially affected relevant persons (those considered relevant from Table 6-4, and any additional relevant persons identified under Section 8.3.4.1), plus any others identified from the oil spill trajectory modelling). This engagement will include WAFIC and any potentially affected commercial fisheries as required. The process for reaching out to these relevant persons includes direct contact (phone or email) or indirect contact via the CAPL website.

In the event of other emergency events (e.g. potential reportable incident), CAPL will commence any emergency management as required (and in accordance with Section 8.3.8), and consultation with required departments or agencies will occur as per regulatory requirements (e.g. refer to Table 8-11 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 Table 6-4, and any additional relevant persons identified under Section 8.3.4.1.

8.3.5 Risk management

The risk management process (Ref. 13) 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. 33) and ISO 31000:2018 *Risk management – Principles and guidelines* (Ref. 14).

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. 13) and the *Management of Change for Facilities and Operations* process (Ref. 38) 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. 41) enables CAPL to deliver assurance that safeguards are established and functioning; it details:

- a framework for managing verification activities that assure that CAPL complies with applicable legal and OEMS requirements
- a process to identify, report and resolve noncompliance
- the minimum qualifications and organisational capability to execute this process.

The *ABU OE Assurance Plan* (Ref. 47) 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 project and asset assurance plans that outline asset specific assurance activities and risk-based frequency (i.e. field inspection programs, audits, compliance reviews, performance reviews).

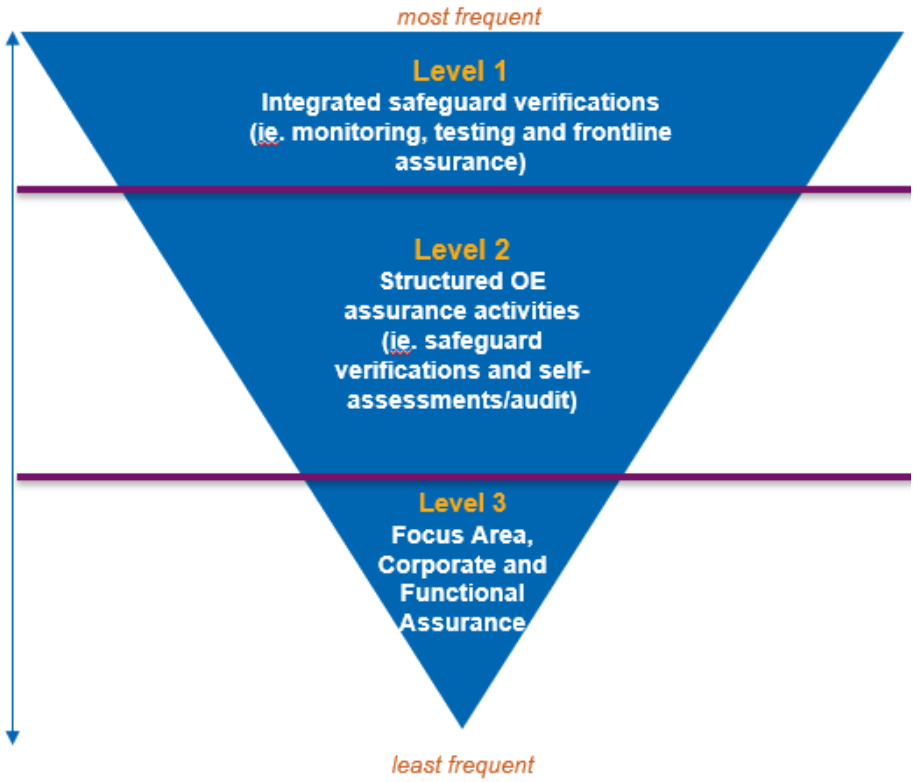


Figure 8-4: ABU integrated assurance system

To support the implementation of the *ABU OE Assurance Process*, CAPL have developed an ABU integrated assurance system (Figure 8-4), which integrates and leverages assurance activities across the various levels of CAPL business

through to the corporate level—to provide confidence that safeguards are in place and functioning as intended. This integrated assurance system includes:

- **Level 1 – Monitoring, testing and frontline assurance assurance**: ongoing, routine, planned verifications of safeguards specific for the asset/facility (e.g. inspections, preventive maintenance, emergency drills and exercises,)
- **Level 2 – OE assurance**: OE assurance activities (e.g. assessments, reviews, audits, inspections) that verify safeguards are in place and functioning, and validate that L1 assurance is effective. These assurance activities monitor weaknesses in the management system and compliance with regulatory requirements, and input learnings into the management system cycle.
- **Level 3 – Corporate and functional assurance:** Assurance activities undertaken by Chevron, CAPL's functional groups (e.g., HSE, Drilling and Completions, base business) or third parties. These assurance activities test effectiveness of the focus area's complete assurance system and how associated safeguards are being sustained.

Assurance activities are scheduled on a risk-based approach and conducted to verify the effectiveness of safeguards and verifications and the extent to which requirements are met by CAPL.

Assurance activities focus on in-field activities and administrative processes, depending on the activities being undertaken and assurance priorities (these priorities are based on risk) and provide sufficient demonstration that environmental performance outcomes and environmental performance standards have been met and the activity implemented in accordance with this Implementation Strategy. A record of all assurance activities undertaken, and the outcomes, are maintained and actions are tracked until closure.

As outlined in Section 8.3.1.2, prior to the activity commencing, a pre-survey vessel inspection will be undertaken to confirm that vessel management systems are consistent with the requirements in this EP.

Prior to the commencement of the petroleum activity, an assurance register specific to the requirements of this EP will be developed. Assurance activities will be undertaken in accordance with the *ABU OE Assurance Process* (Ref. 41). 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 8.3.1.2.

Environmental performance standards in the EP undergo an annual compliance review and evidence will be gathered for each environmental performance standard to support the annual environmental report. Environmental performance during the petroleum activity will be reviewed to ensure that environmental performance standards and environmental performance outcomes are being met, reviewed and where necessary amended to continue to manage the environmental impacts and risks of the petroleum activity to ALARP and acceptable levels.

Assurance related to the activities described in this EP will be summarised in the annual report submitted to NOPSEMA (Section 8.4.3).

8.3.6.1 Managing Instances of Nonconformance

The reporting, investigation, and tracking of non-conformances are managed via Chevron's *OE Corporate Standard Incident Investigation* (Ref. 42) and *OE Data Reporting Standard* (*Ref. 43*). These processes apply to instances where the requirements of this EP have not been met. This process is used if inspections, reviews and audits identify that activities in the scope of this EP are not being implemented in accordance with the risk and impact control measures identified in Section 7.

Audit findings and corrective actions are recorded and tracked in a CAPL compliance assurance database for timely closure of actions. As per Section 8.3.6, any corrective action/s identified during inspections is required to be implemented as soon as practicable during the petroleum activity. 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 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 (IIR) 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. 44) 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 IIR 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. 48) and is consistent with the core aspects presented in the International Maritime Organisation (IMO) equivalent courses.

The ERO comprises the groups listed in Table 8-6; 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. 49).

As the incident escalates and the workload of each function increases, it may be necessary to delegate specific roles to additional people within each section. These roles may lead a team of people to fulfil the tasks under their control.

To establish emergency response arrangements that can be scaled up or down depending on the nature of the incident by integrating with other local, regional, national, and industry plans and resources, CAPL has adopted a tiered approach in its response system. This tiered-response model scales the number of resources mobilised for a response, and the emergency team activated, according to the severity of the incident. This approach is consistent with the *International Convention on Oil Pollution Preparedness, Response and Cooperation 1990*. The response tiers and resources that may be mobilised for an oil spill incident within CAPL are further described within the OPEP (Ref. 1).

Table 8-6: 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 Functional Response Teams	Enterprise-level teams with specific technical expertise in selected command staff positions and unit positions in the Planning, Logistics, and Finance sections. Team members are trained to support the management of global- and regional-level (Tier 2 and 3) incidents but are available to support any response.
Chevron Corporation's Worldwide Emergency Response Team	An enterprise-level team of Chevron Corporation's most highly trained and experienced personnel capable of filling IMS command and general staff roles of a respon288ecognizes288288ion, 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. 45) 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. 45) 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. 50).

The OPEP (Ref. 1) acts as an operational document to ensure an appropriate response to the emergency events described in this EP. Smaller spills will be monitored, evaluated, and cleaned up as part of routine duties, where relevant and appropriate to the nature and scale of the spill, and will not require activation of the ORT or OPEP. Several emergency management subprocesses are outlined below that are integral to emergency preparedness and management.

8.3.8.3 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.

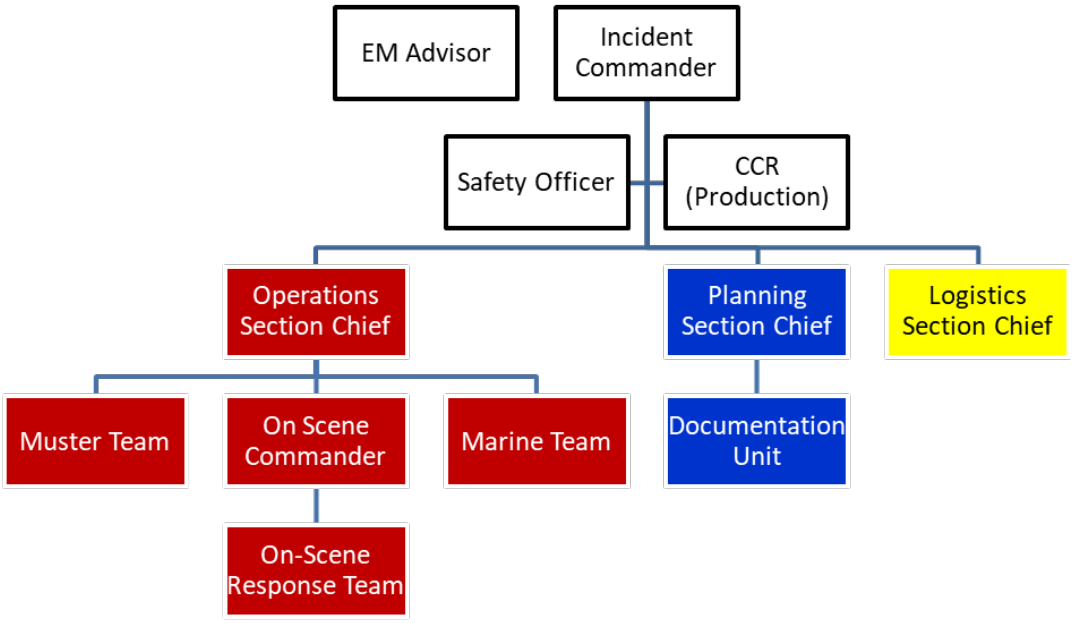


Figure 8-5: Basic installation EMT organisation chart

Figure 8-6: Expanded EMT organisation chart

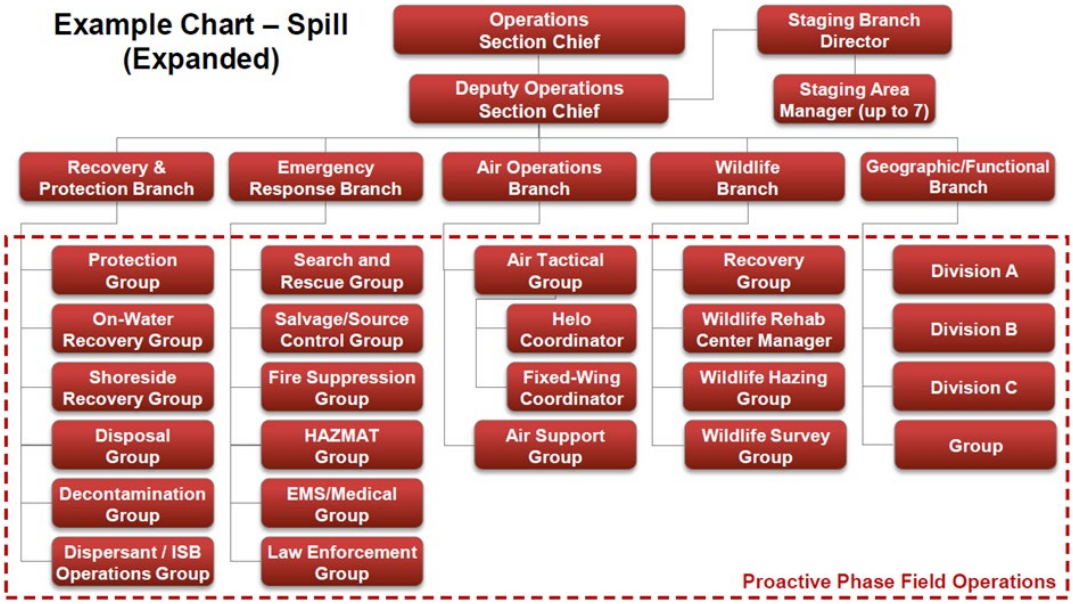


Figure 8-7: Example expanded operations section organisation chart

8.3.8.4 Roles and responsibilities (emergency response)

Table 8-7 provides additional information about the structure of these teams and the key individual roles and responsibilities during emergency response.

Table 8-7: Key roles and responsibilities—emergency response

Role	Responsibilities
On-Site Response Team	
On-Scene Commander (OC) *(Vessel Master)*	• Safely and effectively recognizeses 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

Role	Responsibilities
	• 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. 1) are outlined in Table 8-8. Competency and training records for personnel, including contractors and subcontractors, are maintained.

Table 8-8: 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 • 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 with 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	• ICS-100 Introduction to the Incident Command System • ICS-200 Basic Incident Command System training • ICS-220 Initial Response Team

Role	Summary	Training Standard
	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-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. 51) 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. 51) outlines the proposed testing arrangements to be completed, including the exercise types (Table 8-9) and proposed level of response to be tested (Table 8-10) that may be used to meet the defined objectives. A minimum of one test for each level will be conducted each year.

Table 8-9: 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 8-10: 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 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. 1) must be tested:

- when they are introduced
- when they are significantly amended
- not later than 12 months after the most recent test
- if a new location for the activity is added to this EP after the response arrangements have been tested, and before the next test is conducted: test the response arrangements in relation to the new location as soon as practicable after it is added to this EP

8.4 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 contractors will monitor and record emissions and discharges as detailed in Section 7 to ensure that that this record can be used to assess whether the environmental performance outcomes and standards in this EP are being met.

If an emergency condition resulting in a Level 2 or 3 spill event occurs, CAPL will implement the OSMP (Ref. 2), which is identified as a control measure in

Section 7.15, 7.16, and 7.17. 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 8-11.

Table 8-11: 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 the 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 7 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 7.8) • unplanned release from a vessel collision event (Section 7.15). 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. Other incidents that may be considered reportable incidents include: • loss of equipment resulting in damage or harm to the environment • death or injury to individual(s) from an EPBC Act Listed Species • an unplanned event within a Commonwealth Marine Park.	

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 • any corrective actions already taken, or that may be taken, to prevent a recurrence. If the initial notification of the reportable incident was verbal, this information must be included in the written report.	Written report to be provided to: • NOPSEMA: submissions@nopsema.gov.au • National Offshore Petroleum Titles Authority: info@nopta.gov.au
Additional Reporting Requirements	
Reporting requirements	**Report to**
An oil/gas pollution incident that occurs within a marine park or is likely to impact on a Commonwealth 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 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 likely 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

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 8-12. Routine notifications required by regulations 29 and 30 of the OPGGS(E)R and also included in Table 8-12.

Table 8-12: Routine external reporting requirements

Reporting requirement	Description	Reporting to	Timing
Environmental performance reporting (annual)	A report detailing environmental performance of the activity detailed in this EP	NOPSEMA submissions@nopsema.gov.au Phone: +61 8 6461 7090	Annually from commencement of activities
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	Notification of start of activity
Notification of start of activity	CAPL must notify DNP at least 10 days before commencement of the activity within an AMP. The notification should include: • titleholder details • contact details for a titleholder representative • details of the OA and overlap with an AMP • name and IMO vessel number of vessel/s entering an AMP • type and duration of activity • link to activity summary on NOPSEMA website.	DNP: marineparks@environment.gov.au	Once prior to activity commencement within an AMP
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	Once following completion of activity

Reporting requirement	Description	Reporting to	Timing
		or: https://securefile.nopsema.gov.au/filedrop/submissions	
Notification of conclusion of activity	CAPL must notify DMIRS following completion of the activity	DMIRS: Petroleum.environment@dmirs.wa.gov.au	Notification of conclusion of activity
Notification of conclusion of activity	CAPL must notify DNP following completion of the activity within an AMP.	DNP: marineparks@environment.gov.au	Once post to activity completion within an AMP

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 abbreviations and definitions

Table 9-1: Abbreviations and definitions

Acronym/ Abbreviation	Definition
ABU	Australian Business Units
AFMA	Australian Fisheries Management Authority
AHO	Australian Hydrographic Office
AIIMS	Australasian Inter-service Incident Management System
AIS	Automated Identification System
ALARP	As Low As Reasonably Practicable
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
ANZG	Australian and New Zealand Guideline
API	American Petroleum Institute
ASC	Australia Singapore Cable
ASOG	Activity-specific operational guideline
ASV	Accommodation support vessel
AUV	Autonomous underwater vehicle
Auscoast	Australian Coastal (weather warning)
BIA	Biologically Important Area
BFFL	Barrier fluid flying lead
BP	Boiling Point
BRS	Bureau of Resource Sciences
BTEX	Benzene, toluene, ethylbenzene and xylenes
CALM Act	*Conservation and Land Management Act 1984* (WA)
CAPL	Chevron Australia Pty Ltd
CAR	Containment and Recovery
CDU	Central Distribution Unit
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CIM	Compressor interface module
CHARM	Chemical Hazard Assessment and Risk Management
CLV	Cable lay vessel
CMT	Crisis Management Teams
cP	Centipoise
CPDU	Control power distribution units
Cth	Commonwealth
dB re 1 µPa	Decibels relative to one micropascal; the unit used to measure the intensity of an underwater sound
DIFFS	Deck integrated fire fighting system
DJSC	Darwin-Jakarta-Singapore Cable

Acronym/ Abbreviation	Definition
DMIRS	Western Australian Department of Mines, Industry Regulation and Safety
DNP	Commonwealth Director of National Parks
DoT	Western Australian Department of Transport
DP	Dynamic Positioning
DPLH	Western Australian Department of Planning, Lands and Heritage
DPIRD	Western Australian Department of Primary Industries and Regional Development (formerly Department of Fisheries)
EFL	Electrical Flying Lead
EMBA	Environment that May Be Affected
EMT	Emergency Management Team
ENGO	Environmental non-governmental organisations
EOFL	End of facility life
EOP	Emergence Operating Procedures
EP	Environment Plan
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 19*[99]
$ER_{95\%}$	95th percentile exposure ranges
ERO	Emergency Response Organisation
ESD	Ecologically Sustainable Development
FCS	Field control station
GFP	Gorgon Foundation Project
GHG	Greenhouse gas
GS2	Gorgon Stage 2
GTP	Gas Treatment Plant
h	Hour
HFL	Hydraulic Flying Lead
HFO	Heavy Fuel Oil
HSE	Health, Safety, and environment
HWM	High water mark
HV	High voltage
HVSC	High voltage submarine cable
Hz	Hertz
IAPP	International Air Pollution Prevention
IC	Incident Commander
IEE	International Energy Efficiency
IEMT	Installation Emergency Management Team
IFO	Intermediate Fuel Oil
IMO	International Maritime Organization
IMP	Invasive Marine Pest

Acronym/ Abbreviation	Definition
IMR	Inspection, Maintenance, and Repair
IMS	Incident management system
IPCC	Intergovernmental Panel on Climate Change
IIR	Incident investigation and reporting
ISPP	International Sewage Pollution Prevention
ISQG	Interim Sediment Quality Guideline
ITOPF	International Tanker Owners Pollution Federation Ltd
IUCN	International Union for Conservation of Nature
J-IC	Jansz–Io Compression
JASMINE	JASCO Animal Simulation Model Including Noise Exposure
JRCC	Joint Rescue Coordination Centre
KEF	Key Ecological Feature
kg	Kilogram
kHz	Kilohertz
km	Kilometre
L	Litre
LAT	Lowest astronomical tide
LBL	Long baseline
LCV	Light construction vessel
LNG	Liquified Natural Gas
LOC	Loss of Containment
LoR	Limit of reporting
lux	A standard for measuring light; equal to the amount of visible light per square metre incident upon a surface
LV	Low voltage
LWM	Low water mark
m	Metre
m/m	Mass percent
m^2	Square metre
m^3	Cubic metre
MAOP	Maximum allowable operating pressure
MARPOL	The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978
MARS	Maritime Arrivals Reporting System
MBES	Multibeam Echo Sounder
MDO	Marine Diesel Oil
MEG	Monoethylene glycol
MES	Monitoring, Evaluation, and Surveillance
MFO	Marine Fauna Observer

Acronym/ Abbreviation	Definition
MIE	Major incident or event
mg	Milligram
MGO	Marine gas oil
mm	Millimetre
MNES	Matter of national environmental significance
MOC	Management of Change
MoU	Memorandum of Understanding
MPTS	Mid-line Pipeline Termination Structure
MSC	Management system cycle
MSF	Module support frame
MSW	Managing Safe Work
MV	Medium voltage
N/A	Not Applicable
NEBA	Net Environmental Benefit Analysis
NEPM	National Environmental Protection (Air Quality) Measure
nm	Nautical Mile
NMFS	National Marine Fisheries Service (US)
NOAA	National Oceanic and Atmospheric Administration
NO_2	Nitrogen dioxide
NOPSEMA	National Offshore Petroleum Safety and Environment Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
NO_x	Oxides of nitrogen
NWMR	North-west Marine Region
NWS	North West Shelf
OA	Operational Area
OC	On-scene Commander
OCNS	Offshore Chemical Notification Scheme
OCV	Offshore construction vessel
OE	Operational Excellence
OEMS	Operational Excellence Management System
OEUK	Offshore Energies UK
OFL	Optical flying leads
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

Acronym/ Abbreviation	Definition
OSMP	Operational and Scientific Monitoring Plan
OWR	Oiled Wildlife Response
PAH	Polyaromatic Hydrocarbon
PAR	Pre-arrival reporting
PCB	Prescribed Body Coporporate
PEMT	Perth Emergency Management Team
PFL	Power flying lead
ppb	Parts per billion
ppm	Parts per million
PPP	Protection Prioritisation Process
PTS	Permanent threshold shift
PTW	Permit to work
RAAF	Royal Australian Air Force
RMS	Root Mean Square
ROV	Remotely Operated Vehicle
s	Second (time)
SCMS	Subsea compression manifold station
SCSt	Subsea compression station
SCU	Subsea compressor unit
SEEMP	Ship Energy Efficiency Management Plan
SEL	Sound exposure levels
SHC	Shoreline Clean-up
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	Simultaneous Operations
SPU	Subsea pump unit
SOPEP	Shipboard Oil Pollution Emergency Plan
SO_x	Sulfur oxides
SPD	Shoreline Protection and Deflection
SPL	Sound Pressure Level
SSS	Side-scan Sonar
STCW95	Standards of Training Certification and Watch Keeping for Seafarers
TBT	Tributyltin tin
TEC	Threatened Ecological Community
TRG	Tactical Response Guide
TRH	Total recoverable hydrocarbon
TPH	Total petroleum hydrocarbon
TTS	Temporary threshold shift
UK	United Kingdom

Acronym/ Abbreviation	Definition
US	United States
UTA	Umbilical termination assembly
WA	Western Australia
WAFIC	Western Australian Fisheries Industry Council
WTW	Walk-to-work

10 references

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

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appendix a operational excellence—policy 530

policy 530

operational excellence: achieving world-class performance

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

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

leadership and OE culture

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

focus areas and OE expectations

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

management system cycle

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

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

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

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

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

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

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

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

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

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

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

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

Mark Hatfield
Managing Director, Australasia Business Unit

the human energy company™

appendix b protected matters search reports

Australian Government
Department of Climate Change, Energy, the Environment and Water

OPERATIONAL AREA

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: 13-Jul-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:	41

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:	67
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	28
Key Ecological Features (Marine):	3
Biologically Important Areas:	20
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	Breeding known to occur within area
FISH		
Thunnus maccoyii Southern Bluefin Tuna [69402]	Conservation Dependent	Breeding known to occur within area
MAMMAL		
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	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 known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Congregation or aggregation 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	Congregation or aggregation 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 known to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
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
Sterna dougallii		
Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus		
Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Dugong dugon		
Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Congregation or aggregation 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 known to occur within area
Mobula birostris as Manta birostris		
Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	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
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

Scientific Name	Threatened Category	Presence Text
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
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
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area overfly marine area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
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
Sterna dougallii		
Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Thalasseus bengalensis as Sterna bengalensis		
Lesser Crested Tern [66546]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Fish		
Acentronura larsonae Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within 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

Scientific Name	Threatened Category	Presence Text
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
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
Mammal		
Dugong dugon Dugong [28]		Species or species habitat 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 likely 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
Astrotia stokesii Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Congregation or aggregation 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

Scientific Name	Threatened Category	Presence Text
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	Congregation or aggregation 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 bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis		
Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata		
Pygmy Killer Whale [61]		Species or species habitat may occur within area
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

Current Scientific Name	Status	Type of Presence
Megaptera novaeangliae		
Humpback Whale [38]		Breeding known to occur within area
Mesoplodon densirostris		
Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra		
Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus		
Sperm Whale [59]		Species or species habitat may occur within area
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 likely to 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
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
Dec - Jan		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur
Nov - May		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Barrow Island	Marine Management Area	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Gorgon Gas Development	2003/1294		Assessment
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
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Not controlled action			
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	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
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Not controlled action (particular manner)			
"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
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular Manner)	Post-Approval
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

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
Exmouth Plateau	North-west

Biologically Important Areas

Scientific Name	Behaviour	Presence
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting	Known to occur
Chelonia mydas Green Turtle [1765]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		

Scientific Name	Behaviour	Presence
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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SOUND EMBA

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: 13-Jul-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:	38
Listed Migratory Species:	50

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:	83
Whales and Other Cetaceans:	29
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	1
Habitat Critical to the Survival of Marine Turtles:	3

Extra Information

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

State and Territory Reserves:	3
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	34
Key Ecological Features (Marine):	3
Biologically Important Areas:	23
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 known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	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
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	Critically Endangered	Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Malurus leucopterus edouardi White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
FISH		
Milyeringa veritas Cape Range Cave Gudgeon, Blind Gudgeon [66676]	Vulnerable	Species or species habitat may occur within area
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
Bettongia lesueur Barrow and Boodie Islands subspecies Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Isoodon auratus barrowensis		
Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Species or species habitat known to occur within area
Lagorchestes conspicillatus conspicillatus		
Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Species or species habitat known to occur within area
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Osphranter robustus isabellinus		
Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Petrogale lateralis lateralis		
Black-flanked Rock-wallaby, Mororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Rhinonicteris aurantia (Pilbara form)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat may occur within area
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 known to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding known to occur within area
Ctenotus zastictus		
Hamelin Ctenotus [25570]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
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 may occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat known to occur within area
Pristis pristis		
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Sphyrna lewini		
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
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
Sterna dougallii Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
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	Foraging, feeding or related behaviour 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	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
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

Scientific Name	Threatened Category	Presence Text
Mobula alfredi as Manta alfredi		
Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat known to occur within area
Mobula birostris as Manta birostris		
Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]		Species or species habitat likely to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
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 likely to 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 Terrestrial Species		
Hirundo rustica		
Barn Swallow [662]		Species or species habitat may occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within 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
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area
Limosa lapponica		
Bar-tailed Godwit [844]		Species or species habitat likely to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Breeding known to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
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 likely to 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
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
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Hirundo rustica		
Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Limosa lapponica		
Bar-tailed Godwit [844]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
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 may occur within area
Pandion haliaetus		
Osprey [952]		Breeding known to occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Rostratula australis as Rostratula benghalensis (sensu lato)		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Sterna dougallii		
Roseate Tern [817]		Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
Sternula albifrons as Sterna albifrons		
Little Tern [82849]		Species or species habitat may occur within area
Thalasseus bengalensis as Sterna bengalensis		
Lesser Crested Tern [66546]		Breeding known to occur within area
Fish		
Acentronura larsonae		
Helen's Pygmy Pipehorse [66186]		Species or species habitat may occur within area
Bulbonaricus brauni		
Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus		
Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma		
Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus		
Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus		
Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
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 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
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solenostomus cyanopterus		
Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus		
Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus		
Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris		
Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Mammal		
Dugong dugon		
Dugong [28]		Species or species habitat known to 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
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
Astrotia stokesii		
Stokes' Seasnake [1122]		Species or species habitat may occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Foraging, feeding or related behaviour known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding known to occur within area
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	Breeding 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
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
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

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding known to occur within area
Pelamis platurus		
Yellow-bellied Seasnake [1091]		Species or species habitat may occur within area

Whales and Other Cetaceans [Resource Information]

Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata		
Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Delphinus delphis		
Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Feresa attenuata		
Pygmy Killer Whale [61]		Species or species habitat may occur within area
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 likely to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra		
Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus		
Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens		
False Killer Whale [48]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
Sousa sahulensis		
Australian Humpback Dolphin [87942]		Species or species habitat likely to occur within area
Stenella attenuata		
Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba		
Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris		
Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area
Steno bredanensis		
Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus		
Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to 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
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
Dec - Jan		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur
Nov - May		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Management Area	WA
Barrow Island	Marine Park	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Gorgon Gas Development	2003/1294		Assessment
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
Develop Jansz-lo deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Not controlled action			
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	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
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D 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)			
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260	Not Controlled Action (Particular Manner)	Post-Approval
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
John Ross & Rosella Off Bottom Cable Seismic Exploration Program	2008/3966	Not Controlled Action (Particular Manner)	Post-Approval
Julimar Brunello Gas Development Project	2011/5936	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
West Anchor 3D Marine Seismic Survey	2008/4507	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Westralia SPAN Marine Seismic Survey, WA & NT	2012/6463	Not Controlled Action (Particular Manner)	Post-Approval

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
Exmouth Plateau	North-west

Biologically Important Areas

Scientific Name	Behaviour	Presence
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Internesting buffer	Known to occur
Chelonia mydas Green Turtle [1765]	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 buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting buffer	Known to occur
Natator depressus Flatback Turtle [59257]	Mating	Known to occur
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Breeding	Known to occur
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Breeding	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Distribution	Known to occur

Scientific Name	Behaviour	Presence
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae		
Humpback Whale [38]	Migration (north and south)	Known to occur

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

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

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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

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EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 13-Jul-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:	1
National Heritage Places:	1
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	48
Listed Migratory Species:	62

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:	3
Commonwealth Heritage Places:	1
Listed Marine Species:	103
Whales and Other Cetaceans:	32
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	5
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:	23
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	192
Key Ecological Features (Marine):	5
Biologically Important Areas:	35
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Legal Status
The Ningaloo Coast	WA	Declared property

National Heritage Places [Resource Information]

Name	State	Legal Status
Natural		
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		
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
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Erythrotriorchis radiatus		
Red Goshawk [942]	Endangered	Species or species habitat may occur within area
Falco hypoleucos		
Grey Falcon [929]	Vulnerable	Species or species habitat 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
Malurus leucopterus edouardi		
White-winged Fairy-wren (Barrow Island), Barrow Island Black-and-white Fairy-wren [26194]	Vulnerable	Species or species habitat likely to occur within area
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
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

Scientific Name	Threatened Category	Presence Text
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
FISH		
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
Dasyurus hallucatus		
Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 Central Australian subspecies		
Mala, Rufous Hare-Wallaby (Central Australia) [88019]	Endangered	Translocated population known to occur within area
Macroderma gigas		
Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Osphranter robustus isabellinus		
Barrow Island Wallaroo, Barrow Island Euro [89262]	Vulnerable	Species or species habitat likely to occur within area
Petrogale lateralis lateralis		
Black-flanked Rock-wallaby, Moororong, Black-footed Rock Wallaby [66647]	Endangered	Species or species habitat known to occur within area
Rhinonicteris aurantia (Pilbara form)		
Pilbara Leaf-nosed Bat [82790]	Vulnerable	Species or species habitat known to occur within area
REPTILE		
Aipysurus apraefrontalis		
Short-nosed 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

Scientific Name	Threatened Category	Presence Text
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	Species or species habitat known to occur within area
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
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

Scientific Name	Threatened Category	Presence Text
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 likely to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat likely to occur within area
Ardenna pacifica		
Wedge-tailed Shearwater [84292]		Breeding known to occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat 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
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
Onychoprion anaethetus		
Bridled Tern [82845]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat known to occur within area
Sterna dougallii		
Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons		
Little Tern [82849]		Species or species habitat may occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat likely to occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
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

Scientific Name	Threatened Category	Presence Text
Carcharhinus longimanus		
Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat 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	Species or species habitat known to occur within area
Dugong dugon		
Dugong [28]		Breeding known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
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

Scientific Name	Threatened Category	Presence Text
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
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 may occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus		
Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius leschenaultii		
Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat known to occur within area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 VLF TRANSMITTER STATION [50122]	WA
Defence - EXMOUTH VLF TRANSMITTER STATION [50123]	WA
Defence - LEARMONTH RADAR SITE - VLAMING HEAD EXMOUTH [50001]	WA

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Natural		
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
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]		Species or species habitat 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

Scientific Name	Threatened Category	Presence Text
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
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
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
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

Scientific Name	Threatened Category	Presence Text
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding known to occur within area
Limnodromus semipalmatus Asian Dowitcher [843]		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
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding known to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
Pandion haliaetus		
Osprey [952]		Breeding known to occur within area
Papasula abbotti		
Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat known to occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
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
Sterna dougallii		
Roseate Tern [817]		Breeding known to occur within area
Sternula albifrons as Sterna albifrons		
Little Tern [82849]		Species or species habitat may occur within area
Sternula nereis as Sterna nereis		
Fairy Tern [82949]		Breeding known to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalassarche impavida		
Campbell Albatross, Campbell Black-browed Albatross [64459]	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
Bulbonaricus brauni		
Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus		
Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma		
Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus		
Muiron Island Pipefish [66196]		Species or species habitat may occur within area
Choeroichthys suillus		
Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
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

Scientific Name	Threatened Category	Presence Text
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 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
Micrognathus micronotopterus Tidepool Pipefish [66255]		Species or species habitat may occur within area
Phoxocampus belcheri Black Rock Pipefish [66719]		Species or species habitat may occur within area
Solegnathus hardwickii Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
Solegnathus lettiensis Gunther's Pipehorse, Indonesian Pipefish [66273]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Solenostomus cyanopterus		
Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
Syngnathoides biaculeatus		
Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Trachyrhamphus bicoarctatus		
Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris		
Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
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
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

Scientific Name	Threatened Category	Presence Text
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
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Disteira kingii		
Spectacled Seasnake [1123]		Species or species habitat may occur within area
Disteira major		
Olive-headed Seasnake [1124]		Species or species habitat may occur within area
Emydocephalus annulatus		
Turtle-headed Seasnake [1125]		Species or species habitat may occur within area
Ephalophis greyi		
North-western Mangrove Seasnake [1127]		Species or species habitat may occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding known to occur within area
Hydrelaps darwiniensis		
Black-ringed Seasnake [1100]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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
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
Globicephala macrorhynchus Short-finned Pilot Whale [62]		Species or species habitat may occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Indopacetus pacificus Longman's Beaked Whale [72]		Species or species habitat may occur within area
Kogia breviceps Pygmy Sperm Whale [57]		Species or species habitat may occur within area
Kogia sima 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

Current Scientific Name	Status	Type of Presence
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Mesoplodon ginkgodens Gingko-toothed Beaked Whale, Gingko-toothed Whale, Gingko Beaked Whale [59564]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]		Species or species habitat known to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]		Species or species habitat known to occur within area
Stenella attenuata Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
Stenella coeruleoalba Striped Dolphin, Euphrosyne Dolphin [52]		Species or species habitat may occur within area
Stenella longirostris Long-snouted Spinner Dolphin [29]		Species or species habitat may occur within area

Current Scientific Name	Status	Type of Presence
Steno bredanensis Rough-toothed Dolphin [30]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat known to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Australian Marine Parks

[Resource Information]

Park Name	Zone & IUCN Categories
Gascoyne	Habitat Protection Zone (IUCN IV)
Gascoyne	Multiple Use Zone (IUCN VI)
Montebello	Multiple Use Zone (IUCN VI)
Gascoyne	National Park Zone (IUCN II)
Ningaloo	Recreational Use Zone (IUCN IV)

Habitat Critical to the Survival of Marine Turtles

Scientific Name	Behaviour	Presence
Aug - Sep		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Dec - Jan		
Chelonia mydas Green Turtle [1765]	Nesting	Known to occur
Nov-Feb		

Scientific Name	Behaviour	Presence
Caretta caretta		
Loggerhead Turtle [1763]	Nesting	Known to occur
Nov - May		
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Nesting	Known to occur

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State
Airlie Island	Nature Reserve	WA
Barrow Island	Nature Reserve	WA
Barrow Island	Marine Management Area	WA
Barrow Island	Marine Park	WA
Bessieres Island	Nature Reserve	WA
Boodie, Double Middle Islands	Nature Reserve	WA
Cape Range	National Park	WA
Great Sandy Island	Nature Reserve	WA
Jurabi Coastal Park	5(1)(h) Reserve	WA
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
Round Island	Nature Reserve	WA
Serrurier Island	Nature Reserve	WA
Thevenard Island	Nature Reserve	WA

Protected Area Name	Reserve Type	State
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

Nationally Important Wetlands [Resource Information]

Wetland Name	State
Cape Range Subterranean Waterways	WA

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status
Browse to North West Shelf Development, Indian Ocean, WA	2018/8319		Approval
Gorgon Gas Development	2003/1294		Assessment
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
Construct and operate LNG & domestic gas plant including onshore and offshore facilities - Wheatston	2008/4469	Controlled Action	Post-Approval
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 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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Gorgon Gas Revised Development	2008/4178	Controlled Action	Post-Approval
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
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
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
'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
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
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Bultaco-2, Laverda-2, Laverda-3 and Montesa-2 Appraisal Wells	2000/103	Not Controlled Action	Completed
Carnarvon 3D Marine Seismic Survey	2004/1890	Not Controlled Action	Completed
Cazadores 2D seismic survey	2004/1720	Not Controlled Action	Completed
Construction and operation of an unmanned sea platform and connecting pipeline to Varanus Island for	2004/1703	Not Controlled Action	Completed
Controlled Source Electromagnetic Survey	2007/3262	Not Controlled Action	Completed
Development of Halyard Field off the west coast of WA	2010/5611	Not Controlled Action	Completed
Development of Mutineer and Exeter petroleum fields for oil production, Permit	2003/1033	Not Controlled Action	Completed
Drilling of an exploration well Gats-1 in Permit Area WA-261-P	2004/1701	Not Controlled Action	Completed
Eagle-1 Exploration Drilling, North West Shelf, WA	2019/8578	Not Controlled Action	Completed
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Exploration Well (Taunton-2)	2002/731	Not Controlled Action	Completed
Exploration Well in Permit Area WA-155-P(1)	2002/759	Not Controlled Action	Completed
Exploratory drilling in permit area WA-225-P	2001/490	Not Controlled Action	Completed
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
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
Maia-Gaea Exploration wells	2000/17	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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
Wanda Offshore Research Project, 80 km north-east of Exmouth, WA	2018/8293	Not Controlled Action	Completed
Western Flank Gas Development	2005/2464	Not Controlled Action	Completed
Wheatstone 3D seismic survey, 70km north of Barrow Island	2004/1761	Not Controlled Action	Completed
Not controlled action (particular manner)			
'Kate' 3D marine seismic survey, exploration permits WA-320-P and WA-345-P, 60km	2005/2037	Not Controlled Action (Particular Manner)	Post-Approval
'Tourmaline' 2D marine seismic survey, permit areas WA-323-P, WA-330-P and WA-32	2005/2282	Not Controlled Action (Particular Manner)	Post-Approval
"Leanne" offshore 3D seismic exploration, WA-356-P	2005/1938	Not Controlled Action (Particular Manner)	Post-Approval
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
3D marine seismic survey	2008/4281	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey (WA-482-P, WA-363-P), WA	2013/6761	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in Permit Areas WA-15-R, WA-18-R, WA-205-P, WA-253-P, WA-267-P and WA-268-P	2003/1271	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Survey in WA 457-P & WA 458-P, North West Shelf, offshore WA	2013/6862	Not Controlled Action (Particular Manner)	Post-Approval
3D marine seismic survey over petroleum title WA-268-P	2007/3458	Not Controlled Action (Particular Manner)	Post-Approval
3D Marine Seismic Surveys - Contos CT-13 & Supertubes CT-13, offshore WA	2013/6901	Not Controlled Action (Particular 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	2009/4968	Not Controlled Action (Particular Manner)	Post-Approval
Acheron Non-Exclusive 2D Seismic Survey	2008/4565	Not Controlled Action (Particular Manner)	Post-Approval
Agrippina 3D Seismic Marine Survey	2009/5212	Not Controlled Action (Particular Manner)	Post-Approval
Apache Northwest Shelf Van Gogh Field Appraisal Drilling Program	2007/3495	Not Controlled Action (Particular Manner)	Post-Approval
Aperio 3D Marine Seismic Survey, WA	2012/6648	Not Controlled Action (Particular Manner)	Post-Approval
Artemis-1 Drilling Program (WA-360-P)	2010/5432	Not Controlled Action (Particular Manner)	Post-Approval
Australia to Singapore Fibre Optic Submarine Cable System	2011/6127	Not Controlled Action (Particular Manner)	Post-Approval
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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 Manner)	Post-Approval
Cue Seismic Survey within WA-359-P, WA-361-P and WA-360-P	2007/3647	Not Controlled Action (Particular Manner)	Post-Approval
CVG 3D Marine Seismic Survey	2012/6654	Not Controlled Action (Particular Manner)	Post-Approval
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092	Not Controlled Action (Particular Manner)	Post-Approval
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	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular Manner)	Completed
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Grimalkin 3D Seismic Survey	2008/4523	Not Controlled Action (Particular Manner)	Post-Approval
Guacamole 2D Marine Seismic Survey	2008/4381	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	Not Controlled Action (Particular Manner)	Post-Approval
Harpy 1 exploration well	2001/183	Not Controlled Action (Particular Manner)	Post-Approval
Honeycombs MC3D Marine Seismic Survey	2012/6368	Not Controlled Action (Particular Manner)	Post-Approval
Huzzas MC3D Marine Seismic Survey (HZ-13) Carnarvon Basin, offshore WA	2013/7003	Not Controlled Action (Particular 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	2009/4801	Not Controlled Action (Particular Manner)	Post-Approval
Judo Marine 3D Seismic Survey within and adjacent to WA-412-P	2008/4630	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Julimar Brunello Gas Development Project	2011/5936	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
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular Manner)	Post-Approval
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Palta-1 exploration well in Petroleum Permit Area WA-384-P	2011/5871	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees 4D Marine Seismic Monitor Survey, HCA12A	2012/6579	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	Not Controlled Action (Particular Manner)	Post-Approval
Quiberon 2D Seismic Survey, permit area WA-385P, offshore of Carnarvon	2009/5077	Not Controlled Action (Particular Manner)	Post-Approval
Reindeer gas reservior development, Devil Creek, Carnarvon Basin - WA	2007/3917	Not Controlled Action (Particular Manner)	Post-Approval
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 Manner)	Post-Approval
Stag Off-bottom Cable Seismic Survey	2007/3696	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow 4D Marine Seismic Survey	2011/5810	Not Controlled Action (Particular Manner)	Post-Approval
Stybarrow Baseline 4D marine seismic survey	2008/4530	Not Controlled Action (Particular Manner)	Post-Approval
Tantabiddi Boat Ramp Sand Bypassing	2015/7411	Not Controlled Action (Particular Manner)	Post-Approval
Tidepole Maz 3D Seismic Survey Campaign	2007/3706	Not Controlled Action (Particular Manner)	Post-Approval
Tortilla 2D Seismic Survey, WA	2011/6110	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a 3D marine seismic survey	2010/5695	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5715	Not Controlled Action (Particular Manner)	Post-Approval
Undertake a three dimensional marine seismic survey	2010/5679	Not Controlled Action (Particular Manner)	Post-Approval
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	2007/3941	Not Controlled Action (Particular Manner)	Post-Approval
Wheatstone Iago Appraisal Well Drilling	2008/4134	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Referral decision			
3D Marine Seismic Survey in the offshore northwest Carnarvon Basin	2011/6175	Referral Decision	Completed
3D Seismic Survey	2008/4219	Referral Decision	Completed
Bianchi 3D Marine Seismic Survey, Carnavon Basin, WA	2013/7078	Referral Decision	Completed
CVG 3D Marine Seismic Survey	2012/6270	Referral Decision	Completed
Enfield 4D Marine Seismic Surveys, Production Permit WA-28-L	2005/2370	Referral Decision	Completed
Rose 3D Seismic acquisition survey	2008/4220	Referral Decision	Completed
Stybarrow Baseline 4D Marine Seismic Survey (Permit Areas WA-255-P, WA-32-L, WA-	2008/4165	Referral Decision	Completed
Two Dimensional Transition Zone Seismic Survey - TP/7 (R1)	2010/5507	Referral Decision	Completed
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

Biologically Important Areas

Scientific Name	Behaviour	Presence
Dugong		

Scientific Name	Behaviour	Presence
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
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

Scientific Name	Behaviour	Presence
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Internesting buffer	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Mating	Known to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur
Natator depressus Flatback Turtle [59257]	Aggregation	Known to occur
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Internesting	Known to occur
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
Sterna dougallii Roseate Tern [817]	Breeding	Known to occur
Sternula nereis Fairy Tern [82949]	Breeding	Known to occur

Scientific Name	Behaviour	Presence
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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appendix c consultation material

gorgon gas development jansz-io compression and gorgon umbilical installation

environment plan consultation

October 2022

background

Chevron Australia, on behalf of the Gorgon Joint Venture, is the operator for the Gorgon Gas Development (also known as the Gorgon Project).

The Gorgon Project comprises offshore production wells and pipeline infrastructure associated with the Jansz-Io and Gorgon gas fields that gather and transport gas to the Gorgon liquified natural gas (LNG) facility (the Facility) and domestic gas plant on Barrow Island, where it is processed.

To maintain long-term natural gas supply to the Facility, Chevron Australia plans to modify the subsea gas gathering network by installing a subsea compression station and associated infrastructure in the Jansz-Io gas fields. In addition, power in the Gorgon field will be supplemented by the installation of a new umbilical.

Chevron Australia is therefore developing State and Commonwealth Environment Plans to account for the installation of the Jansz-Io Compression (JIC) infrastructure and the additional umbilical to the Gorgon gas field (Gorgon umbilical).

location and water depths

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

The Gorgon gas field is located within production licences WA-37-L and WA-38-L, approximately 130 km off the north-west coast of WA, and 65 km north-west of Barrow Island in water depths of approximately 200 m.

Installation activities will also occur on Barrow Island and in State waters adjacent to the north-west coast of Barrow Island in water depths of approximately 12 – 25 m.

Please refer to Table 1 for the coordinates of the proposed locations where infrastructure will be installed and Figures 1 and 2 to see maps of the activity area.

schedule and duration

Under a current project timeline, JIC installation activities are scheduled to commence in mid-2024 and are anticipated to be completed in mid-2026.

The Gorgon umbilical is planned to be installed from late 2023 / early 2024 and is anticipated to be completed mid-2024.

Further details on the timing of each work scope are presented in Table 1.

activity overview

JIC will use proven subsea compression technology to enhance the recoverability of the Jansz-Io fields and maintain supply of natural gas to the Facility on Barrow Island.

Chevron Australia plans to install the following infrastructure:

- Subsea structures, including a subsea compression station, subsea compression manifold station and associated foundations
- Spools, umbilicals and flying leads
- Field control station – a normally unattended, floating facility moored to the seabed
- JIC umbilical to supply power from Barrow Island to the field control station and subsea structures
- Gorgon umbilical to supplement power supply infrastructure in the Gorgon field
- Pipeline crossings and rock armour as required.

The new umbilicals will be installed adjacent to the existing offshore Gorgon and Jansz feed gas pipelines. On Barrow Island, the new umbilicals will be installed within trenches dug in the same corridor that was previously cleared for installation of the existing umbilicals and pipelines.

The shore crossing will be undertaken by horizontal directional drilling (HDD) at a site to be established approximately 150 metres inland from North White's Beach. The HDD bore holes will extend under the beach to approximately 550 metres offshore, to avoid disturbance to foreshore vegetation and the nearshore marine environment.

Installation activities will require the use of installation vessels, support vessels, helicopters and temporary accommodation vessels.

Further details on the infrastructure to be installed, are included in Table 1.

marine exclusion zones

During installation of the umbilicals, Notices to Mariners will be sought, to advise vessels to navigate with caution in the area. A temporary 500 m 'safe navigation area' will be in place around vessels engaged in installation activities.

There are no exclusion zones over the existing infrastructure in the Gorgon and Jansz-Io gas fields and no exclusion zone will be sought for the new JIC subsea infrastructure or the Gorgon umbilical. Chevron Australia asks stakeholders to exercise due caution when fishing over these areas.

Once installed, a 500 m petroleum safety zone will be in place for the field control station.

environmental approvals

In accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cwth), the installation of the JIC infrastructure and Gorgon umbilical in

Commonwealth Waters constitutes a significant modification to the accepted *Gorgon Gas Development Pipeline and Subsea Infrastructure Installation and Pre-commissioning Environment Plan*.

Chevron Australia intends to revise the Environment Plan to include the JIC and Gorgon umbilical installation scopes of work and submit the Environment Plan to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment.

In addition, installation activities in WA State Waters and onshore will be addressed in the *Gorgon and Jansz Feed Gas Pipeline Umbilicals Installation Environment Plan* to be submitted to the Department of Mines, Industry Regulation and Safety (DMIRS) in accordance with the requirements of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA) and the Petroleum Pipelines (Environment) Regulations 2012 (WA).

The Environment Plans will describe the environment in which the installation activities are planned to take place, provide an assessment of the impacts and risks arising from the activities, and identify control measures to manage the potential impacts and risks to levels that are acceptable and as low as reasonably practicable.

The Environment Plans will also outline how Chevron Australia has engaged with relevant stakeholders, whose interests, functions, and activities may be affected. The Environment Plan will describe how stakeholder feedback has been considered and addressed.

implications for stakeholders

Chevron Australia will keep informed stakeholders who identify an interest in our planned activities

Chevron Australia is aiming to submit the Environment Plans associated with these activities to NOPSEMA and DMIRS in late 2022. At this time, the Commonwealth jurisdiction Environment Plan will be made publicly available on the NOPSEMA website and a summary of the State jurisdiction Environment Plan will be made publicly available on the DMIRS website.

The potential impacts and risks to the environment and a list of the key control measures currently being proposed, are summarised in Table 2.

No significant impacts or risks to the environment have been identified in the risk workshops completed for the installation works.

Further details of the risk assessment will be provided in the Environment Plans and will incorporate feedback received from relevant stakeholders during this consultation process

commercial fishing

Chevron Australia recognises the commercial fishing sector is an important and relevant stakeholder group whose members may have interests, functions, and activities that could be affected by the activities associated with this program.

Chevron Australia is committed to working proactively with the commercial fishing sector and on-the-water communications and cooperation is a Chevron Australia priority.

Table 1: JIC and Gorgon Umbilical Infrastructure Details

Infrastructure	Details	Indicative Installation Timing*	Latitude South	Longitude East	Depth (~m)
Subsea Compression Station	Electric powered subsea compression station for the Jansz-Io field. Receives power from via the Field Control Station.	Late 2025 – Late 2026	19° 48’ 35.00”S	114° 36’ 20.84”E	1,345
Subsea Compression Manifold Station	Manifold station required for the operation of the Subsea Compression Station.	Late 2025 – Mid 2026	19° 48’ 32.44”S	114° 36’ 20.24”E	1,345
Field Control Station	Moored floating facility that will accommodate electrical equipment and will be normally unattended.	Mooring suction piles: Mid/Late 2024 Field Control Station: Mid/Late 2025	19° 52’ 43.67”S	114° 36’ 28.91”E	1,275
Spools, umbilicals and flying leads	The Subsea Compression Station, Subsea Compression Manifold Station and existing subsea infrastructure will be connected by spools, umbilicals and flying leads.	Mid/Late 2025 – Mid 2026	To be installed between the Subsea Compression Station and the Subsea Compression Manifold Station		1,345
JIC Umbilical	New umbilical to supply power from Barrow Island to the field control station and subsea structures. The umbilical will run adjacent to the existing feed gas pipeline.	Mid/Late 2025 – Mid 2026	Refer to Figure 1 for location		12 – 1,275
Gorgon Umbilical	New umbilical to run from Barrow Island to the Gorgon gas field to supplement existing power supply infrastructure. The umbilical will run adjacent to the existing feed gas pipeline.	Late 2023 – Mid 2024	Refer to Figure 1 for location		12 – 130
Pipeline and umbilical crossings	Concrete mattresses will be installed over existing pipelines and umbilicals to allow for installation of the JIC infrastructure and Gorgon umbilical.	JIC: Late 2025 Gorgon: Late 2023 – Early 2024	Refer to Figure 1 for location		25 – 1,345

*Calendar year indicative timing provided

Table 2: Summary of relevant aspects and proposed controls

Aspect	Proposed Control
Commercial Fishing and Other Marine Users	• Notification to relevant stakeholders a minimum of four weeks prior to the commencement of activities • Consultation with commercial fishers and their representative organisations, and government departments (i.e. DPIRD, Australian Fisheries Management Authority) to inform decision making for the activity and development of the Environment Plan. • Vessels will meet the crew competency, navigation equipment, and radar requirements as per the Chevron Australia's Marine, Safety Reliability and Efficiency process
Marine Fauna Interaction	• Vessels will implement fauna caution and no approach zones in accordance with the Environment Protection Biodiversity Conservation Regulations 2000 – Part 8 Division 8.1
Planned Discharges	• All vessel discharges managed in accordance with MARPOL 73/78 • Chevron Australia's Marine, Safety Reliability and Efficiency process for vessel inspections implemented • Hazardous chemicals selected and managed in accordance with Chevron Australia's Hazardous Materials Management Procedure.
Air Emissions	• Vessels will hold (as appropriate to vessel class) a valid International Air Pollution Prevention certificate, current international energy efficiency certificate and a Ship Energy Efficiency Management Plan as per MARPOL 73/78 Annex VI. • Chevron Australia's Marine, Safety Reliability and Efficiency process for vessel inspections implemented
Invasive Marine Pests	• Chevron Australia's Quarantine Management System implemented • Maritime Arrivals Reporting System - Vessels coming from overseas will have clearance • Compliance with Australian Ballast Water Requirements • Marine vessels maintain an up-to-date international antifouling coating certification • Biofouling management plan, record book and risk assessment implemented
Light Emissions	• Pre-installation inspections of vessels to identify opportunities to reduce light spill • Vessels working at night within critical habitat and during turtle nesting season will reduce lighting to the minimum required for safe operations
Unplanned Releases	• Hazardous chemicals selected and managed in accordance with Chevron Australia's Hazardous Materials Management Procedure • All unplanned releases reported, cleaned up and recorded in accordance with Chevron Australia's Incident Investigation and Reporting Process • Chevron Australia's Marine, Safety Reliability and Efficiency process implemented • Marine spill response implemented in accordance with the response arrangements and strategies detailed in the Oil Pollution Emergency Plan, including operational and scientific monitoring if required
Underwater sound	• Seabed surveys will utilise low impact acoustic sources (no seismic) • Noise modelling to inform potential impacts and input to mitigation and management measures • Vessels will implement fauna caution and no approach zones in accordance with the Environment Protection Biodiversity Conservation Regulations 2000 – Part 8 Division 8.1.
Waste	• Waste managed in accordance with legislative requirements and vessel Waste Management Plan • Wastes managed and disposed of in a manner that prevents accidental loss to the environment • Wastes transported onshore to recycling or disposal facilities by a licensed waste contractor.
Terrestrial Disturbance	• Chevron Australia has prepared a separate Fact Sheet outlining controls to be implemented to manage impacts and risks associated with terrestrial disturbance on

Aspect	Proposed Control
	Barrow Island. If you would like a copy, please contact the email address listed in the 'providing feedback' section below

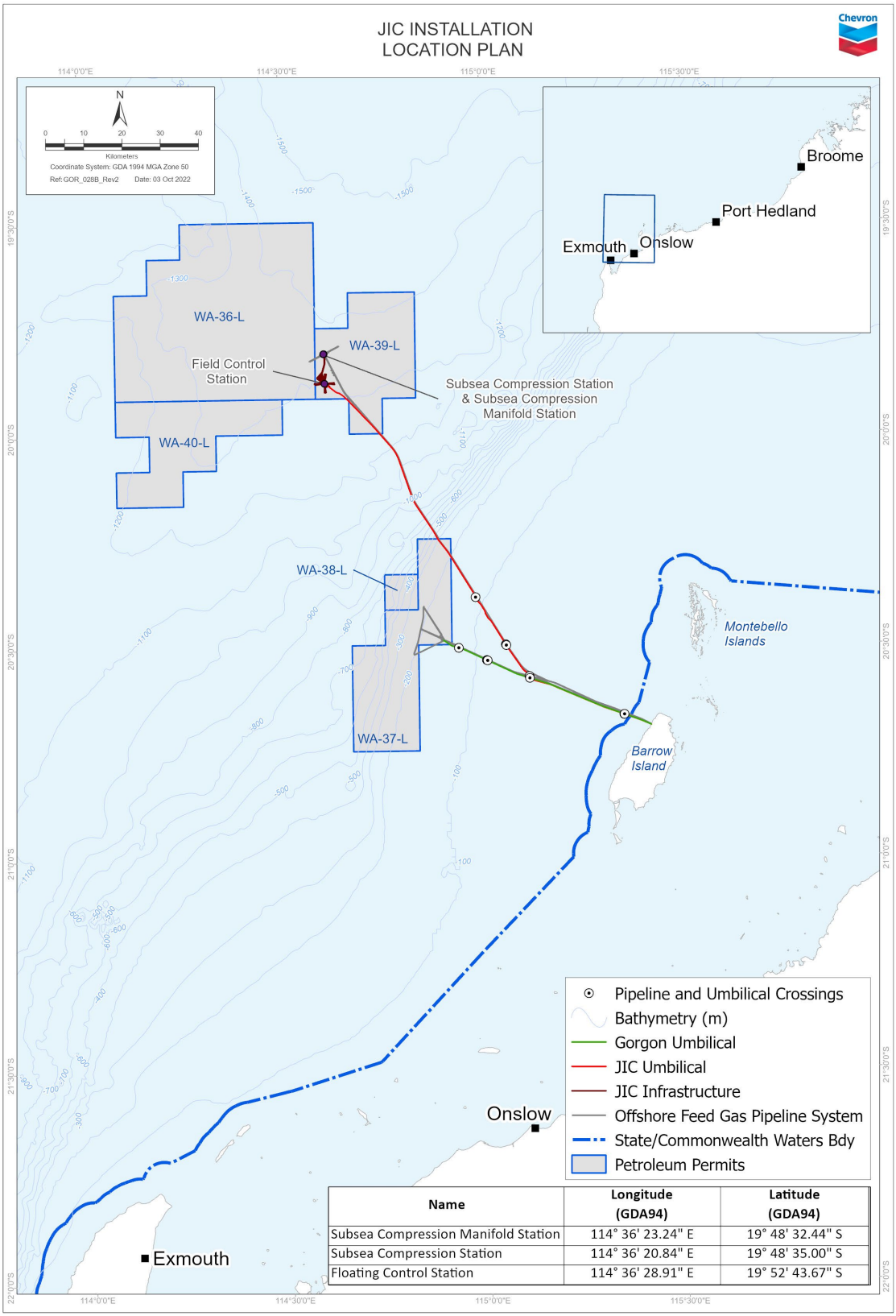
providing feedback

Feedback from stakeholders on potential impacts associated with Chevron Australia's activities will be carefully considered and assessed.

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

Feedback can be directed to:

Jeff Hunter
HSE – Regulatory Affairs Advisor
abuenvplaninfo@chevron.com
(08) 9216 4525



Name	Longitude (GDA94)	Latitude (GDA94)
Subsea Compression Manifold Station	114° 36' 23.24" E	19° 48' 32.44" S
Subsea Compression Station	114° 36' 20.84" E	19° 48' 35.00" S
Floating Control Station	114° 36' 28.91" E	19° 52' 43.67" S

Figure 1: Jansz-lo Compression and Gorgon Umbilical Infrastructure Installation Map

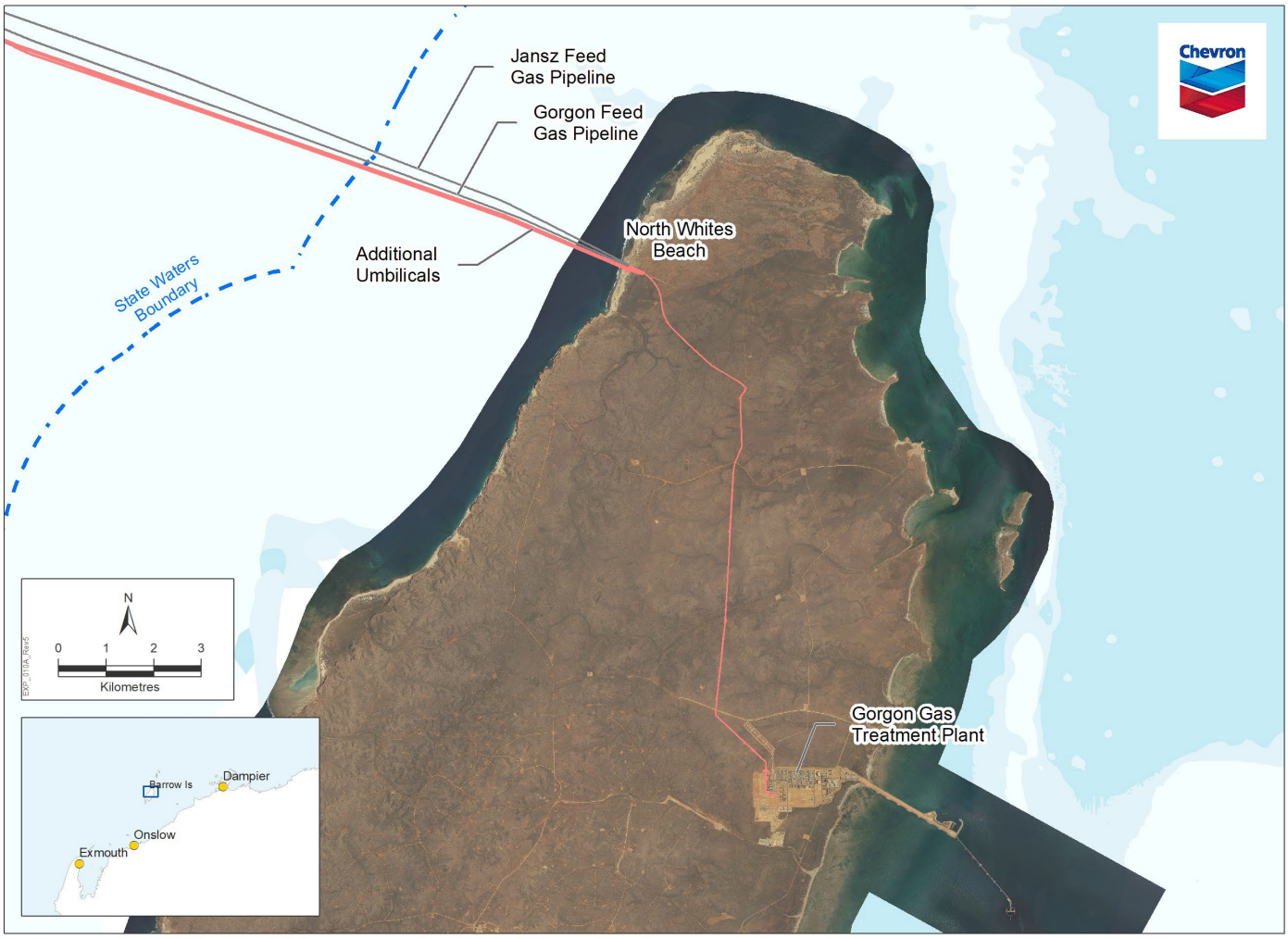
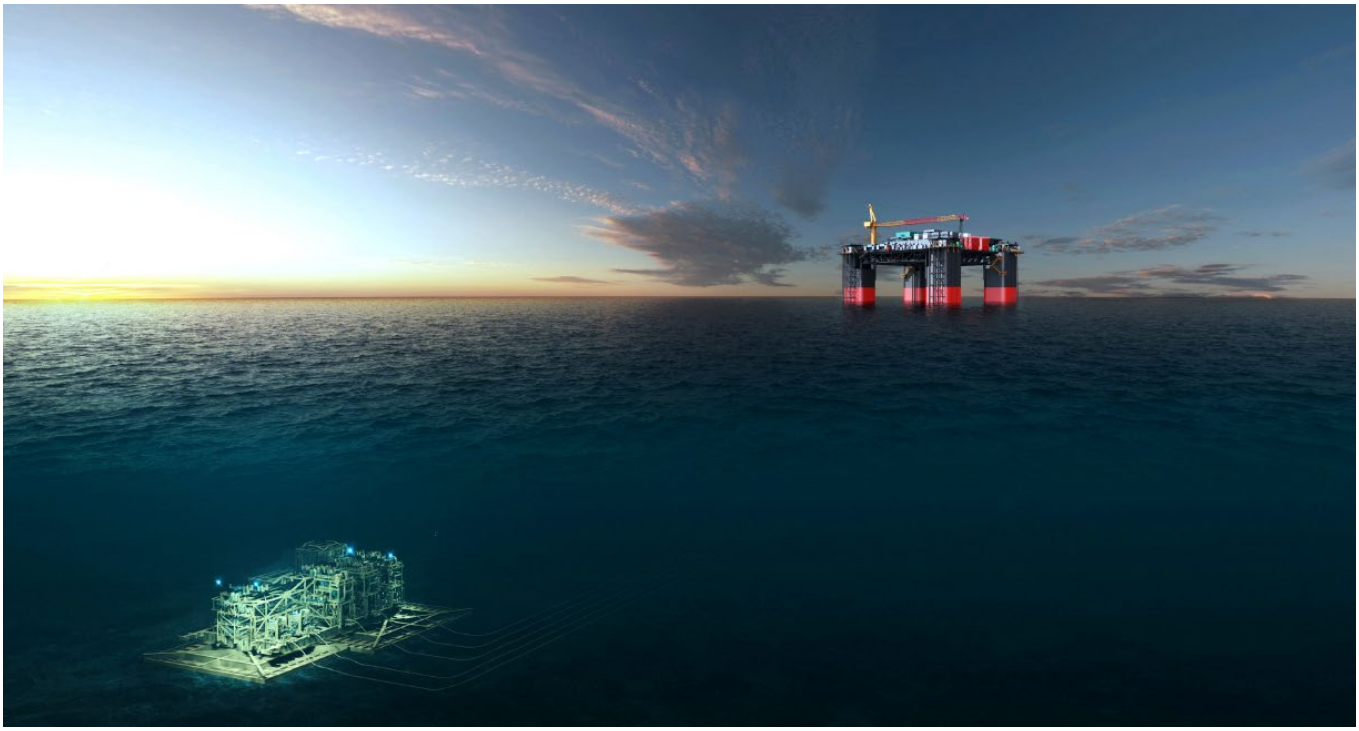


Figure 2: Jansz-lo Compression and Gorgon Umbilical Infrastructure Installation Map (Onshore and State Waters)

jansz-io compression installation

relevant persons information sheet

february 2023



overview

Chevron Australia, on behalf of the Gorgon Joint Venture, operates the Gorgon Project (Gorgon) in Western Australia.

Gorgon comprises offshore production wells and pipeline infrastructure that gathers natural gas from the Jansz-Io and Gorgon gas fields and transports it to a facility on Barrow Island for processing.

To maintain long-term gas supply to the facility, Chevron Australia plans to install a subsea compression station and associated infrastructure in the Jansz-Io gas fields ('Jansz-Io Compression'), using proven subsea compression technology to enhance the recoverability of gas. The compression station includes two pumps and three compressors and will be placed on 'mud mats' on the seabed.

To maintain the reliability of the offshore gas gathering systems, Chevron Australia will also install two additional control and electrical umbilicals in the existing feedgas pipeline system that extends between the offshore fields and the Gorgon facility on Barrow Island. The umbilicals provide electrical power and other essential functions to the gas fields.

Chevron Australia is developing State and Commonwealth Environment Plans for the Jansz-Io Compression and Gorgon umbilical installation and welcomes feedback from relevant persons.

location and water depths

The Jansz-Io gas fields are located within production licences WA-36-L, WA-39-L and WA-40-L, approximately 200 kilometres off the north-west

coast of Western Australia (WA) in water depths of approximately 1,350 meters.

The Gorgon gas field is located within production licences WA-37-L and WA-38-L, 130 kilometres off the north-west coast of WA, and 65 kilometres north-west of Barrow Island in water depths of approximately 200 meters.

Installation activities will also occur on Barrow Island and in state waters adjacent to the north-west coast of Barrow Island in depths of approximately 12 to 25 metres.

Table 1 shows the coordinates and Figures 2 and 3 show maps of the installation areas.

schedule and duration

Jansz-Io Compression installation is scheduled to occur from mid-2024 to mid-2026.

Installation of the Gorgon umbilical is planned to occur from late 2023/early 2024 to mid-2024.

Table 1 provides details on the timing.

activity overview

Activities include installing, pre-commissioning, commissioning of subsea infrastructure.

Non-invasive surveys may be conducted before and after installation, including video and geophysical survey techniques.

Helicopters and installation and support vessels will be used throughout the works.

Chevron Australia plans to install the following:

- Subsea structures, including a compression station, compression manifold station and associated foundations.
- A normally unattended, floating field control station anchored to the seabed by 12 mooring lines.
- An umbilical to supply power from Barrow Island to the field control station, and power cables, known as flying leads, from the control station to the subsea station.
- An umbilical to supplement power supply in the Gorgon field.
- Pipeline crossings and rock armour as required.

The new umbilicals will be installed adjacent to the existing offshore Gorgon and Jansz-Io feed gas pipelines. On Barrow Island, the new umbilicals will be installed in a trench within the approved right of way for existing infrastructure.

The shore crossing for the umbilicals will be undertaken by horizontal directional drilling from a site to be established approximately 150 metres inland from North White's Beach, extending under the beach to approximately 550 metres offshore, to avoid disturbing foreshore vegetation and the nearshore marine environment.

Table 1 includes details on the infrastructure to be installed.

EMBA: environment that may be affected

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

Planned aspects result in environmental impacts and changes to the environment and may present environmental risks.

Unplanned releases and events may occur while conducting activities.

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 vessel collision.

The EMBA has been defined through combining 300 simulations of vessel collisions under different hydrological and meteorological conditions representative of summer, winter and transition seasons in the north-west. Figure 1 shows the EMBA.

Control measures to prevent this event are in place, 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.

Table 2 lists potential environmental impacts, risks and control measures.

safe navigation area and marine exclusion zone

During installation of the infrastructure, notices to mariners will be sought, to advise vessels to navigate with caution. A temporary 500-metre exclusion zone will be in place around vessels engaged in installation activities.

There is currently no exclusion zone over the existing infrastructure in the Gorgon and Jansz-Io gas fields and none will be sought for the new Jansz-Io Compression subsea infrastructure or the Gorgon umbilical.

Once installed, a 500-metre exclusion zone will be in place for the field control station.

approvals process

In accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth), the installation of the Jansz-Io Compression subsea infrastructure and Gorgon umbilical in Commonwealth waters requires an environment plan to be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment and acceptance. These regulations require Chevron Australia to consult with relevant persons whose functions, interests and activities may be affected by the petroleum activity.

Installation activities in WA State waters and onshore will be addressed in an environment plan to be submitted to the Department of Mines, Industry Regulation and Safety (DMIRS) in accordance with the requirements of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA) and the Petroleum Pipelines (Environment) Regulations 2012 (WA).

The environment plans will describe the environment in which the installation activities are planned to take place, provide an assessment of the impacts and risks arising from the activities, and identify control measures to manage the potential impacts and risks to levels that are acceptable and 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 2. 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 Australia 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: Jansz-Io Compression (J-IC) and Gorgon Umbilical Infrastructure Details

Infrastructure	Details	Indicative Installation Timing*	Latitude South	Longitude East	Depth (~m)
Subsea Compression Station	Electric powered subsea compression station for the Jansz-Io field. Receives power via the Field Control Station.	Late 2025 – Late 2026	19° 48' 35.00"S	114° 36' 20.84"E	1,345
Subsea Compression Manifold Station	Manifold Station required for the operation of the Subsea Compression Station.	Late 2025 – Mid 2026	19° 48' 32.44"S	114° 36' 20.24"E	1,345
Field Control Station	Moored floating facility that will accommodate electrical equipment and will be normally unattended.	Mooring suction piles: Mid/Late 2024 Field Control Station: Mid/Late 2025	19° 52' 43.67"S	114° 36' 28.91"E	1,275
Spools, umbilicals and flying leads	The Subsea Compression Station, Subsea Compression Manifold Station and existing subsea infrastructure will be connected by spools, umbilicals and flying leads.	Mid/Late 2025 – Mid 2026	Between the Subsea Compression Station and the Subsea Compression Manifold Station		1,345
J-IC Umbilical	New umbilical to supply power from Barrow Island to the field control station and subsea structures. The umbilical will run adjacent to the existing feed gas pipeline.	Mid/Late 2025 – Mid 2026	Refer to Figures 2 and 3 for location		12 – 1,275
Gorgon Umbilical	New umbilical to run from Barrow Island to the Gorgon gas field to supplement existing power supply infrastructure. The umbilical will run adjacent to the existing feed gas pipeline.	Late 2023 – Mid 2024	Refer to Figures 2 and 3 for location		12 – 130
Pipeline and umbilical crossings	Concrete mattresses will be installed over existing pipelines and umbilicals to allow for installation of the J-IC infrastructure and Gorgon Umbilical.	J-IC: Late 2025 Gorgon: Late 2023 – Early 2024	Refer to Figures 2 and 3 for location		25 – 1,345

*Calendar year indicative timing provided

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

Aspect	Potential interaction	Proposed Control
Planned impacts		
Physical presence of subsea infrastructure, field control station and vessels within the Operational Area (OA)	• presence of subsea infrastructure, field control station and vessels within the OA has the potential to interact and disrupt commercial shipping, fishing vessels and marine fauna. • potential interaction with fishing vessels may result in entanglement of trawl fishing gear on subsea infrastructure	• relevant parties will be advised of the commencement of key phases of the activity • marine safety information to be issued via AUSCOAST and/or Notice to Mariners (where required) prior to commencing the installation activity • vessels will meet Chevron's crew competency, navigation equipment, and radar requirements as per the *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 • where required, a simultaneous operation plan will be developed and implemented to manage the activity
Light emissions	• navigation and operational lighting from vessels within the OA may result in a localised and temporary change in ambient light • change in ambient light may result in the temporary attraction of light-sensitive species	• vessels will meet lighting requirements of *Chevron Australia's MSRE process* • an activity-risk assessment will be undertaken when vessels work at night within critical habitats and during turtle nesting season
Underwater sound from marine surveys, vessels and helicopter operations within the OA	• surveys, vessels and/or helicopter operations within the operational area may result in localised and temporary increase to ambient underwater sound levels • a change in ambient sound may result in temporary and localised behavioural disturbance to marine fauna	• in accordance with EPBC Regulations 2000 – Part 8 Division 8.1 – Interacting with cetaceans, vessels will implement caution and no approach zones, and interaction management action • a Vessel Master (or delegate) will be on duty at all times
Seabed Disturbance	• seabed disturbance from installation activities may result in the alteration of marine habitat and a localised and temporary change in water quality	• pre-lay surveys will be conducted to identify and avoid emergent seabed features before installing subsea infrastructure. • vessels will meet the crew competency, navigation equipment, and radar requirements as per the *Chevron Australia's MSRE* process.
Air Emissions	• combustion of fuel from vessels and helicopters within the operational area may result in a localised and temporary reduction in air quality.	• reduced sulfur content fuel will be used when available • vessels will comply with the requirements of Marine Order 97 (MARPOL 73/78 Annex VI) in relation to air pollution
Planned Discharges – Vessel Operations	• planned discharges from 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	Proposed Control
		• vessels will comply with the requirements of Marine Order 91 (MARPOL 73/78 Annex I) in relation to oily bilge water discharges
Planned Discharges – Subsea Operations	• leak testing, flying lead installation and pre-commissioning activities may have the potential to result in planned discharges from subsea operations causing localised and temporary change in water quality • change in ambient water quality may result in indirect impacts to marine fauna	• subsea fluids hazardous materials will be selected and managed in accordance with *Chevron Australia's Hazardous Materials Management Procedure*
Unplanned risks		
Invasive marine pests	• planned discharged of ballast water or the presence of biofouling on vessels may have the potential to result in the introduction of an invasive marine pest	• vessels will meet the requirements of the *Chevron Australia's Quarantine Management Procedure for Marine Vessel* • 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*.
Accidental release - waste	• vessel operations and subsea structure, jumpers, and tie-in spool installation activities may result in an unplanned release of waste to the environment causing marine pollution and potentially resulting in entanglement or injury to marine fauna.	• vessels will comply with the requirements of Marine Order 95 (MARPOL 73/78 Annex V) in relation to managing waste (garbage) offshore
Accidental release - fuel bunkering	• unplanned release of hazardous material from transferring materials from vessel activities may result in indirect impacts to the marine environment and 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 availability and refuelling/bunkering process • 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
Accidental release - vessel collision	• the potential environmental impacts associated with hydrocarbon exposure from a vessel collision event may result in marine pollution, smothering of subtidal and intertidal habitats, indirect impacts to fisheries, and reduction in amenity.	• 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 activity • 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 will be implemented in accordance with the response arrangements and strategies detailed in *Chevron Australia's Oil Pollution Emergency Plan*

Aspect	Potential interaction	Proposed Control
		• where required, operational and scientific monitoring will be undertaken in accordance with *Chevron Australia's Operational and Scientific Monitoring Plan.*
Accidental release – hydrocarbons from subsea infrastructure	• the potential environmental impacts associated with hydrocarbon exposures from a subsea release event may result in marine pollution, smothering of subtidal and intertidal habitats, indirect impacts to fisheries, and reduction in amenity.	• monitoring, inspection and maintenance of hydrocarbon system and infrastructure will be undertaken • source control / isolation procedures will be implemented • safe lifting of offsets from existing subsea infrastructure • emergency response will be implemented in accordance with 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.*
Emergency response		
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.*
Onshore		
Terrestrial Disturbance	• Chevron Australia has prepared a separate Information Sheet outlining controls to be implemented to manage impacts and risks associated with terrestrial disturbance on Barrow Island. If you would like a copy, please contact the email address listed in the 'providing feedback' section below	

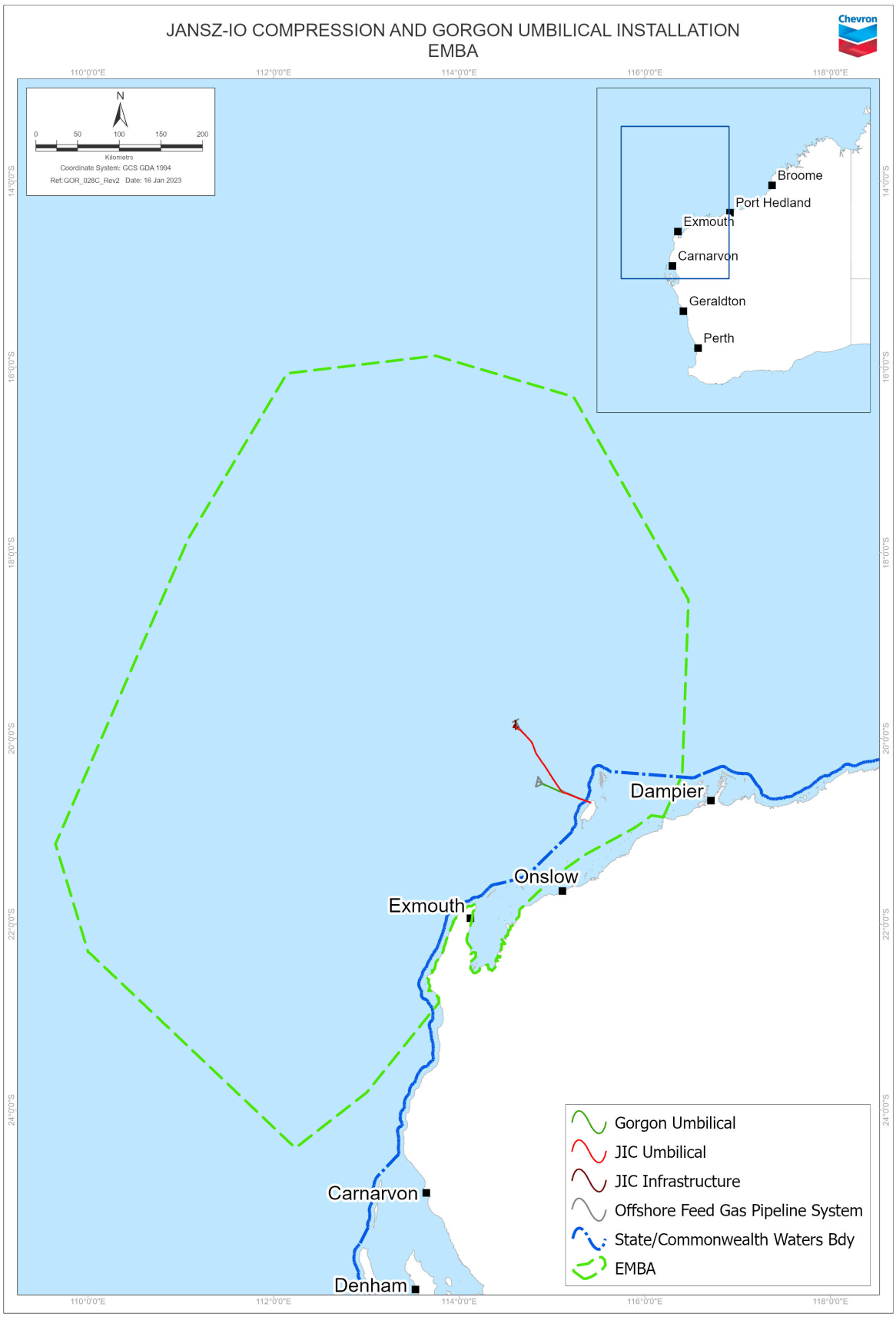
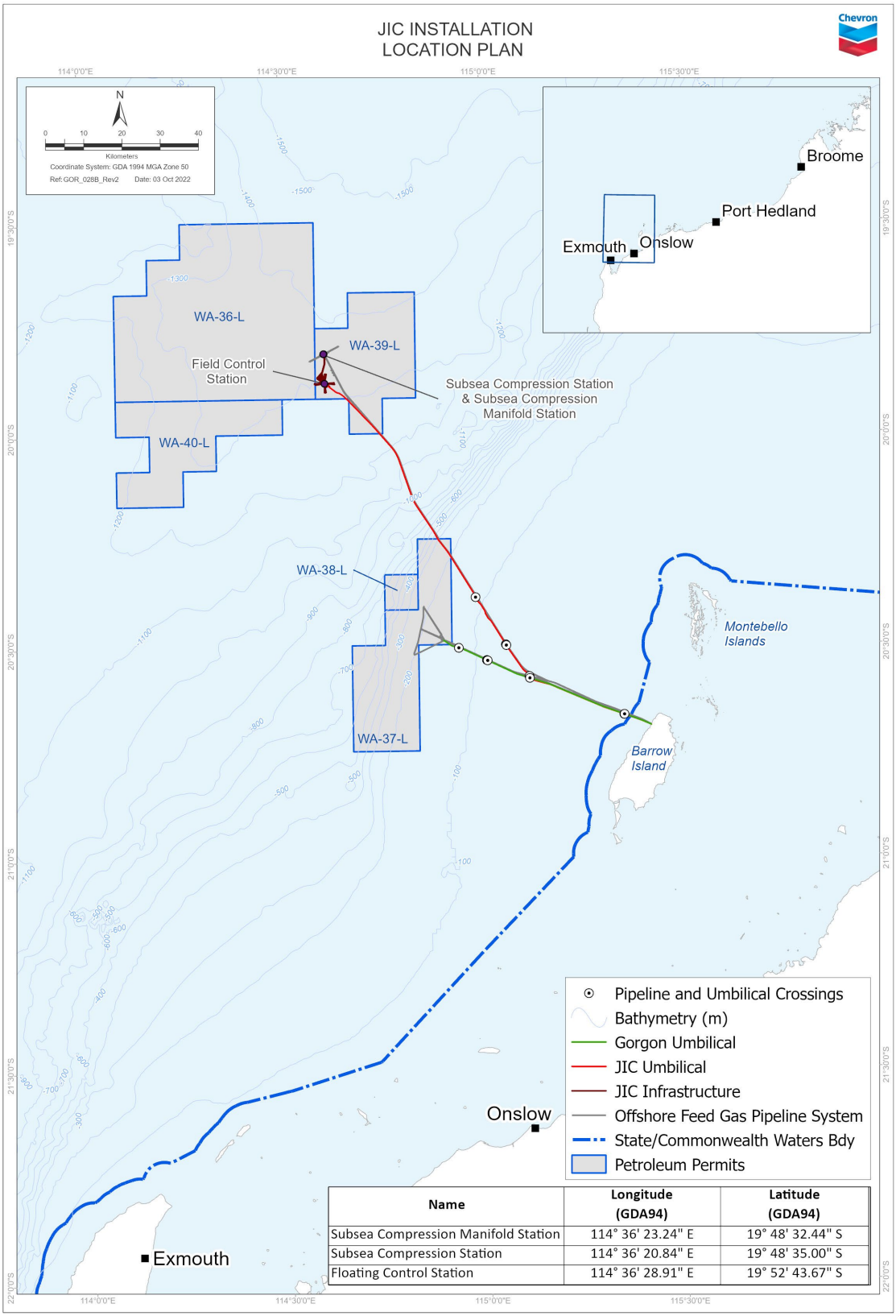


Figure 1: Jansz-Io Compression and Gorgon Umbilical Infrastructure EMBA map



Name	Longitude (GDA94)	Latitude (GDA94)
Subsea Compression Manifold Station	114° 36' 23.24" E	19° 48' 32.44" S
Subsea Compression Station	114° 36' 20.84" E	19° 48' 35.00" S
Floating Control Station	114° 36' 28.91" E	19° 52' 43.67" S

Figure 2: Jansz-Io Compression and Gorgon Umbilical Infrastructure Installation Map

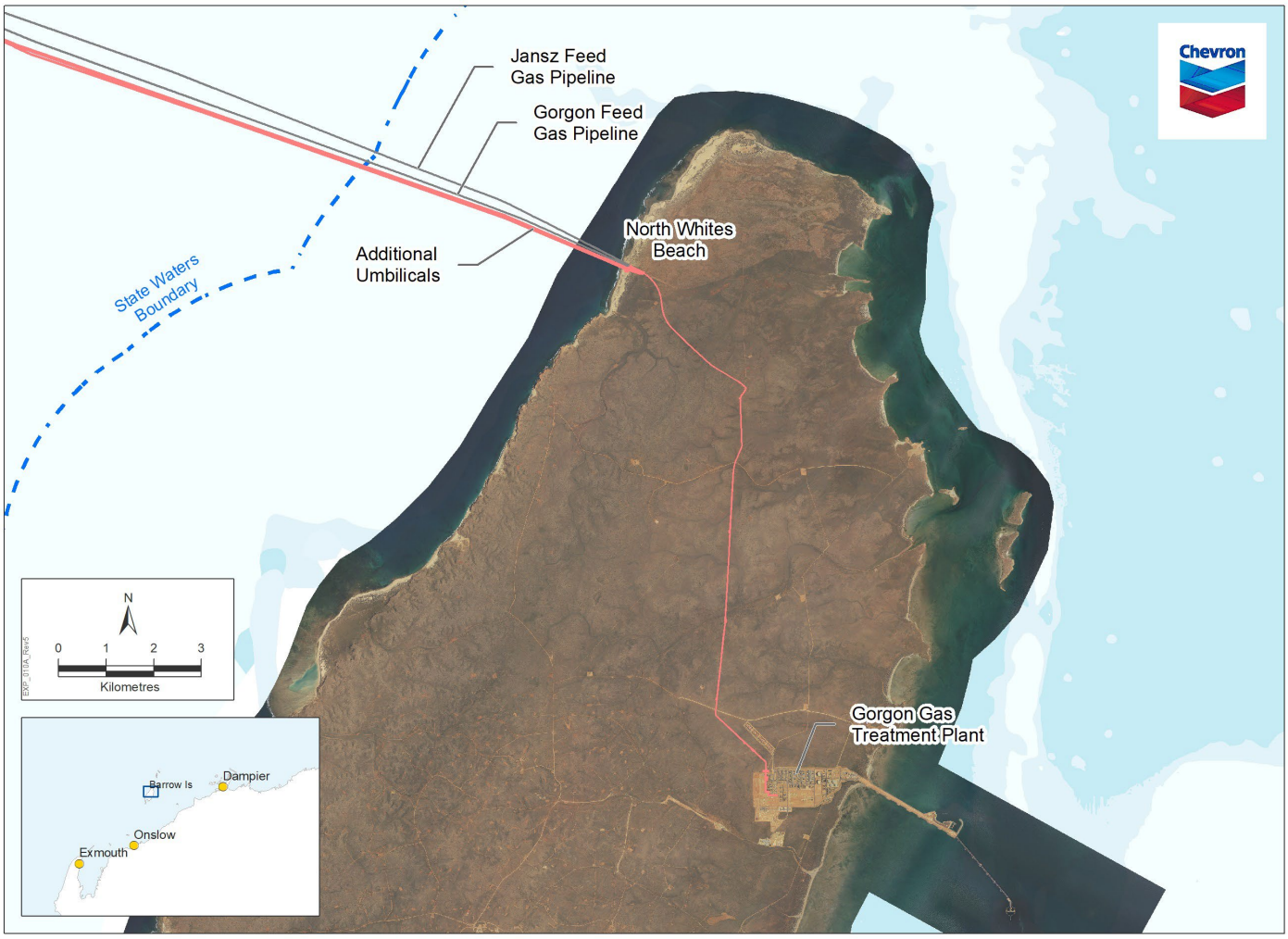


Figure 3: Jansz-Io Compression and Gorgon Umbilical Infrastructure Installation Map (Onshore and State Waters)

relevant persons information

jansz-io subsea compression installation

Chevron Australia, on behalf of the Gorgon Joint Venture, operates the Gorgon Project (Gorgon) in Western Australia.

Gorgon comprises offshore production wells and pipeline infrastructure that gathers natural gas from the Jansz-Io and Gorgon gas fields and transports it to a facility on Barrow Island for processing.

To maintain long-term gas supply to the facility, Chevron Australia plans to install a subsea compression station and associated infrastructure in the Jansz-Io gas fields, using proven subsea compression technology to enhance the recoverability of gas. The compression station includes two pumps and three compressors and will be placed on 'mud mats' on the seabed.

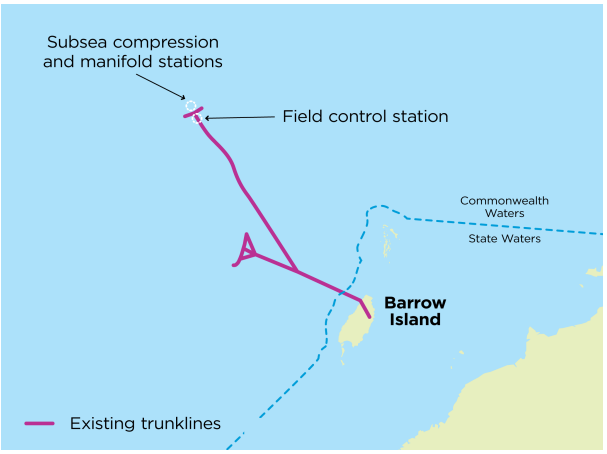
Chevron Australia is developing State and Commonwealth Environment Plans for the Jansz-Io Subsea Compression installation and welcomes feedback from relevant persons.

location and water depth

The Jansz-Io gas fields are located within production licences WA-36-L, WA-39-L and WA-40-L, approximately 200 kilometres off the northwest coast of Western Australia in water depths of approximately 1,350 metres.

Most installation activities will occur in this area as well as on Barrow Island and along the existing pipeline route between Barrow Island and the Jansz-Io fields in State and Commonwealth waters adjacent to the northwest coast of Barrow Island. Water depths in State waters are up to 25 metres, before dropping off at the Continental shelf to depths of 1,350 metres.

Table 1 shows the coordinates and Figures 2 and 3 show maps of the installation areas.



Jump to detailed maps below

schedule and duration

Jansz-Io subsea compression installation is scheduled to occur from mid-2024 to mid-2026.

Table 1 provides details on the timing.

activity summary

Activities include installing, pre-commissioning and commissioning of subsea compression infrastructure and a floating field control station.

Non-invasive surveys may be conducted before and after installation, including video and geophysical survey techniques. Helicopters and installation and support vessels will be used throughout the works.

Chevron Australia plans to install the following:

- Subsea structures, including a compression station, compression manifold station and associated foundations.
- A normally unattended, floating field control station anchored to the seabed by 12 mooring lines.
- An umbilical to supply power from Barrow Island to the field control station, and power cables, known as flying leads, from the field control station to the subsea compression station.
- Pipeline crossings and rock stabilisation as required.

The new umbilical will be installed adjacent to the existing offshore Gorgon and Jansz-Io feed gas pipelines. On Barrow Island, the umbilical will be installed in a trench in the approved right of way for existing infrastructure.

The shore crossing for the umbilical will be undertaken by horizontal directional drilling from a site to be established approximately 150 metres inland from North White's Beach, extending under the beach to approximately 550 metres offshore, to avoid disturbing foreshore vegetation and the nearshore marine environment.

Table 1 includes details on the infrastructure to be installed.

EMBA – environment that may be affected

Installation activities have planned environment interactions, known as 'aspects', which may cause environmental impacts or changes to the environment.

Unplanned releases and events may occur while conducting installation activities. Potential unplanned events are called environmental 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 vessel collision.

The EMBA has been defined through combining 300 simulations of vessel collisions under different hydrological and meteorological conditions representative of summer, winter and transition seasons in the northwest. Figure 1 shows the EMBA.

Control measures to prevent this event are in place, 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.

Table 2 lists potential environmental impacts, risks and control measures.

safe navigation area and marine exclusion zone

During installation of the infrastructure, notices to mariners will be sought to advise vessels to navigate with caution. A temporary 500-metre exclusion zone will be in place around vessels engaged in installation activities.

There is currently no exclusion zone over the existing infrastructure in the Gorgon and Jansz-Io gas fields.

Once installed, a 500-metre exclusion zone will be in place for the floating field control station, however, no other exclusion zones will be sought for the subsea infrastructure.

approvals process

In accordance with the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth), the installation of the Jansz-Io Compression subsea infrastructure in Commonwealth waters requires an Environment Plan to be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for assessment and acceptance. These regulations require Chevron Australia to consult with relevant persons whose functions, interests and activities may be affected by the petroleum activity.

Installation activities in State waters and onshore will be addressed in an Environment Plan to be submitted to the Western Australian Department of Mines, Industry Regulation and Safety in accordance with the requirements of the Petroleum (Submerged Lands) (Environment) Regulations 2012 (WA) and the Petroleum Pipelines (Environment) Regulations 2012 (WA).

Both environment plans will describe the environment in which the installation activities are planned to take place, provide an assessment of the impacts and risks arising from the activities, and identify control measures to manage the potential impacts and risks to levels that are acceptable and 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

A summary of impacts/risks and key proposed controls for installation activities can be viewed in Table 2.

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 2.

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 **Jansz-io Compression Subsea Installation**, 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

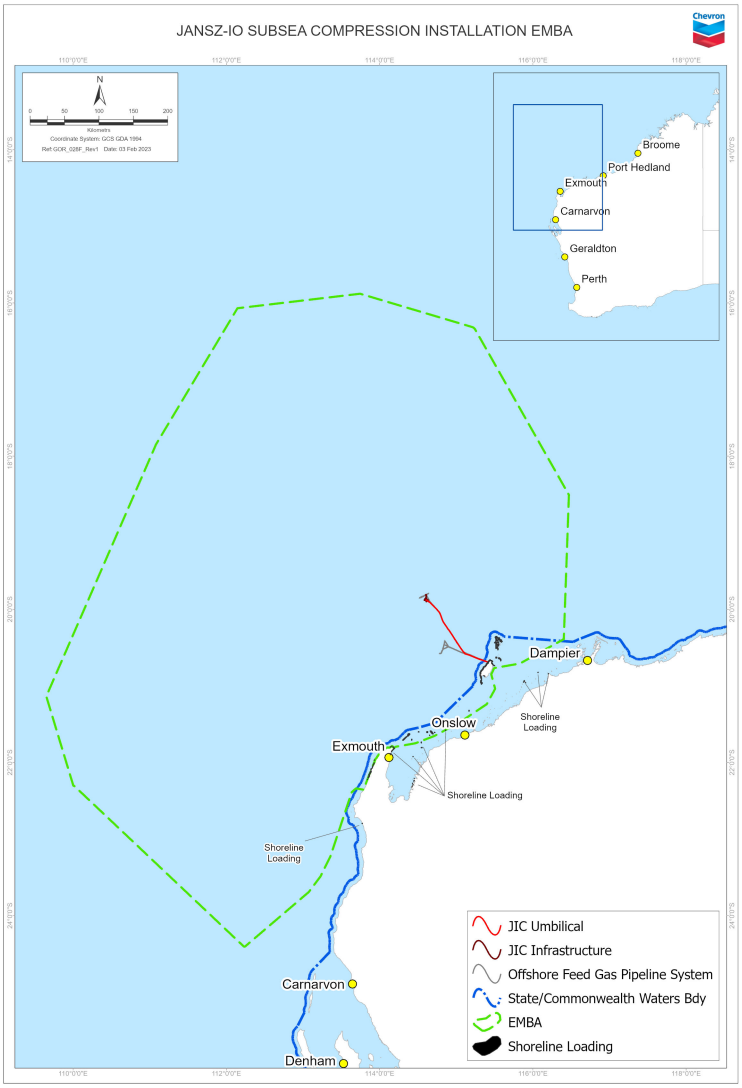


Figure 1: Jansz-Io Compression Infrastructure EMBA map.

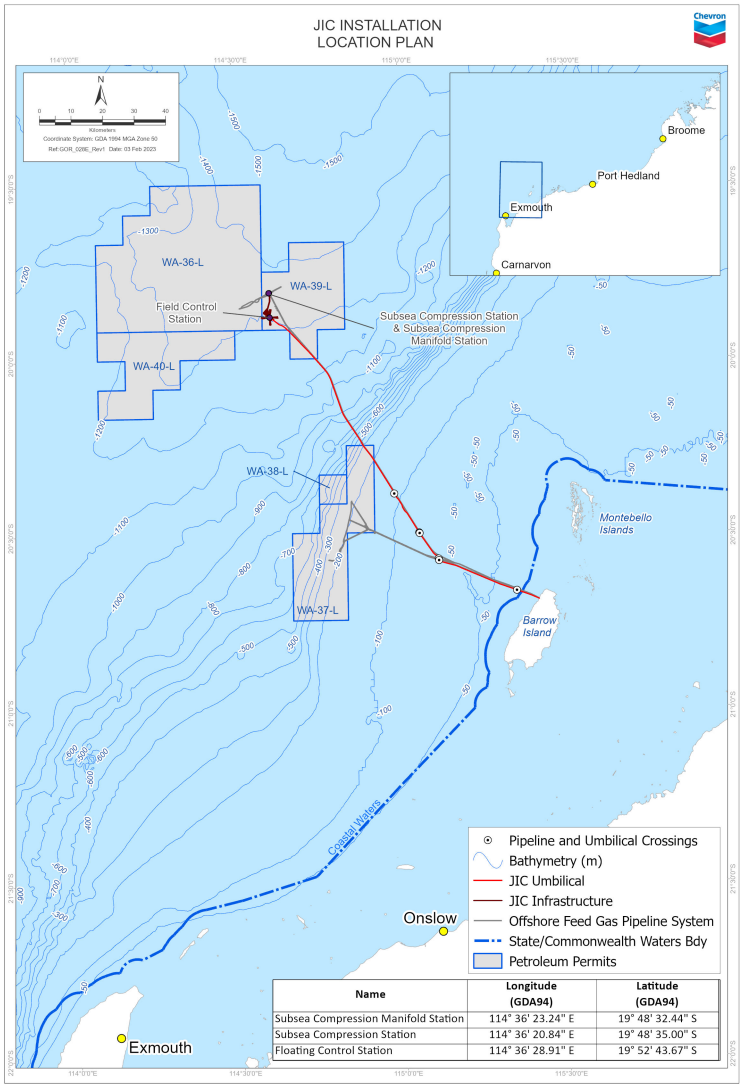


Figure 2: Jansz-Io Subsea Compression Infrastructure Installation Map

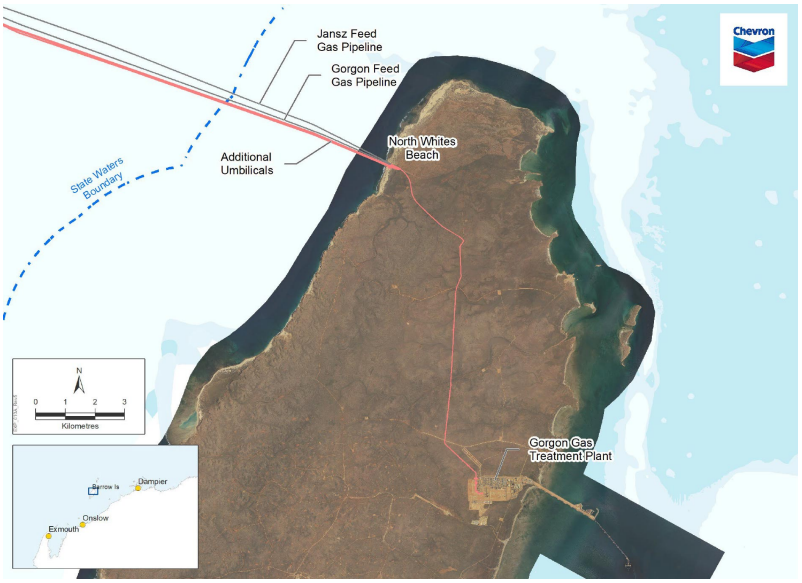


Figure 3: Jansz-Io Subsea Compression Infrastructure Installation Map (Onshore and State Waters)

Table 1: Jansz-Io Subsea Compression (J-IC) Infrastructure Details – view here

Table 2: Summary of impacts/risks and key proposed controls for installation activities – view here

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)

appendix d summary of relevant persons consultation

Table D-1: Summary of relevant persons objections/claims and titleholder response

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
Apache Fishing Charters	05/10/2022	CN-000536	Email	CAPL advised 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 advised 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.
	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.		
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 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 ACWA board. ACWA mentioned various areas that their members may be interested and concerned about. The ACWA was appreciative of CAPL's		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				approach and will revert back to CAPL with any questions they may have.		
	01/05/2023	OC-000424	Email	CAPL thanked the 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	CAPL considers the measures and controls in the EP address Archipelago Adventure's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
					they provide in the future (see Section 8.3.4.1)	
Ashburton Anglers	05/10/2022	CN-000536	Email	CAPL advised Ashburton Anglers 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 advised that 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 Ashburton Angler's functions, interests or activities. No changes required.
	08/05/2023	CN-000400	Email	CAPL sent a follow up email and advised the Ashburton Anglers 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 Ashburton Anglers that they welcome meaningful feedback.		
Australian Communications and Media Authority (ACMA)	05/10/2022	CN-000470	Email	CAPL advised 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 advised that 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.
	08/05/2023	CN-000402	Email	CAPL sent a follow up email and advised 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.		
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	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is	CAPL considers the measures and controls in the EP address ACF's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				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.	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)	
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 the ACPF 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 ACPF's functions, interests or activities. No changes required.
Australian Fisheries Management Authority (AFMA)	05/10/2022	CN-000271	Email	CAPL advised the Australian Fisheries Management Authority (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 notified AFMA that they welcome meaningful feedback. AFMA confirmed receipt of email and had no specific comments on the proposed activity. AFMA advised that it is important to consult with all fisheries who have entitlements to fish within the proposed area.	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.
	15/02/2023	CN-000214	Email	CAPL sent a follow up email to AFMA advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding		

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				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).		
Australian Hydrographic Office (AHO)	05/10/2022	CN-000272	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 notified the AHO that they welcome meaningful feedback. AHO acknowledged receipt of the information sheet and email. AHO notified CAPL that the information and data provided will be registered, assessed, prioritised and validated in preparation for updating 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.
	08/05/2023	CN-000416	Email	CAPL sent a follow up email advising AHO 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 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.		
Australian Institute of Marine Science (AIMS)	05/10/2022	CN-000470	Email	CAPL advised Australian Institute of Marine Science (AIMS) 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	No objection or claim raised regarding the activity impacts or risks.	CAPL considers the measures and controls in the EP address AIMS's functions, interests or activities. No changes required.

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				advised that 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)	
	04/05/2023	CN-000387	Email	CAPL sent a follow up email and advised AIMS 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 AIMS that they welcome meaningful feedback.		
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). 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)	05/10/2022	CN-000536	Email	CAPL advised Australian Maine Oil Spill Response Centre (AMOSC) 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 advised that 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	CAPL will notify AMOSC in the event of an emergency as per their request (see Section 8.3.4) CAPL considers the measures and controls in the EP address AMOSC's functions, interests or activities. No additional EP controls are required.
	04/05/2023	CN-000385	Email	CAPL sent a follow up email advising AMOSC 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		

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				regarding the activity. CAPL notified AMOSC that they welcome meaningful feedback.	they provide in the future (see Section 8.3.4.1)	
Australian Maritime Safety Authority (AMSA)	05/10/2022	CN-000470	Email	CAPL advised Australian Maritime Safety Authority (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 advised that that they welcome meaningful feedback.	In consultation in the course of preparing the EP, AMSA has provided no objection or claim in response to the proposed activity CAPL provided the shapefiles of the operational area for the activity as per AMSA's request. 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 Section 8.3.4, CAPL will notify AMSA's JRCC at least 24–48 hours before commencement of activity. CAPL considers the measures and controls in the EP address AMSA's functions, interests or activities. No additional EP controls are required.
	15/02/2023	CN-000537	Email	CAPL sent a follow up email to AMSA advising 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.		
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 seeked confirmation that ASBTIA would still like to be removed from the consultation list. No response was received.		

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Baiyungu Aboriginal Corporation	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. 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 referenced in Section 7.1, 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 as per their request. CAPL considers the measures and controls in the EP address BAC's functions, interests or activities. No additional EP controls are required.
	22/02/2023	OC-000323	Email	CAPL advised that they are interested in speaking to a representative of BAC about CAPL's activities.		
	13/03/2023	OC-000322	Email	CAPL engaged with BAC to express their gratitude for BAC's 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 exploring 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.		

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	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 the 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.		

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				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 it may wish to also engage with the DBCA who in partnership with Baiyungu people have joint management of the Ningaloo Coast. BAC supported CAPL approach of continuing to engage with NTGAC and BAC on the Engagement Plan.		
Blue Horizon Charters	05/10/2022	CN-000536	Email	CAPL advised Blue Horizon Charters 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 advised that 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 Blue Horizon Charters functions, interests or activities. No changes required.
	04/05/2023	CN-000386	Email	CAPL sent a follow up email to Blue Horizon Charters advising 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 Blue Horizon Charters that they welcome meaningful feedback.		
Blue Juice Charters	05/10/2022	CN-000536	Email	CAPL advised Blue Juice Charters 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 advised that that they welcome meaningful feedback.	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive	CAPL considers the measures and controls in the EP address Blue Juice Charters functions, interests or activities. No changes required.

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	04/05/2023	CN-000389	Email	CAPL sent a follow up email to Blue Juice Charters advising 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 Blue Juice Charters that they welcome meaningful feedback.	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)	
Blue Lightning Fishing Charters	05/10/2022	CN-000536	Email	CAPL advised Blue Lightning Fishing Charters 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 advised that 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 Blue Lightning Fishing Charters functions, interests or activities. No changes required.
	04/05/2023	CN-000390	Email	CAPL sent a follow up email to Blue Lightning Fishing Charters advising 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 Blue Lightning Fishing Charters that they welcome meaningful feedback.		
Bluesun2 Boat Charters	05/10/2022	CN-000536	Email	CAPL advised Bluesun 2 Boat Charters 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 advised that 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 Bluesun 2 Boat Charters functions, interests or activities. No changes required.
	04/05/2023	CN-000391	Email	CAPL sent a follow up email to Bluesun 2 Boat Charters advising 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 Bluesun 2 Boat Charters that they welcome meaningful feedback.		

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Boating Industry Association WA	05/10/2022	CN-000470	Email	CAPL advised the Boating Industry Association WA 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 advised that 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 Boating Industry Association WA's functions, interests or activities. No changes required.
	04/05/2023	CN-000392	Email	CAPL sent a follow up email to the Boating Industry Association WA advising 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 Boating Industry Association WA that they welcome meaningful feedback.		
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). 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 further objections or claims in response to the proposed activity. BTAC have requested to be included in ongoing	As referenced in Section 8.3.4, 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.
	05/10/2022	CN-000536	Email	CAPL advised BTAC 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		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				activity and advised that that they welcome meaningful feedback.	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 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 Environment Plan consultation requirement and develop a mutually agreed consultation process. A meeting was organised.		
	17/11/2022	OC-000479	Email	CAPL sent a follow-up email to BTAC requesting a meeting to discuss the upcoming offshore activities and Environment Plan consultation requirements along with a request to map a path forward in regard to co-design consultation. A meeting was confirmed.		
	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 Environment 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 met with BTAC and 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.		

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		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. CAPL corresponded with RFF Australia (representing BTAC) in relation to the CAPL's Environment 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 BTAC's 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 and for a summary of consultation.		

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	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 its 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.		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				• 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 NOPSEMA about the nature of BTAC's interests and values and how they may be affected by CAPL's activities.		

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	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 a final copy.		
	26/05/2023	OC-000556	Email	CAPL sent an 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 will be happy to arrange a meeting to discuss CAPL's activities at any time.		
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	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive	CAPL considers the measures and controls in the EP address Cape Immersion Tour's functions, interests or activities. No changes required.

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				the activity. CAPL notified Cape Immersion Tours that they welcome meaningful feedback.	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)	
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 the 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		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				activities. Care for Hedland responded with no specific concerns around CAPL activities, just general concerns around potential and 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). 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). 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	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive feedback, which is	CAPL considers the measures and controls in the EP address CWR's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				Research that they welcome meaningful feedback. CAPL followed up to ensure they received the formal notification regarding CAPL's activity.	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)	
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.		

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	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)	05/10/2022	CN-000470	Email	CAPL Commonwealth Fisheries Association (CFA) advised 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 advised that 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 CFA's functions, interests or activities. No changes required.
	14/03/2023	CN-000192	Email	CAPL sent a follow up email to CFA advising 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 the CFA that they welcome meaningful feedback.		
Conservation Council of WA (CCWA)	10/02/2023	CN-000225	Email	CAPL advised that the Conservation Council of Western Australia (CCWA) had been identified		

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				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 CCWA 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 CCWA's functions, interests or activities. No changes required.
	27/03/2023	CN-000159	Phone	CAPL contacted 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. CAPL followed up with CCWA to see if they have any feedback they would like to provide. No response was received.		
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	CAPL considers the measures and controls in the EP address Coral Bay Progress Association's functions, interests or activities. No changes required.

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	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.	ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	
	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	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	As referenced in Section 8.3.4, 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.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				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.	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)	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). 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)	05/10/2022	CN-000470	Email	CAPL advised the Department of Agriculture, Fisheries and Forestry (DAFF) 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 advised that 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	CAPL considers the measures and controls in the EP address Department of Agriculture, Fisheries and Forestry functions, interests or activities. No changes required.

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	15/02/2023	CN-000215	Email	CAPL sent a follow up email to DAFF advising 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 the DAFF that they welcome meaningful feedback.	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)	
Department of Biodiversity, Conservation and Attractions (DBCA)	05/10/2022	CN-000471	Email	CAPL advised the Department of Biodiversity, Conservation and Attractions (DBCA) 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 DBCA that they welcome meaningful feedback.	In consultation in the course of preparing the EP, DBCA 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). 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 DBCA's functions, interests or activities. No changes required.
	24/01/2023	OC-000108	Email	The Shire of Carnarvon provided a contact at 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 committees 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 sent a follow up email providing 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		

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				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 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 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	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 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 accordingly to ensure they meet the requirements and engage with the appropriate corporations.	In consultation in the course of preparing the EP, DCCEEW has provided no objection or claim in response to the proposed activity. DCCEEW 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	As referenced in Section 8.3.4, CAPL will notify DCCEEW before commencing the activity. CAPL considers the measures and controls in the EP address DCCEEW functions, interests or activities. No additional EP controls are required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
					they provide in the future (see Section 8.3.4.1)	
Department of Climate Change, Energy, the Environment and Water - Director of National Parks (DNP)	5/10/2022	CN-000156	Email	CAPL advised the Director of National Parks 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 Director of National Parks that they welcome meaningful feedback. DNP advised CAPL of the regulations of petroleum activities within marine management and park areas and that they would like to be part of ongoing consultation relating to the project. DNP notified CAPL that the activity is occurring within Montebello Marine Park Multiple Use Zone (IUCN VI) which is managed under the North-west Marine Parks Network Management Plan 2018. DNP requested further information on the below to assist in raising any relevant objections and claims: - Threatened species that is likely or known to occur within the proposed / likely operational area - Relevant recovery plans and threat abatement plans for species known or likely to be present - How the proposed activity operates in accordance with the and relevant plans, such as managing activity location and, or timing to avoid key threatened species behaviours. CAPL responded with listing the threatened species and the relevant recovery plans determined to be relevant for the proposed activity. CAPL also confirmed they will manage impacts and risk to marine turtles by aligning with management action A8.1 in the Recovery Plan for Marine Turtles. For Pygmy Blue Whales, CAPL are currently	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 Section 8.3.4, 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.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				conducting vessel noise modelling and will use the results of the modelling to inform the impact assessment in the EP. Management action A.2.3 of the Blue Whale Conservation Management Plan will be the key focus: 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. More broadly, impacts and risks to threatened species that may occur within the operational area will be managed through the following control measures: - implementation of the EPBC Regulations 2000 – Part 8, Division 1 - routine vessel discharges will be managed in accordance with MARPOL 73/78 and relevant Marine Orders - waste will be managed in accordance with a vessel waste management plan - in the event of an unplanned hydrocarbon release, Chevron's Australian Business Unit Consolidated Oil Pollution Emergency Plan and Operational and Scientific Monitoring Plan will be implemented as required. DNP had no further questions along with no objections or claims related to the activity and request that they be notified when the EP is published so they can review the risk assessment and mitigations.		
	15/02/2023	CN-000194	Email	CAPL sent a follow up email providing 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.		
Department of Defence (DoD)	05/10/2022	CN-000474	Email	CAPL advised 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	In consultation in the course of preparing the EP, DoD has provided no objection or	As referenced in Section 8.3.4, CAPL will notify the AHO no less than four weeks before commencing activity.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				overview of the activity in a factsheet. CAPL notified the relevant stakeholders that they welcome meaningful feedback. Department of Defence responded that the proposed area is located within the North-west Exercise Area (NWXA) and restricted airspace. CAPL is advised that unexploded ordnance (UXO) may be present on and in the sea floor within the NWXA and must therefore be aware of the risk associated with conducting activities in the area (for example, the detonation of UXO). Additionally, CAPL is advised that (a) all activities in there are conducted at its own risk; and (B) the Commonwealth of Australia, represented by the Department of Defence, takes no responsibility for (i) reporting the location and type of UXO that may be in the area (ii) identifying or removing any UXO from these areas; and (iii) any loss or damage suffered or incurred by CAPL or any third party arising out of, or directly related to, UXO in the area. To ensure CAPL's activities do not conflict with Defence training, Defence requires a minimum of 5 weeks notification prior to the commencement of activities and requested CAPL continue liaising with the Australian Hydrographic Service (AHS) for Notices to Mariners (NOTMAR), in particular ensure that the AHS is notified three weeks prior to the actual commencement of activities. This information is critical to maritime safety and reduces negative impacts on other maritime users.	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 DoD's functions, interests or activities. No additional EP controls are required.
	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		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				their website for further information regarding the activity. CAPL notified the DoD that they welcome meaningful feedback.		
	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 Department of Defence 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 providing a map of restricted airspace.		
Department of Mines, Industry Regulation and Safety (WA DMIRS)	05/10/2022	CN-000470	Email	CAPL advised the Department of Mines, Industry Regulation and Safely (DMIRS) that they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an	No objection or claim raised regarding the activity impacts or risks.	CAPL considers the measures and controls in the EP address DMIRS functions, interests or activities. No changes required.

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				overview of the activity and advised that 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)	
	09/05/2023	CN-000510	Email	CAPL sent a follow up meeting advising DMIRS that 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.		
Department of Primary Industries and Regional Development (WA DPIRD): Fisheries	05/10/2022	CN-000470	Email	CAPL advised Department of Primary Industries and Regional Development (DPIRD) 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 advised that 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 DPIRD's functions, interests or activities. No changes required.
	08/05/2023	CN-000453	Email	CAPL advised DPIRD 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 DPIRD that they welcome meaningful feedback.		

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Department of Transport (DoT) - Maritime Environmental Emergency Response (MEER) - Marine Pollution (formerly OSRC Unit)	05/10/2022	CN-000475	Email	CAPL advised the Department of Transport (DoT) Maritime Environmental Emergency Response Unit 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 advised the DoT that they welcome meaningful feedback. DoT advised CAPL of the requirements pertaining to spill events and to ensure the DoT is consulted.	In consultation in the course of preparing the EP, DoT - Maritime Environmental Emergency Response has provided no 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 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 Department of Transport (DoT) - Maritime Environmental Emergency Response in the event of an emergency as per their request. 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.
	15/02/2023	CN-000168	Email	CAPL sent a follow up email advising DoT 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 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).		
Department of Transport (DoT) - Navigational Safety	05/10/2022	CN-000470	Email	CAPL advised Department of Transport (DoT) - Navigational Safety 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 advised that that they welcome meaningful feedback.	In consultation in the course of preparing the EP, DoT – Navigational Safety has provided no objection or claim in response to the proposed activity.	As referenced in Section 8.3.4 and detailed in, CAPL will provide Department of Transport (DoT) - Navigational Safety ongoing consultation of the activity milestones as per their request.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
	23/03/2023	CN-000127	Email	CAPL sent a follow up email to DoT advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. CAPL notified DoT Navigational Safety that they welcome meaningful feedback. DoT acknowledged receipt of email and would like to be involved in consultation regarding the activity in State Waters.	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)	CAPL considers the measures and controls in the EP address DoT Navigational Safety's functions, interests or activities. No additional EP controls are required.
Department of Water & Environmental Regulation (DWER)	05/10/2022	OC-000184	Email	CAPL advised that the Department of Water and 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). 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.
	15/02/2023	CN-000210	Email	CAPL sent a follow up email advising that 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.		
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	CAPL considers the measures and controls in the EP address Glass Bottom Boat's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
					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)	
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). 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). 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	In consultation in the course of preparing the EP, ECCI has provided no objection or claim in response to the proposed activity.	CAPL considers the measures and controls in the EP address ECCI's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				CAPL for early consultation and relationship building.	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)	
	05/01/2023	OC-000542	Virtual Meeting	CAPL discussed the upcoming Environment Plan consultation for the activity and CAPL's membership with ECCI had been identified as a relevant person.		
		OC-000172	Email	CAPL thanked the ECCI 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 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 sent a follow up email providing 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. ECCI organised for CAPL's activity information to be sent out via the Exmouth Chamber of Commerce EDM. CAPL notified the ECCI 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 ECCI 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.		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
	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). 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 sent a follow up email advising that the 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). 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	CAPL considers the measures and controls in the EP address Exxon Mobil's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
					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)	
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 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. GDC would be pleased to meet with CAPL and a meeting was organised.	In consultation in the course of preparing the EP, Gascoyne Development 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)	CAPL considers the measures and controls in the EP address Gascoyne Development Commission's functions, interests or activities. No changes required.
	09/02/2023	CN-000105	Email	CAPL sent a follow up email advising 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 GDC 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 GDC 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 GDC has not expressed		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				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 activity. CAPL notified the GJCRC 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 Gascoyne Junction Community Resource Centre's functions, interests or activities. No changes required.
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). 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	CAPL considers the measures and controls in the EP address Image Dive and Charter's functions, interests or activities. No changes required.

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					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)	
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). 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 International Fund for Animal Welfare'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 further information regarding the activity. CAPL notified Jadestone 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). 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 Jadestone Energy's functions, interests or activities. No changes required.
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	In consultation in the course of preparing the EP, Karratha & Districts Chamber of Commerce and Industry has provided no	CAPL considers the measures and controls in the EP address Karratha & Districts Chamber of Commerce and Industry's functions, interests or activities.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				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.	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)	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	No objection or claim raised regarding the activity impacts or risks.	CAPL considers the measures and controls in the EP address Karratha Tourism and Visitor Centre's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				their website for further information regarding the activity. CAPL notified the Karratha Visitor Centre 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)	
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). 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). 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.

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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 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 Live Ningaloo's functions, interests or activities. No changes required.
	20/02/2023	CN-000201	Email	CAPL sent a follow up email to Live Ningaloo advising 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 Live Ningaloo that they welcome meaningful feedback.		
	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	05/10/2022	CN-000536	Email	CAPL advised Mackerel Islands & Onslow Beach Resort 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 advised that 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 Mackerel Islands and Onslow Beach Resort's functions, interests or activities. No changes required.
	20/02/2023	CN-000207	Email	CAPL sent a follow up emailing advising the Mackerel Islands & Onslow Beach Resort 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 & Onslow Beach Resort that they welcome meaningful feedback.		
Mahi Mahi Charters	05/10/2022	CN-000536	Email	CAPL advised Mahi Mahi Fishing Charters that they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an	No objection or claim raised regarding the activity impacts or risks.	CAPL considers the measures and controls in the EP address Mahi Mahi Charters functions, interests or activities.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				overview of the activity and advised that 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)	No changes required.
	04/05/2023	CN-000394	Email	CAPL sent a follow up email advising 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.		
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. 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	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		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				CAPL's activities and a keen interest in employment opportunities in the Pilbara.	will consider any feedback if they provide in the future (see Section 8.3.4.1)	
	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). 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 sent a follow up email to the 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 considers the measures and controls in the EP address the Member of Mining and Pastoral Region's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
	08/02/2023	CN-000408	Email	CAPL sent a follow up email advising that 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.	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)	
	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 24 February 2023. The member of the public said the newspaper	In consultation in the course of preparing the EP, the Member of the Public has provided no objection or	CAPL considers the measures and controls in the EP address the Member of the Public's functions, interests or activities.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				ad told her to call CAPL and the member of the public did not have any specific concerns related to CAPL's proposed activities.	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)	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 Environment that they welcome meaningful feedback.	In consultation in the course of preparing the EP, Minister for Environment 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 detailed in Section 8.3.4, 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 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	05/10/2022	CN-000536	Email	CAPL advised Montebello Island Safaris 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 advised that 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 considers the measures and controls in the EP address Montebello Island Safaris' functions, interests or activities. No changes required.
	04/05/2023	CN-000395	Email	CAPL sent a follow up email advising the Montebello Island Safaris had been identified as a relevant person with functions, interests or activities that may be affected by the activity.		

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				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.	CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	
Nganhurra Thanardi Garrbu Aboriginal Corporation	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 any further 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	As referenced in Section 8.3.4, CAPL will provide NTGAC ongoing consultation of the activity milestones as per their request. CAPL will also notify NTGAC in the event of an emergency as per their request. CAPL considers the measures and controls in the EP address NTGAC'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		

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				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. CAPL requested advice from NTGAC Board on whether there were cultural values and sensitivities within the EMBA that could be impacted in the case of an event. CAPL also requested advice from NTGAC Board as to whether there were other Relevant Persons that CAPL should contact as part of this process. CAPL offered to spend more time with NTGAC Board if necessary to both help to build the relationship but to also understand values and sensitivities.	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 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		

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				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 NTGAC. There was no answer so CAPL left a message to call back.		
		OB-000541	Email	CAPL advised 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		

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				submitted Environment Plans and commencement of activities. CAPL offered to discuss any issues further at NTGACs convenience.		
	13/06/2023	OC-000575	Email	CAPL reached out to NTGAC to confirm when they are expecting to engage an environmental specialist to review CAPL's offshore activity information sheet. NTGAC confirmed they have engaged an environmental specialist and YMAC confirmed the proposed consultation framework will be placed on hold pending the outcome of the review from the environmental specialist. CAPL reiterated they would like to build a relationship with NTGAC based on co-design that shapes how CAPL present information to NTGAC going forward and would be grateful if the proceed with the environmental specialist could continue in parallel with CAPL's continued consultation.		
	12/06/2023	OC-000576	Email	YMAC presented their draft consultation framework to CAPL. CAPL thanked YMAC/NTGAC for their time and acknowledged that CAPL are currently collaborating with a number of other PBC's to develop a plan around developing and managing our relationship and opportunities for collaboration so look forward to being able to do this with NTGAC as well. These plans are progressing well and we hope to finalise a number of them in the coming weeks. CAPL provided initial thoughts and feedback: - CAPL would like to build a relationship, we do not want to visit NTGAC when we need something. CAPL understand NTGAC are limited with time, however, CAPL would like to be able to discuss opportunities to meet NTGAC outside of consultations so that we can build and develop our relationship. The discussions with other PBC's are focused on creating what we are referring to as an		

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				"Engagement Plan" where we build events and activities in throughout the year. - CAPL's position on creating an Engagement Plan is that it is an opportunity for us to build a long term, enduring relationship based on trust and understanding. CAPL would like to be in a position where we can sit down with NTGAC to show our planned activities, i.e., occurring over the next 12-18 months, that require consultation, so that we can effectively plan future engagements with NTGAC. Through this process and as NTGAC's fluency for offshore activities increase, it might mean that there are other ways for us to engage, which could possibly take pressure off your board meetings or enable information to be more easily shared with members. - CAPL understand that the draft is generalised in nature, hence it is meant for many different proponents, however our consultation framework will need to be developed on the basis that our planned activities are offshore and there are no proposed activities or operations on the NTGAC determination. From a consultation perspective, CAPL's focus is on sharing how we prevent and mitigate unplanned risks and impacts on the draft consultation guideline.		
	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. YMAC requested CAPL provide initial feedback on the draft provided. CAPL confirmed desire to meet with NTGAC and YMAC to develop a framework for consultation.		
	30/06/2023	OC-000572	Phone	CAPL had a phone discussion with NTGAC with respect to developing engagement		

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				framework for ongoing consultation and relationship development.		
Ngarluma Aboriginal Corporation RNTBC	14/12/2022	OC-000342	Email	CAPL engaged with 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 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 Section 8.3.4, 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. 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.		

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				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 NAC regarding feedback following the board meeting. CAPL identified the importance of NAC 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 NAC to identify any missing information. CAPL requested another meeting to discuss other opportunities.		
Ngarluma Yindjibarndi Foundation Ltd	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 Section 8.3.4, 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. 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 CAPL's 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.		

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	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		

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				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	NYFL confirmed that there were no further comments to add to their response to CAPL's submission.		
	15/05/2023	OC-000524	Email	CAPL thanked NYFL for their time and consultation and ensured their commitment to ongoing 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,		

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				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. 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). 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	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	CAPL considers the measures and controls in the EP address NCWHAC's functions, interests or activities. No changes required.

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				May 2023 and would revert back to CAPL with any feedback. CAPL contacted The Committee to see whether there was any feedback from the Committee meeting. No response was received.	they provide in the future (see Section 8.3.4.1)	
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). 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). 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.		

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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). 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 n Dive's functions, interests or activities. No changes required.
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). 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). CAPL is committed to ongoing consultation and	CAPL considers the measures and controls in the EP address Northern Prawn Fishery's functions, interests or activities. No changes required.

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					will consider any feedback if they provide in the future (see Section 8.3.4.1)	
Oil Spill Response Limited (OSRL)	05/10/2022	CN-000536	Email	CAPL advised 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 advised that 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 will notify OSRL in the event of an emergency as per their request. CAPL considers the measures and controls in the EP address OSRL's functions, interests or activities. No additional EP controls are required.
	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.		
Onslow Chamber of Commerce and Industry - OCCI	05/10/2022	CN-000470	Email	CAPL advised 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 advised that that they welcome meaningful feedback.	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.
	17/01/2023	OC-000092	Email	CAPL advised the Onslow Chamber of Commerce and Industry (OCCI) 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.		
	23/01/2023	OC-000286	Virtual Meeting	CAPL met with the 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 OCCI to provide an overview of their new approach to consultation along with an update on their Environment Plans. CAPL provided guidance		

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				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 OCCI 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 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	OCCI advised their community of CAPL's information briefing on their proposed offshore activities.		
	18/03/2023	OC-000095	Email	OCCI 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). 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	No objection or claim raised regarding the activity impacts or risks.	CAPL considers the measures and controls in the EP address Pearl

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				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.	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)	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). 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 consult on the current Environment Plans. Pilbara Development Commission responded they would be pleased to meet with CAPL. A meeting was organised.	In consultation in the course of preparing the EP, Pilbara Development 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	CAPL considers the measures and controls in the EP address Pilbara Development Commission's functions, interests or activities. No changes required.
	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.		

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	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.	they provide in the future (see Section 8.3.4.1)	
	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	05/10/2022	CN-000155	Email	CAPL advised Pilbara Port Authority (PPA) 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 notified PPA that they welcome meaningful feedback. PPA notified CAPL with an update in contact details. CAPL sent the information sheet to the updated contact email address.	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 Pilbara Ports Authority's functions, interests or activities. No changes required.
	08/02/2023	CN-000236	Email	CAPL advised that 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.		
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).	CAPL considers the measures and controls in the EP address Protect Ningaloo's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
					CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	
Recfishwest (WA)	05/10/2022	CN-000470	Email	CAPL advised 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 advised that that they welcome meaningful feedback.	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 Recfishwest's functions, interests or activities. No changes required.
	03/11/2022	OC-000473	Email	Refishwest advised CAPL of the importance of the ecosystems surrounding the proposed activities and requested to be kept engaged with future updates regarding the activities. CAPL acknowledged receipt of email and advised Recfishwest of their intent to liaise accordingly.		
	24/02/2023	OC-000125	Email	CAPL advised 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.		
	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 provide an EDM for Recfishwest.		
	10/03/2023	OC-000185	Email	CAPL provided details of the activity and discussed the best method to circulate		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				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.		
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). 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	05/10/2022	CN-000536	Email	CAPL advised 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 advised that 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.
	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.		
	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		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				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). 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.
Shire of Ashburton (Pilbara)	05/10/2022	CN-000470	Email	CAPL advised 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 advised that that they welcome meaningful feedback.	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.
	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.		
	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		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. CAPL 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.		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
	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		

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				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.		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
	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.		
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). CAPL is committed to ongoing consultation and will consider any feedback if	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.		

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	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.	they provide in the future (see Section 8.3.4.1)	
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). 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	05/10/2022	CN-000536	Email	CAPL advised 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 advised that 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 Top Gun Charter's functions, interests or activities. No changes required.
	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.		
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	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 considers the measures and controls in the EP address Tourism Western Australia's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				current Environment Plans. Tourism Western Australia would be pleased to meet with CAPL and a meeting was organised.	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)	
	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). 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	No objection or claim raised regarding the activity impacts or risks. CAPL has provided a reasonable period to receive	CAPL considers the measures and controls in the EP address View Ningaloo's functions, interests or activities. No changes required.

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				the activity. CAPL notified the View Ningaloo that they welcome meaningful feedback.	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)	
	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	05/10/2022	CN-000536	Email	CAPL advised 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 advised that 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 Vocus Communications' functions, interests or activities. No changes required.
	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.		
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	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.		

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
	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.	they provide in the future (see Section 8.3.4.1)	
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). 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)	01/11/2022	OB-000545	Email	CAPL advised WAFIC had been identified as a relevant person with functions, interests or activities that may be affected by the activity. WAFIC responded with queries regarding how the materials will be soured and the quarantine requirements if it is coming from overseas. CAPL responded that the umbilicals and other subsea structures will be manufactured overseas and brought into Australia dry, so the equipment itself should not present a pathway for introduction of invasive marine pests (IMP). The focus for IMP risk management will be on biofouling and ballast water from vessels and this will be managed through CAPL's Quarantine Marine Vessels and compliance with the Biosecurity Act 2015. CAPL also have the Gorgon Terrestrial and Marine Quarantine Management System (QMS), which outlines measures to prevent introduction of both terrestrial non-indigenous species (INS) to Barrow Island and IMP to the surrounding waters. The QMS was due for revision in March this year and is currently	In consultation in the course of preparing the EP, WAFIC requested further information regarding if the umbilicals and subsea equipment will be sourced locally or overseas along with quarantine requirements. WAFIC had no objection or claim raised regarding the activity impacts or risks and WAFIC also confirmed that no further feedback, objections or claims had been received from the fishers. CAPL is committed to ongoing consultation. CAPL notes that further feedback may be received as part of	As referenced in Section 8.3.4, 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. CAPL considers the measures and controls in the EP address WAFIC's functions, interests or activities. No changes required.

Relevant Person	Interaction Date	Record ID	Method	Summary	Assessment of Objection/Claim	Changes made to EP in response to consultation
				being assessed by the State and Commonwealth Regulators, however changes were mostly administrative and the version currently on the CAPL's website is accurate for the most part. As the rock armour could potentially provide a pathway of exposure for the introduction of soil and NIS to Barrow Island, controls will be in place for the rock used within 500m of the coast and infrastructure contiguous with Barrow Island (termed the Barrow Island Marine Quarantine Controlled Access Zone) to ensure its clean and free from quarantine risk material.	ongoing consultation. CAPL will consider any feedback if they provide in the future (see Section 8.3.4.1)	
	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.		
	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.		

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		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.		
	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.		

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				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). 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	No objection or claim raised regarding the activity impacts or risks.	CAPL considers the measures and controls in the EP address Western Gas' functions, interests or activities.

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				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.	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)	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, Western Rock Lobster Council 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 Western Rock Lobster Council's functions, interests or activities. No changes required.
	08/02/2023	CN-000411	Email	CAPL advised 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.		
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).	CAPL considers the measures and controls in the EP address Whale and Dolphin Conservation Society's functions, interests or activities. No changes required.

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	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.	CAPL is committed to ongoing consultation and will consider any feedback if they provide in the future (see Section 8.3.4.1)	
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). 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 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.		
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). 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	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	CAPL considers the measures and controls in the EP address Wirrawandi Aboriginal Corporation functions, interests or activities.

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	30/11/2022	OC-000372	Virtual Meeting	CAPL advised WAC of the new NOPSEMA consultation requirements, CAPL's Environment 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.	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)	No changes required.
	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, drafting up an 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. The Board meeting did not go ahead as CAPL met with WAC Chair on the 10th of January instead.		

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	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 WAC to present an overview of their upcoming offshore activities and to discuss the re-building of the relationship between CAPL and Wirrawandi. 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 Wirriwandi 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 a follow up email advising that WAC 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		

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				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		

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				• 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:		

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				- 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 WA, 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 and to ensure emergency response plans are well informed.		

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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	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	As referenced Section 8.3.4, 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. CAPL considers the measures and controls in the EP address Yinggarda Aboriginal Corporation functions, interests or activities.
	07/03/2023	OC-000327	Email	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.		

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				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.	they provide in the future (see Section 8.3.4.1)	
		OC-000337	Phone	CAPL spoke with representatives of 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 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		

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				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.		

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	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		

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				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.		