Gorgon Gas Development

Geryon and Eurytion pipelay, subsea installation, and pre-commissioning environment plan

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1 Environment plan summary

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

To fulfil the requirements of an EP summary for public disclosure, as required by regulations 35(6) and 35(7), Table 1-1 has been prepared from material provided in this EP, and in the EP summary statement format preferred by NOPSEMA (Ref. 1).

Table 1-1: Environment Plan summary

Regulation	EP summary material requirement	Relevant section of this EP
35(7)(a)(i)	the location of the activity.	Sections 2.2 and 4.1.1.
35(7)(a)(ii)	a description of the receiving environment.	Section 5.
35(7)(a)(iii)	a description of the activity.	Section 4.
35(7)(a)(iv)	details of environmental impact and risks.	Section 8.
35(7)(a)(v)	a summary of control measures for the activity.	Section 8.
35(7)(a)(vi)	a summary of the arrangements for ongoing monitoring of the titleholder's environmental performance.	Section 10.
35(7)(a)(vii)	a summary of the response arrangements in the oil pollution emergency plan.	Sections 9.4, 10.3.9 and the Oil Pollution Emergency Plan (OPEP) (Ref. 2).
35(7)(a)(viii)	details of consultation already undertaken, and plans for ongoing consultation.	Sections 7 and 10.3.4.
35(7)(a)(ix)	details of the titleholder's nominated liaison for the activity.	Section 2.4.

2 Introduction

2.1 Overview

Chevron Australia Pty Ltd (CAPL), acting on behalf of the Gorgon Joint Venturers, is the operator of the Gorgon Gas Development, located off the northwest coast of Western Australia (WA).

The first phase of the Gorgon Gas Development, the Gorgon Foundation Project[1] (GFP), comprises the production of natural gas from the Gorgon and Jansz-Io fields. Hydrocarbon is transported from the offshore gas fields via two subsea pipeline networks to the Gas Treatment Plant (GTP) on Barrow Island, where it is processed for export as liquefied natural gas (LNG) or piped to the mainland for WA domestic gas users. This phase of the Gorgon Gas Development commenced operation in 2015.

The next phase of the development, the Backfill Fields Development, comprises the production of natural gas from seven backfill fields: Chandon, Chrysaor, Dionysus, Eurytion, Geryon, Semele, and West Tryal Rocks. The purpose of the Backfill Fields Development is to maintain gas supply to the existing GTP on Barrow Island to sustain production rates of LNG and domestic gas. All the backfill fields are subsea tie-back developments connecting to GFP infrastructure. These backfill fields are covered by the *Gorgon Gas Development: Backfill Fields Offshore Project Proposal (OPP)* (Ref. 3) which was accepted by NOPSEMA in October 2025.

The first of the backfill fields to be developed are the Geryon and Eurytion (G&E) gas fields, referred to as Gorgon Stage 3 (GS3). To maintain gas supply to the Gorgon GTP, and sustain current production rates, CAPL is proposing to install a production flowline, Mono Ethylene Glycol (MEG) pipeline, umbilical, and associated subsea infrastructure at the G&E fields, tied back to the GFP infrastructure within the Jansz-Io field. CAPL also proposes to install an umbilical (Jansz infield umbilical) to provide power and communications to the Jansz-Io fields, which forms part of the GFP. This EP documents the assessment and management of potential environmental impacts and risks associated with installation and pre-commissioning activities, as well as contingency inspection, maintenance, and repair (IMR) activities conducted in Commonwealth waters.

This EP has been prepared and submitted to NOPSEMA in accordance with the requirements of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth) (OPGGS Act) and the OPGGS(E)R.

2.2 Location

The G&E gas fields are located in the North Carnarvon Basin and ~80 km offshore from the closest island (Montebello Islands) and ~184 km from Onslow on the mainland coast (Figure 2-1).

The proposed subsea infrastructure is located within production licenses WA-39-L and WA-66-L[2]. See Section 4.1.1 for definition of the ‘Operational Area’ (OA) for the petroleum activity.

[1] The GFP includes the Gorgon Stage 2 (GS2) infill development and the J-IC Project.

[2] An application has been submitted to the National Offshore Petroleum Titles Administrator (NOPTA) to request a pipeline licence.

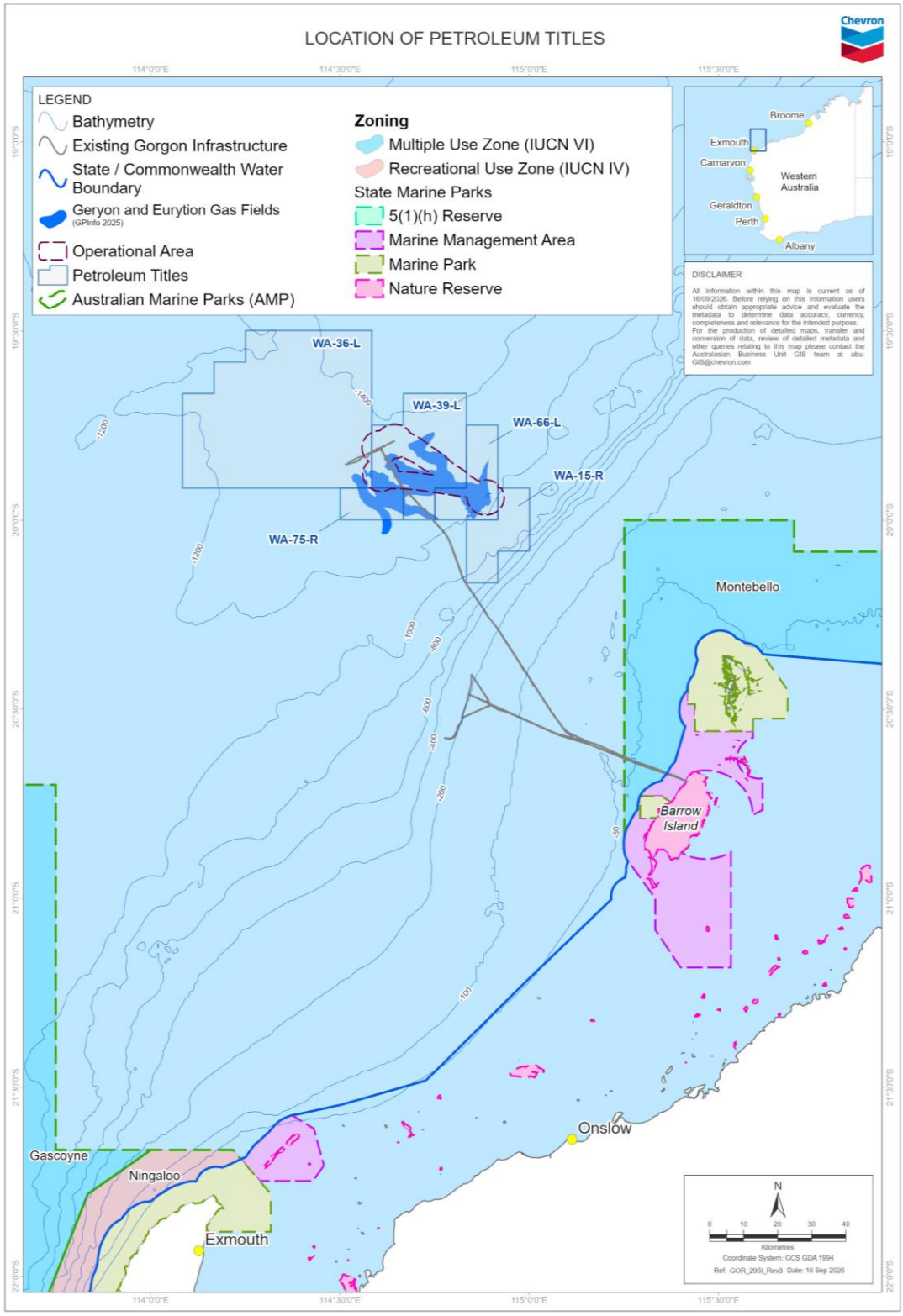


Figure 2-1: Location of petroleum titles

2.3 Scope

2.3.1 In scope

This EP addresses activities in Commonwealth waters associated with:

- installation and pre-commissioning of G&E production flowline and MEG pipeline
- installation and pre-commissioning of G&E subsea infrastructure
- installation and pre-commissioning of Jansz infield umbilical and associated subsea infrastructure
- Field Control Station (FCS) integration
- commissioning and start-up of G&E and Jansz infield umbilicals
- contingency IMR
- support activities.

2.3.2 Outside of scope

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

- vessels (including emergency response vessels) operating outside of the OA (e.g. transiting to or from the OA); these vessels are subject to the *Navigation Act 2012* (Cth) and not performing the petroleum activity
- helicopters operating outside of the OA (e.g. transiting to or from the OA); these aircraft are subject to the *Air Navigation Act 1920* (Cth) and *Civil Aviation Act 1998* (Cth) and not performing the petroleum activity
- commissioning, start-up and operations of G&E infrastructure, except G&E umbilical
- pre-commissioning, commissioning, and start-up of the FCS, which are covered under the NOPSEMA-accepted *Gorgon gas development pipeline and subsea infrastructure installation and pre-commissioning EP* (Ref. 4)
- commissioning, start-up, and operation of Jansz-Io Compression (J-IC) infrastructure which are covered under a revision to the existing NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations EP* (Ref. 5)
- end of facility life decommissioning.

2.4 Titleholder details

In accordance with regulations 23(1) and 23(2) of the OPGGS(E)R, details of the titleholders and titleholder's nominated liaison are provided in Table 2-1 and Table 2-2 respectively.

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

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

Table 2-1: Details of titleholder

Title	Type	Titleholders	Operator
WA-66-L	Production licence	Chevron Australia Pty Ltd Mobil Australia Resources Company Pty Limited Shell Australia Pty Ltd Osaka Gas Gorgon Pty Ltd MidOcean Gorgon Pty Ltd JERA Gorgon Pty Ltd	Chevron Australia Pty Ltd Business address: 1 The Esplanade, Perth WA 6000 Telephone: +61 8 9216 4000 Fax: +61 8 9216 4444 ACN: 086 197 757
WA-39-L	Production licence		

Table 2-2: Details of nominated liaison

Name	George Siappas
Position	Project Manager
Business address	1 The Esplanade, Perth WA 6000
Telephone	+61 8 9216 4000
Email	feedback@chevron.com

3 Environmental management framework

3.1 Corporate framework

CAPL's operations are managed in accordance with Chevron Corporation's Operational Excellence Management System (OEMS), which is described in Section 10.

3.1.1 Environmental policy

CAPL's commitment to environmental management in all aspects of operations is documented in Chevron Corporation's Operational Excellence (OE) Policy 530 (appendix a).

3.2 Relevant requirements

This section provides a description of the requirements, including legislative requirements, that apply to the petroleum activity and are relevant to the environmental management of the petroleum activity as required by regulation 21(4) of the OPGGS(E)R.

3.2.1 Offshore Petroleum and Greenhouse Gas Storage Act 2006

The OPGGS Act and associated regulations provide the legal framework for the exploration and recovery of petroleum in offshore areas[3]. Regulations made under this Act include the OPGGS(E)R.

The object of the OPGGS(E)R is to ensure that any petroleum activity carried out in an offshore area is carried out in a manner:

- consistent with the principles of ecologically sustainable development (ESD) set out in section 3A of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- by which the environmental impacts and risks of the activity will be reduced to as low as reasonably practicable (ALARP)
- by which the environmental impacts and risks of the activity will be of an acceptable level.

Part 4 of the OPGGS(E)R describes requirements relating to EPs, including the requirement for a titleholder to have an accepted EP in place prior to the commencement of any petroleum activity in an offshore area (Division 1); the content requirements of an EP (Division 2); and the consultation requirements during preparation of an EP (Division 3).

Division 4 of Part 4 of the OPGGS(E)R describes the submission process of an EP. In particular, regulation 26(3) provides that a titleholder may submit an EP for a petroleum activity that is, or is part of, an offshore project[4], only if:

- there is a NOPSEMA accepted OPP that includes that petroleum activity, or
- the Commonwealth Environment Minister has:

[3] The OPGGS Act defines an 'offshore area' as (a) starts 3 nautical miles (nm) from the baseline from which the breadth of the territorial sea is measured, and (b) extends seaward to the outer limits of the continental shelf.

[4] The OPGGS(E)R defines an 'offshore project' as one or more activities that are undertaken for the purpose of the recovery of petroleum, other than on an appraisal basis, including any conveyance of recovered petroleum by pipeline (whether or not the activity is undertaken for other purposes).

- made a decision under section 75 of the EPBC Act that an action that is equivalent to or includes the activity is not a controlled action, or
- made a component decision under section 77A of the EPBC Act that a particular provision of Part 3 of that Act is not a controlling provision for an action that is equivalent to or includes the activity, because the Environment Minister believes the action will be taken in a particular manner, or
- approved, under Part 9 of the EPBC Act, the taking of an action that is equivalent to or includes the activity.

This EP[5] has been prepared in accordance with the relevant content and consultation requirements of the OPGGS(E)R. The petroleum activity covered by this EP is considered part of the offshore project described within the *Gorgon Gas Development: Backfill Fields OPP* (Ref. 3), which was accepted by NOPSEMA in October 2025[6].

A concordance table for relevant requirements from the OPP that are relevant to the petroleum activity within this EP are summarised in appendix b.

3.2.2 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act and the Environment Protection and Biodiversity Conservation Regulations 2000 (EPBC Regulations) are Australia's main national environmental legislation, and provide for the protection and management of nationally and internationally important plants, animals, habitats, and places. The objects of the EPBC Act include:

- to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance (MNES)
- to promote ESD through the conservation and ecologically sustainable use of natural resources
- to promote the conservation of biodiversity
- to provide for the protection and conservation of heritage.

Under section 146B of the EPBC Act, the Commonwealth Minister for the Environment endorsed the environmental management authorisation process for offshore petroleum and greenhouse gas activities administered by NOPSEMA under the OPGGS Act and the OPGGS(E)R ('the Program') in February 2014. The effect of this streamlined environmental approvals process is that petroleum activities within the classes of actions covered by the Program are no longer subject to a separate environmental approval process under the EPBC Act, as the NOPSEMA-administered OPGGS(E)R process is treated as an accredited process for those actions (Ref. 7). The Program ensures that potential impacts and risks to matters protected under Part 3 of the EPBC Act are assessed and managed so that they are not unacceptable (Ref. 7).

[5] The EP submission also includes an OPEP (Ref. 2) and Operational and Scientific Monitoring Bridging Implementation Plan (OSM-BIP; Ref. 6)

[6] The Backfill Fields Development OPP is publicly available on NOPSEMA's website: https://info.nopsema.gov.au/offshore_projects/51/show_public.

3.2.2.1 recovery plans, conservation advices, threat abatement plans, and wildlife conservation plans

Under Part 13 of the EPBC Act, listed threatened species and ecological communities are managed through recovery plans, conservation advices, or threat abatement plans; and listed migratory, marine, cetacean or conservation dependent species are managed through wildlife conservation plans. These instruments provide guidance on threats (or threatening processes) and recommend management and mitigation actions.

Of these instruments, recovery plans are legally binding on the Australian Government; i.e. once a recovery plan is in place, Australian Government agencies must act in accordance with that plan. The other instruments (conservation advices, threat abatement plans, and wildlife conservation plans) provide guidance that informs proponents and the Australian Government.

The relevant requirements of these instruments and where these have been considered within the EP are summarised in appendix c.

3.2.3 Other Commonwealth legislation

Table 3-1 summarises other Commonwealth legislation relevant to the environmental management of the petroleum activity.

3.2.4 State legislation

Although the petroleum activity occurs in Commonwealth waters, some State legislation is also relevant to the environmental management of the petroleum activity (Table 3-2).

3.2.5 Policies and guidelines

Table 3-3 summarises Australian Government and/or international policies and guidelines that are relevant to the environmental management of the petroleum activity.

Table 3-1: Relevant Commonwealth legislative requirements

Legislation	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met
Australian Maritime Safety Authority Act 1990	The objects of this Act include: • promote maritime safety • protect the marine environment from pollution from ships or other environmental damage caused by shipping • 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 OPEP (Ref. 2).
Biosecurity Act 2015 Biosecurity Regulations 2016	The objects of this Act include to provide for the managing of: • biosecurity risks • risks related to ballast water. The Act also gives effect to Australia's international obligations under the Ballast Water Convention, and the United Nations Convention on the Law of the Sea.	Pre-arrival reporting (PAR) prior to arrival in Australian territory.	Section 8.12.
		Ballast water and biofouling management.	Section 8.12.
Industrial Chemicals Environmental Management (Register) Act 2021 Industrial Chemicals Environmental Management (Register) Instrument 2022	This Act provides for the establishment of the Industrial Chemicals Environmental Management Standard (IChEMS) and its associated Register. The IChEMS establishes nationally consistent standards for managing the import, manufacture, export, use, and disposal of industrial chemicals. Industrial chemicals will be listed on the IChEMS Register in one of seven schedules according to their environmental risk. The regulation and enforcement of IChEMS relies on the Commonwealth, States and Territories adopting them into their environmental laws.	Risk management measures identified under IChEMS may have implications for the use or disposal of industrial chemicals during the petroleum activity[7].	Sections 8.8 and 8.9.
National Greenhouse and Energy Reporting Act 2007 (NGER Act)	This Act establishes the national scheme for the reporting of Greenhouse gas (GHG) emissions, energy production and energy consumption.	Facilities that trigger the 100,000 t per annum CO_2-e Safeguard Mechanism threshold will need to comply with requirements of the Act, including energy	Section 8.4.

[7] Note: Planned discharges to the marine environment are subject to selection and environmental assessment as per CAPL's Hazardous Materials Management Procedure (Ref. 8).

Legislation	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met
National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Safeguard Rule)	The emissions reductions established under the Safeguard Mechanism are designed to deliver emissions reductions consistent with Australia's Nationally Determined Contributions (NDC) under the Paris Agreement.	and GHG reporting, and meeting any net emissions targets or baselines. Any new gas fields, as defined under the Safeguard Rule, will be required to meet net-zero reservoir carbon emissions.	
Navigation Act 2012 Various marine orders	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) and the International Convention for the Safety of Life at Sea (SOLAS).	Notice to Mariners.	Sections 8.1 and 8.15.
		Marine Order 15: Construction—Fire protection, fire detection and fire extinction.	Section 8.8.
		Marine Order 27: Safety of navigation and radio equipment.	Sections 8.1 and 8.15.
		Marine Order 28: Operations standards and procedures.	Sections 8.1 and 8.15.
		Marine Order 30: Prevention of collisions.	Sections 8.1 and 8.15.
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 91: Marine pollution prevention—oil.	Sections 8.14 and 8.15.
		Marine Order 95: Marine pollution prevention—garbage.	Section 8.13.
		Marine Order 96: Marine pollution prevention—sewage.	Section 8.8.
		Marine Order 97: Marine pollution prevention—air pollution.	Sections 8.3 and 8.4.
		Marine Order 98: Marine pollution prevention—antifouling systems.	Section 8.12.
Underwater Cultural Heritage Act 2018 (UCH Act)	This Act protects the heritage values of shipwrecks, sunken aircraft, and relics (>75 years old) in Australian Commonwealth waters from the low water mark to the outer edge of the continental shelf (excluding the State's internal waterways).	Identification of the presence of protected cultural heritage sites and assessment of any impacts and risks to these sites.	Sections 5, 8.2 and 8.11.

Legislation	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met
	The Act allows for protection through the designation of protection zones. Activities and conduct prohibited within each zone will be specified.		

Table 3-2: Relevant State legislative requirements

Legislation	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met
Aboriginal Heritage Act 1972	This Act recognises and protects Aboriginal cultural sites and objects of significance. Approval is required for activities that adversely impact Aboriginal cultural sites.	Identification of the presence of Aboriginal cultural heritage sites and assessment of potential impacts and risks.	Sections 5, 8.2 and 8.11.
Conservation and Land Management Act 1984 (CALM Act)	This Act regulates the use, protection and management of certain public lands and waters, including the conservation of flora and fauna within those areas.	Identification of State marine or terrestrial protected areas managed under the CALM Act and, where relevant, assessment of potential impacts and risks.	Sections 5, 8.2 and 8.11

Table 3-3: Relevant requirements from policies, standards, and guidelines

Policy or guideline	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met/applied
Assessing and managing impacts to Underwater Cultural Heritage in Australian Waters (Ref. 9)	Provides guidance on identifying, assessing, and protecting underwater cultural heritage. Includes guidance proponents can comply with the UCH Act.	Guidance in the identification of the presence of protected cultural heritage sites and assessment of any impacts and risks to these sites. Used as guidance for CAPL's *Inadvertent Underwater Cultural Heritage Discovery Procedure* (Ref. 10).	Sections 5, 8.2 and 8.11
Australian Ballast Water Management Requirements (Ref. 11)	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 8.12

Policy or guideline	Description	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met/applied
Australian Biofouling Management Requirements (Ref. 12)	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 8.12
National Biofouling Management Guidance for the Petroleum Production and Exploration Industry (Ref. 13)	A voluntary biofouling management guidance document has been developed to assist industry manage the risk of marine pest translocation and introduction via biofouling.	Guidance for evaluating the biofouling risk of types of structures and facilities; and on biofouling management and decommissioning. Used as guidance for CAPL's *Quarantine Procedure Marine Vessels* (Ref. 14).	Section 8.12
National Light Pollution Guidelines for Wildlife (Ref. 15)	Outlines the process to be followed where there is the potential for artificial lighting to affect light-sensitive wildlife. Applies to new projects, lighting upgrades, and where there is evidence of wildlife being affected by existing artificial light.	Guidance for impact assessment, and identifying management tools to minimise and mitigate impacts and risks from artificial light to light-sensitive species.	Section 8.5.
National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna (Ref. 16)	Provides a guiding framework for identifying species most at risk of vessel collision, areas where these species are most at risk of vessel collision, and appropriate mitigation measures to reduce the risk of vessel collisions with marine megafauna.	Guidance on understanding and reducing the risk of vessel collisions and the impacts they may have on marine megafauna.	Section 8.10

4 Description of the petroleum activity

4.1 Overview

This section provides a description of the petroleum activity as required by regulation 21(1) of the OPGGS(E)R, and is presented in the following sub-sections:

- installation of flowline and pipeline—includes G&E production flowline, MEG pipeline, pipeline end terminations (PLETs) / pipeline end manifolds (PLEMs) and associated structures and supports (Section 4.2)
- installation of subsea infrastructure—includes G&E flexible jumpers, rigid spools and jumpers, umbilical and flying leads (Section 4.3) and Jansz infield umbilical (Section 4.7) and associated structures and supports
- FCS integration (Section 4.4)
- pre-commissioning (Section 4.6)
- contingency IMR—includes subsea inspections activities that may be required prior to commissioning, start-up and operations (Section 4.9)
- support activities—includes use of vessels, helicopters, and remotely operated vehicles (ROVs) or autonomous underwater vehicles (AUVs) to support above activities (Section 4.10)
- decommissioning—overview of early decommissioning planning and regulatory obligations (Section 4.12).

An overview of the G&E field layout is provided in Figure 4-2.

4.1.1 Operational area

The OA for the petroleum activity (Figure 4-1) is defined by:

- an ~5 km corridor centred over the proposed location of the G&E production flowline, MEG pipeline, and umbilicals (i.e. 2.5 km either side)
- an ~5 km radius buffer around the GFP tie-in locations (Jansz DC-2, J-IC Subsea Compression Manifold Structure [SCMS], and J-IC FCS) and proposed G&E infrastructure locations within the G&E fields.

The OA occurs predominantly within production licences WA-39-L and WA-66-L, where the proposed infrastructure will be installed. A small portion of the OA extends into CAPL's adjacent production licence WA-36-L and retention leases WA-75-R and WA-15-R, where activities will be limited to vessel-based operations. It is within this OA that the petroleum activity, defined within Section 4 of this EP, will be undertaken.

There will be a request to other marine users for a 500 m safe navigation area (SNA) around the vessels and any deployed equipment during the petroleum activity. The OA encompasses this SNA.

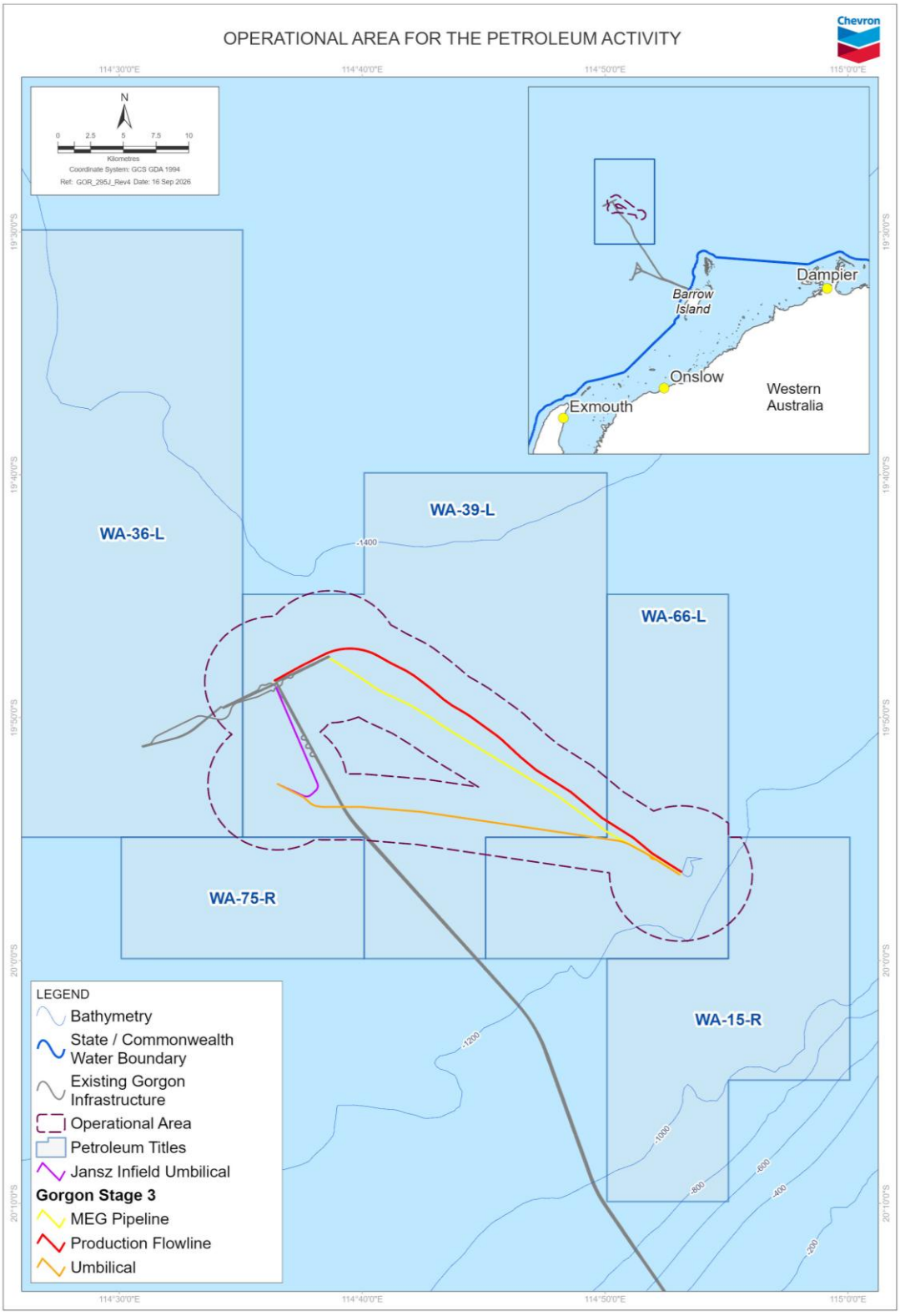


Figure 4-1: Operational area for the petroleum activity

4.1.2 Timing

The petroleum activity is indicatively scheduled to commence from 2027 and will occur over multiple campaigns. Table 4-1 provides indicative durations and a potential timing windows within which the planned activities are expected to be undertaken. These durations and timings are indicative and subject to change (e.g. due to potential delays caused by vessel, infrastructure and/or equipment availability, regulatory approvals, weather events, or other unforeseen factors). Therefore, the petroleum activity may occur at any time over the 5-year in-force period of this EP.

IMR activities are not planned to occur during the in-force period of this EP; however, they are included as a contingency, if required. For the purposes of assessing potential environmental impacts and risks in this EP, CAPL has allowed for ~30 days of subsea inspections and potential remediation to occur during the in-force period of this EP.

The petroleum activity covered by this EP can be conducted 24 hours a day, 7 days a week.

The EP has evaluated potential environmental impacts and risks associated with the petroleum activity occurring at any time during the day (i.e. 24 hours a day) and at any time during the year (i.e. during any season) to provide operational flexibility for potential schedule changes.

Table 4-1: Indicative activity schedule

Activity	EP Section	Indicative number of vessels[8]	Indicative timing[9]	Indicative duration[10]
Installation of production flowline and MEG pipeline				
Pre-lay surveys and pre-lay works	Sections 4.2.1, 4.2.2, 4.2.3, and 4.2.3.5 (if suction pile used for pipeline initiation)	1 x Vessel (e.g. Construction Support Vessel [CSV], Anchor Handling Tug [AHT])* (*These activities are undertaken sequentially; there is only one CSV/AHT in use during the campaign)	Q3–Q4 2027	~60 days
	Section 4.2.3.5 (if dead man anchor [DMA] used for pipeline initiation)	1 x Vessel (e.g. AHT* or Pipelay vessel [PLV])	Q3–Q4 2027	~2 days
Production flowline and PLETs	Section 4.2.4.	1 x PLV 1 x CSV/AHT* 2 x Pipe Supply Vessels (PSVs)	Q3–Q4 2027	~60 days
MEG pipeline and PLEMs				
As-laid surveys	Section 4.2.5.	1 x CSV/AHT*	Q3–Q4 2027	~15 days
Post-lay works	Section 4.2.6.	1 x Vessel* (e.g. CSV/AHT*, Multi-purpose Support Vessel [MSV], or Light Construction Vessel [LCV])	As required	~7 days
Non-intrusive inspection (NII) equipment	Section 4.2.7.	1 x MSV (or equivalent)	Q4 2028	~3 days
Installation of subsea infrastructure				
Pre-installation works	Section 4.3.1.	1 x MSV (or equivalent)	Q2 2027–Q2 2028	~8 days
Pre-lay surveys and acoustic positioning equipment and metrology	Sections 4.3.2 and 4.3.3.	1 x Heavy Construction Vessel (HCV)^	Q3–Q4 2028	~15 days

[8] Not all vessels will remain in the OA for the provided activity duration. For example, transport (e.g. PSVs or DPTV) or general supply vessels (which are not shown in the above table) may be on-site for shorter durations than main construction/installation vessels for the same scope of work.

[9] The indicative windows shown in the table are approximate only and are subject to changes in schedule caused by weather events, vessel, infrastructure and/or equipment availability, SIMOPS and other unforeseen factors.

[10] Indicative durations shown in the table are approximate only, and subject to changes caused by weather events, SIMOPS and other unforeseen factors.

Activity	EP Section	Indicative number of vessels[8]	Indicative timing[9]	Indicative duration[10]
Installation of structures and supports	Section 4.3.4.	1 x HCV^ 1 x Dynamically Positioned Transportation Vessel (DPTV)^ (^Activities are undertaken sequentially; there is only one HCV, one DPTV, and one LCV in use during the campaign)	Q3 2028	~15 days
Installation of flexible jumpers	Section 4.3.5.	1 x HCV^	Q3–Q4 2028	~35 days
Installation of rigid spools and jumpers	Section 4.3.6.	1 x HCV^ 1 x DPTV^	Q4 2028	~20 days
		1 x vessel (e.g. HCV/LCV^)		~10 days
Installation of G&E umbilical	Section 4.3.7.	1 x HCV^	Q4 2028	~10 days
Flying leads	Section 4.3.8.	1 x Vessel (e.g. HCV/LCV^)	Q4 2028	~13 days
As-laid surveys	Sections 4.3.9.	1 x Vessel (e.g. HCV/LCV^)	As required	~7 days
As-built surveys	Sections 4.3.10.	1 x Vessel (e.g. HCV/LCV^)	Q4 2028	~7 days
FCS integration				
FCS integration	Section 4.4.	N/A	Q4 2028	~60 days
Pre-commissioning[11]				
Testing	Section 4.4	1 x CSV/AHT*	Q3–Q4 2027	~2 days
		1 x HCV or LCV	As required	~6 days
Production flowline–Contingency flooding, cleaning, gauging (FCG) and/or pressure testing	Section 4.6.1.2.	1 x Vessel (e.g. CSV/AHT*, HCV, or LCV)	Q4 2027–Q3 2029	~10 days
Production flowline–Contingency dewatering	Section 4.6.1.3	1 x Vessel (e.g. CSV/AHT*, HCV, or LCV)	Q3 2028–Q3 2029	~15 days

[11] Most pre-commissioning activities (with exception of subsea control systems) are undertaken as part of either the pipelay installation or subsea installation campaigns. The indicative timing therefore covers the potential for these activities to occur during either campaign, while the indicative durations represent the expected duration of the activities regardless of the campaign during which they are undertaken.

Activity	EP Section	Indicative number of vessels[8]	Indicative timing[9]	Indicative duration[10]
Production flowline–Conditioning	Section 4.6.1.4	1 x Vessel (e.g. HCV/LCV^)	Q3–Q4 2028	~10 days
MEG pipeline–Partial dry pre-commissioning	Section 4.6.2.1.	1 x CSV/AHT* 1 x MEG supply vessel	Q4 2027	~10 days
MEG pipeline– Contingency FCG and/or pressure testing	Section 4.6.2.2	1 x Vessel (e.g. CSV/AHT*, HCV, or LCV) 1 x MEG Supply Vessel	Q4 2027–Q3 2029	~10 days
Subsea infrastructure	Section 4.6.3	1 x Vessel (e.g. HCV/LCV^)	Q3–Q4 2028	~22 days
Subsea controls system	Section 4.6.4	1 x MSV (or equivalent)	Q1–Q2 2029	~45 days
Gorgon Foundation Project—Jansz infield umbilical				
Pre-lay surveys and acoustic positioning equipment and metrology	Section 4.7.	1 x HCV (These activities are undertaken sequentially; there is only one HCV in use).	Q3 2028–Q1 2029	~7 days
Support subsea infrastructure (mudmat foundation)	Section 4.7	1 x HCV	Q3 2028–Q1 2029	~15 days
Jansz infield umbilical and umbilical termination assembly (UTA)	Section 4.7	1 x HCV	Q3 2028–Q1 2029	~10 days
As-laid surveys	Section 4.7	1 x Vessel (e.g. HCV, LCV, or MSV)	Q3 2028–Q1 2029	~7 days
As-built surveys	Section 4.7	1 x Vessel (e.g. HCV, LCV, or MSV)	Q3 2028–Q1 2029	~7 days
IMR				
IMR (if required)	Section 4.9.	1 x MSV (or equivalent)	As required	~30 days

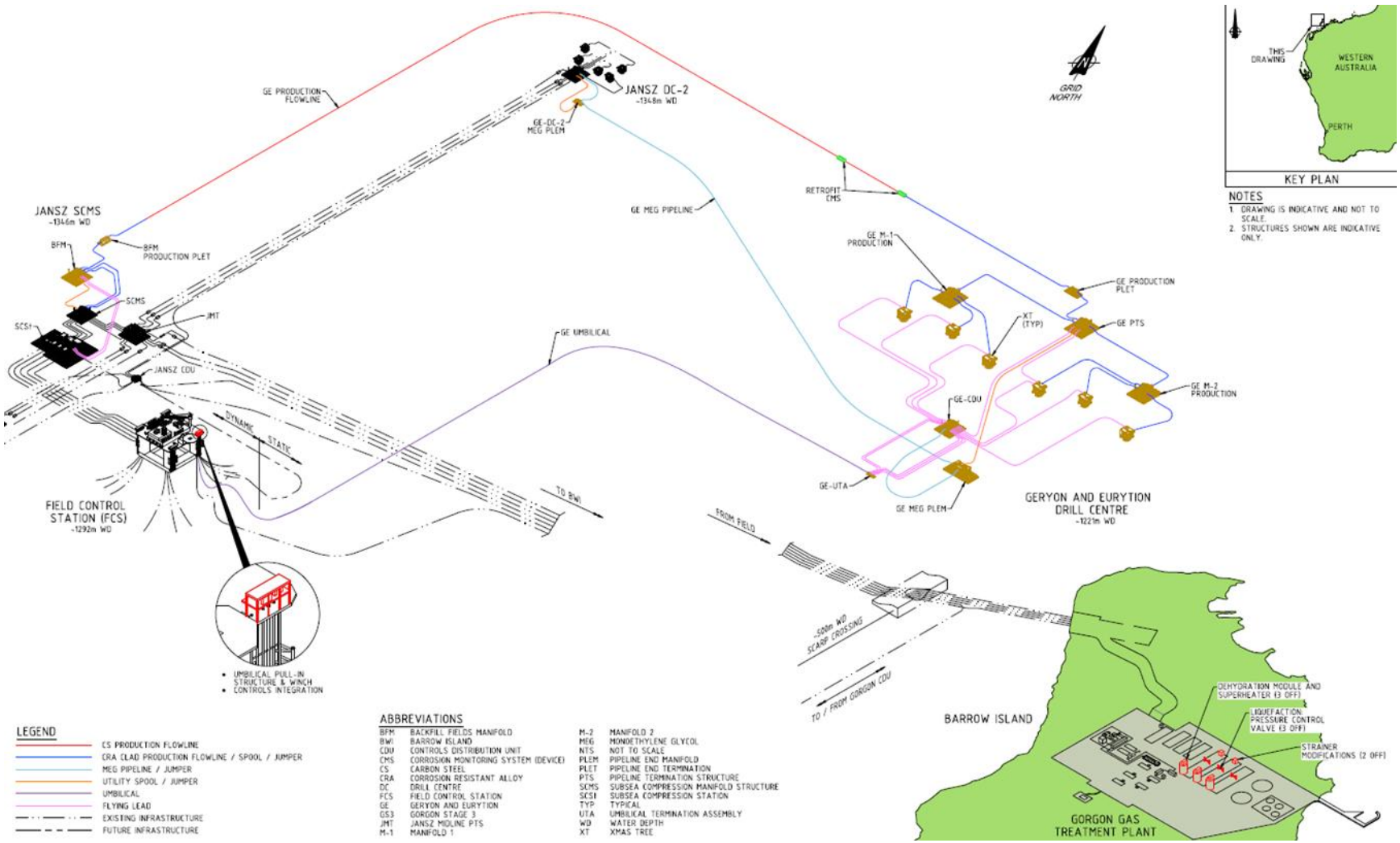


Figure 4-2: Schematic of G&E field layout

4.2 Installation of production flowline and MEG pipeline

The G&E production flowline is an ~36 km long, 24-inch nominal diameter pipeline, predominantly constructed from carbon steel. The upstream and downstream ends of the production flowline (~1 km and ~100 m, respectively) comprises of carbon steel linepipe internally clad with corrosion resistant alloy. The production flowline will have PLETs installed at each end.

The MEG pipeline is an ~31 km long, 6-inch nominal diameter pipeline predominantly constructed from carbon steel. The MEG pipeline will have PLEMs installed at each end. The pipeline has a dual functionality, with MEG transport as the primary function and provision of access to the GFP utility system during contingency.

4.2.1 Pre-lay survey

A pre-lay survey may be undertaken to confirm the bathymetric profile and identify any debris for removal. If a significant obstruction is encountered it will either be removed from the flowline/pipeline route, or, where applicable, the proposed flowline/pipeline alignment may be adjusted to avoid the obstruction (but remaining within the OA as described in Section 4.1.1 of this EP).

The pre-lay survey may involve visual inspections and/or use of acoustic survey techniques (such as multibeam echo sounder [MBES], side scan sonar [SSS], sub-bottom profiler [SBP]). MBES use multiple acoustic signals to detect the seabed to measure bathymetry and water depth. SSS and SBP use acoustic pulses that are reflected off the seabed to create an image of seabed topography and differences in their texture.

4.2.2 Acoustic positioning equipment

An array of long baseline (LBL) transponders may be installed on the seabed, as required, to support accurate positioning during subsea infrastructure installation activities.

Temporary installation equipment (e.g. LBL arrays, installation aids, foundation frames etc.) will be recovered at any time prior to completion of the petroleum activity.

4.2.3 Pre-lay works

Table 4-2 outlines the indicative locations of the subsea support structures associated with production flowline and MEG pipeline installation activities. Further details are provided in the subsequent sections.

Temporary marker buoys may also be installed to aid structure positioning.

Table 4-2: Support structures overview

Description	Indicative location
PLET mudmat foundation	Installed at G&E drilling centre (DC) and Backfill Fields Manifold (BFM) ends of the production flowline.
Single mattress support	Anti-burial supports along production flowline at G&E DC end.
Stacked mattress support	At retro fit non-intrusive equipment locations and adjacent to PLET at G&E DC and BFM ends of the production flowline.

Description	Indicative location
Flowline support	Adjacent to PLET at G&E DC and BFM ends of the production flowline.
Buckle initiators	Buckle initiators are spaced every ~2-3 km apart along the production flowline starting from G&E DC end.

4.2.3.1 Mudmat foundation

Mudmat foundations will be installed for the PLETs. The mudmats are designed to be self-penetrating and will not require post landing intervention.

4.2.3.2 Mattress supports

Mattress supports will be installed along the production flowline route to maintain clearance between the production flowline and the seabed. These supports assist with cooling of the production gas and provide sufficient elevation above the seabed to enable the installation of non-intrusive equipment (Section 4.2.7). These mattress supports consist of dense material (typically concrete) blocks or logs bound together by flexible cables (typically synthetic fibre ropes).

These structures will be deployed to the seabed via vessel cranes and positioned with ROV assistance.

4.2.3.3 Flowline support

Flowline supports are planned to be installed at the production PLET locations to support the production flowline as it approaches the PLET structures. A flowline support may consist of a steel structure with integrated mudmat or stacked mattress support.

4.2.3.4 Buckle initiators

Buckle initiators will be installed along the production flowline route to ensure that pipeline expansion forces are relieved in a controlled manner. Each buckle initiator structure may consist of an integrated mudmat structure with an elevated surface to raise the production flowline above the seabed to facilitate buckle initiation at this location.

4.2.3.5 Pipeline initiation anchor

A pipeline initiation anchor will be deployed to secure the end of the flowline/pipeline at the start of pipelay. The initiation anchor may be a DMA or a suction pile anchor. The anchor will be connected to the start of the flowline/pipeline via a ~2–3 km wire rope rigging. The start of the flowline/pipeline could be anywhere along the flowline/pipeline route. Pipeline initiation anchors and rigging are recovered upon completion of pipelay.

4.2.4 Production flowline, MEG pipeline, and PLETs/PLEMs

The production flowline and MEG pipeline will be installed using S-lay technique, while the PLETs/PLEMs will be installed using J-mode or S-mode. Touch down monitoring via an ROV will be used throughout the installation. The production flowline and MEG pipeline may be installed either toward or away from the G&E location.

The S-lay installation method involves lowering the pipe off the vessel over a stinger (a support structure extending from the stern that guides the pipe into the water). The stinger supports the pipe through the overbend region as it transitions from the vessel to the seabed. As additional pipe is welded and eased off the vessel, the pipe forms an 'S' shape in the water column.

A typical pipelaying sequence includes assembling pipe joints in the firing line, where welding and non-destructive testing are conducted in multiple stages. Once welds are accepted, field joint coating is applied, and the pipeline is gradually lowered over the stinger and laid on the seabed. As the vessel progresses along the route, additional pipe is brought to the firing line and fabrication continues. Pipelaying may commence either from the pipeline start/end point or via a midline start-up.

The J-mode method for PLET and PLEM installation involves recovering the pipe ends near vertically from the seabed to the vessel. PLETs and PLEM are welded vertically on the vessel to the respective pipes, and the assembled structures are then lowered to the seabed. PLETs/PLEMs provide isolation and connection points between pipelines/flowlines and spools.

Once installed, the production PLET structures will sit on mudmat foundations (refer to Section 4.2.3.1) and will not add to the seabed disturbance footprint. The MEG PLEM incorporates an integrated mudmat foundation. The production PLETs will be subject to valve barrier tests (refer to Section 4.4) at various stages throughout the construction sequence.

During pipelay, seawater ingress into the production flowline or MEG pipeline may occur in the event of a wet buckle or rupture, potentially leading to corrosion. In such cases, the pipeline may be flushed with seawater followed by flooding with treated water to displace raw seawater. Following flooding completion, cleanliness and dryness must be restored prior to resuming the installation. The production flowline / MEG pipeline is dewatered by driving a pig train containing slugs of treated water resulting in discharges to the environment.

Pipeline installation may also be interrupted due to other unforeseen events (e.g. cyclone). In such cases, the pipeline may be temporary wet parked.

Table 4-1 identifies the indicative duration of the installation of production flowline, MEG pipeline, and PLETs/PLEMs. Table 4-3 details the indicative location of these infrastructures.

Table 4-3: Production flowline, MEG pipeline, and PLETs/PLEMs indicative location

Infrastructure	Indicative location coordinates
24" Production flowline	From G&E Production PLET (WA-66-L) to BFM production PLET (WA-39-L)
6" MEG pipeline	From G&E MEG PLEM (WA-66-L) to G&E DC-2 PLEM (WA-39-L)

4.2.5 As-laid surveys

The as-laid survey may be conducted concurrently with installation activities (Section 4.2) or as a separate survey pass using the ROV. It may involve acoustic survey techniques (such as MBES, SSS or SBP, see Section 4.2.1 for description of the activity) conducted along the full extent of the production flowline and MEG pipeline routes, including associated PLETs and PLEMs.

4.2.6 Post-lay works

Span rectification may be required depending on the results of the as-laid surveys (Section 4.2.5). The total number and location of the span rectification stabilisation materials will not be known until the as-laid survey is performed. All post-lay materials will be installed within the OA.

Following span rectification, out-of-straightness, cathodic protection and as-built surveys will be completed.

Table 4-1 identifies the indicative timing, duration and vessel required.

4.2.7 NII equipment

The production flowline corrosion management strategy is based on a NII approach, which will provide ongoing monitoring of production flowline conditions through the recording of corrosion-related indicators and process parameters. As part of this strategy, two corrosion monitoring devices will be installed.

Table 4-1 identifies the indicative timing, duration and vessel required.

4.3 Installation of subsea infrastructure

The subsea infrastructure includes structures foundations and modules (for manifolds, Pipeline Termination Structure (PTS), BFM, Chemical Distribution Unit [CDU] and UTA), spools, jumpers, umbilical and flying leads.

Equipment may also need to be temporarily stored on the seabed during installation activities or as a contingency, in response to unforeseen events (e.g. cyclone). This will occur within the OA.

Table 4-1 identifies the estimated duration for the installation of subsea infrastructure.

4.3.1 Pre-installation works

4.3.1.1 Slimline caps change out

Existing pressure caps at the tie-in points on the SCMS will be removed and replaced with slimline pressure caps.

Valve barrier testing (Section 4.4) at the tie-in points on the SCMS may occur either prior to or post hydrocarbon introduction into J-IC infrastructure[12]. If testing is undertaken prior to hydrocarbon introduction, a small amount of MEG fluids will be released. If it occurs after, trapped hydrocarbon may also be released. Prior to installation of the replacement slimline pressure caps, dissolvable chemical sticks will be inserted into the connections to treat any seawater ingress. Estimated discharges are provided in Table 4-8.

4.3.1.2 Preparatory works

Preparatory works comprise the external cleaning of subsea infrastructure and tie-in points using mechanical cleaning (such as high-pressure water jetting) and/or acid wash applied directly to the infrastructure. If acid washing is required, only small volumes of chemicals will be used and discharged (Table 4-8).

[12] Commissioning of J-IC infrastructure and hydrocarbon introduction are outside the scope of this EP (Section 2.3.2) and are covered under the NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations Environment Plan* (Ref. 5).

Function testing of the long-term protection cover at the base of the FCS I-tube will be undertaken. No discharges are expected.

Early valve barrier testing of the MEG/Utility connections at Jansz DC-2 may also be performed (refer to Section 4.4).

4.3.2 Pre-lay survey

A pre-lay survey may be undertaken to confirm the bathymetric profile and identify any debris for removal (see Section 4.2.1 for description of the activity).

4.3.3 Acoustic positioning equipment and metrology

An array of LBL transponders may be installed on the seabed, as required, to support accurate positioning during subsea infrastructure installation activities. LBL systems emit short, non-continuous acoustic pulses when active, as described in Section 4.2.2.

Rigid spool and jumper metrology may alternatively be conducted using ROV mounted light detection and ranging where up to four spheres per rigid spool/jumper location would be temporarily placed on the seabed as reference points.

Any LBL transponders, reference spheres, or other temporary equipment deployed during these activities will be retrieved upon completion of subsea infrastructure installation activities covered under this EP.

4.3.4 Installation of structures and supports

The subsea infrastructure described in the following subsections will be transported to site and lowered to the target location using a vessel-mounted crane, where it will be landed on the seabed or on pre-installed foundations, as applicable.

Rigid spool/jumper supports and flexible MEG jumper crossing supports will be lowered to the seabed using a vessel-mounted crane.

Subsea infrastructure will be deployed with a dedicated rigging set, which will be recovered to the vessel deck after landing.

4.3.4.1 Structure mudmat foundations

Five mudmat foundations are planned to be installed (Table 4-4). Foundations positioning will utilise LBL method as per Section 4.3.3.

Table 4-4 outlines the indicative locations of these mudmat foundations.

Table 4-4: Mudmat foundation overview

Description	Indicative location
BFM mudmat foundation	Jansz SCMS tie-in
M1 mudmat foundation	G&E DC
M2 mudmat foundation	
PTS mudmat foundation	
UTA mudmat foundation	G&E DC

4.3.4.2 Structure modules

BFM, G&E-M1, G&E-M2 and PTS are planned to be installed (Table 4-5). Modules will be guided by pre-installed guideposts on the foundations and supported by ROVs.

Once in place, the modules will sit on the pre-installed foundations and will not add to the seabed disturbance footprint.

Table 4-5 outlines the indicative locations of these mudmat foundations.

Table 4-5: Modules overview

Description	Indicative tie-in location
BFM module	Jansz SCMS tie-in (J-IC SCMS and BFM end PLET)
M1 module	G&E DC (G&E DC christmas trees [XT])
M2 module	
PTS module	G&E DC (G&E end PLET along with the G&E-M1 and M2 modules)

4.3.4.3 CDU

The CDU is a combined module and mudmat foundation which provides the interface where the umbilical from the FCS and MEG Pipeline from DC-2 are split to distribute power, communications, MEG and chemicals to the G&E production wells. The CDU is planned to be located at the G&E DC.

4.3.4.4 Supports

Seabed supports are planned to be installed to support rigid spools and jumpers, and to support the MEG jumper crossing over the MEG pipeline. Supports may consist of a concrete mattress or alternatively glass fibre reinforced polyester (GRP) supports.

As an alternative to support structures at the flexible MEG jumper crossing, protection may be provided through installation of a polyurethane protection system. The protection system may be installed on the flexible MEG jumper on the vessel deck during deployment, providing mechanical protection and separation at the crossing location. This alternative option would result in a smaller seabed disturbance footprint compared with the installation of support structures.

GRP alternative option would result in a similar seabed disturbance footprint compared with the installation of concrete mattresses.

Table 4-6 outlines the indicative location of the mattresses.

Table 4-6: Mattress overview

Description	Indicative location	Inlet	Outlet
Rigid jumper supports	G&E DC	M-1	PTS
		M-2	PTS
Rigid spool supports	G&E DC	PTS	PLET
	Jansz SCMS tie-in	PLET	BFM
		BMF	SCMS

Description	Indicative location	Inlet	Outlet
Flexible MEG jumper crossing	G&E DC crossing of flexible MEG jumper at the MEG pipeline crossing.		

4.3.5 Installation of flexible jumpers

Flexible jumpers are used to connect the:

- production well XTs to the production manifolds
- MEG Pipeline PLEM to the existing DC-2 MEG and utility connections
- MEG Pipeline PLEM to the CDU and PTS Module.

Prior to installation and connection of the flexible jumpers, external cleaning (refer to Section 4.3.1.2) of the existing subsea structures at the tie-in locations will be undertaken.

Flexible jumpers will be transported on reels on the vessel deck and will be lowered through the water column and laid on the seabed, with positioning guided by pre-installed guideposts or guide roofs and supported by ROVs.

Valve barrier testing (refer to Section 4.4) may be undertaken prior to tie-in. Following completion of testing, caps or laydown heads will be removed from the XTs, Jansz DC-2, PTS and CDU structures being tied into, releasing discharges of MEG per tie-in. During this process, dissolvable chemical sticks will be inserted into the flexible jumpers. Potential discharges are identified in Table 4-8.

Following installation, the flexible jumpers will be connected to the associated subsea infrastructure with ROV support. Connections will be back seal tested using hydraulic oil.

Localised damage to flexible jumpers during installation is unlikely; however, if it occurs, remediation would be undertaken via in-field recovery and repair on deck, or recovery and replacement with spares. In the event of flexible jumpers damage, a small-volume discharge of MEG may occur (Table 4-8).

4.3.6 Installation of rigid spools and jumpers

Rigid spools and jumpers are used to connect:

- production manifolds to the PTS module
- production flowline PLETs to the BFM and PTS modules
- SCMS module production and utility connections to the BFM module.

Prior to installation and connection of the rigid spools and jumpers, external cleaning (refer to Section 4.3.1.2) of the existing subsea structures at the tie-in locations will be undertaken.

Each rigid spool and jumper will be deployed with a bespoke spreader bar and rigging, which may either be recovered to the vessel or temporarily wet parked. Rigid spool and jumper positioning will be guided by pre-installed guideposts and guide roofs on the subsea infrastructure and supported by ROVs. Rigid spools and jumpers may also be deployed with additional polyurethane spacer collars to interface with the top of the support mattresses to accommodate post metrology spool geometry.

Valve barrier testing (refer to Section 4.4) may be undertaken prior to tie-in. Following completion of testing, pressure caps or laydown heads will be removed from the G&E-DC and SCMS structures being tied into, releasing small volumes of MEG and trapped hydrocarbons from the Jansz system per tie-in. During this process, dissolvable chemical sticks will be inserted into the rigid spool and jumpers. Potential discharges are identified in Table 4-8.

Following installation, the rigid spools and jumpers will be connected to the associated subsea infrastructure with ROV support. Connections will be back seal tested using hydraulic oil.

Localised damage to rigid spools and jumpers during installation is unlikely; however, if it occurs, remediation would be undertaken via in-field recovery, onshore repair and offshore re-installation. In the event of rigid spools and jumpers damage, a small-volume discharge of MEG may occur (Table 4-8).

4.3.7 Installation of G&E umbilical

The G&E umbilical is an ~31 km long subsea umbilical with a nominal outer diameter of ~190 mm. It connects the FCS to the G&E DC and provides chemicals, hydraulic services, and electrical power to the subsea infrastructure.

Table 4-7 details the indicative location of the G&E umbilical and UTA.

Table 4-7: G&E umbilical and UTA indicative location

Infrastructure	Indicative location coordinates
G&E Umbilical	From G&E UTA (WA-66-L) to umbilical pull-in structure (WA-39-L)2

4.3.7.1 Umbilical crossing

The G&E umbilical will cross existing J-IC infrastructure, including the Jansz production trunkline, umbilical, MEG pipeline and utility pipelines. The G&E umbilical will also cross the proposed Jansz telescopic umbilical (once it is installed).

Umbilical crossings will be constructed with support structures, which may consist of a concrete mattress or alternatively GRP supports, to protect both the new and existing infrastructure. Installation activities may include pre- and post-installation surveys (typically via ROV).

As an alternative to support structures, a polyurethane protection system may be installed on the umbilical during deployment to provide protection and separation at the crossing location. This option would result in a reduced seabed disturbance footprint compared to support structures.

Refer to Section 4.3.4.4 for the other mattresses during subsea infrastructure installation.

4.3.7.2 Umbilical lay and pull-in to FCS

The G&E umbilical and UTA will be installed using an integrated lay system supported by vessel-mounted cranes and ROVs.

Installation of the G&E umbilical is proposed to commence at the J-IC FCS, followed by umbilical lay towards the G&E DC. However, installation may also be undertaken in the opposite direction.

The G&E DC end of the umbilical is terminated with a UTA and will be laid down into the pre-installed UTA foundation (Section 4.3.4.1). The UTA interfaces with the CDU after the connected flying leads have been installed.

G&E umbilical pull-in to the FCS will be performed using the FCS-mounted G&E umbilical pull-in structure and the J-IC winch and sheaves (see also Section 4.4). The G&E umbilical head will be connected to a messenger line and pulled up the FCS i-tube until the head is in position on the FCS topsides and hung-off. The umbilical riser has a “lazy-wave” formation with buoyancy modules attached prior to over-boarding.

Localised damage to the G&E umbilical during installation is unlikely. If damage does occur, in-field repair would be undertaken by cutting out the damaged section and splicing in a spare umbilical section. A small volume of control fluid may be released to the environment (Table 4-8).

Wet parking of this infrastructure may be required and, if undertaken, will occur within the OA.

4.3.8 Installation of flying leads

Flying leads are commonly used to connect subsea equipment. Prior to installation of flying leads, external cleaning (refer to Section 4.3.1.2) of the existing subsea structures to be tied into will be undertaken.

There will be four types of flying leads:

- steel tube flying leads (STFLs) which will be used to connect rigid steel tubing interfaces between subsea structures. The STFLs will distribute hydraulics and chemicals from the umbilical, and MEG from the MEG pipeline to the XTs via the CDU
- high voltage (HV) electrical flying leads (EFLs) which will distribute power from the umbilical UTA to the CDU
- low voltage (LV) EFLs which will have combinations of controls power and controls signals between the CDU and the XTs, and between J-IC subsea compression station (SCSt) and the BFM
- optical flying leads (OFLs) which will distribute fibre communication between the umbilical UTA and the CDU, and between the SCSt and the BFM.

Following installation, flying leads will be stabilised using grout bags, each bag weights ~20 kg and is placed at ~15 m intervals along each flying lead for secondary stabilization. Number of grout bags may vary based on operational conditions.

During the connection of the STFLs to the CDU, UTA and XTs, there is potential for small volume discharges of control fluid to occur (Table 4-8).

Localised damage to flying leads during installation is unlikely; however, if it occurs, remediation would be undertaken via in-field recovery and repair on deck, or recovery and replacement with spares. In the event of STFL damage, a small-volume discharge of control fluid may occur (Table 4-8).

4.3.9 As-laid surveys

The as-laid survey may be conducted concurrently with subsea infrastructure installation or as a separate survey pass using the ROV. The survey may include

visual and/or acoustic survey techniques (see Section 4.2.1 for description of the activity).

4.3.10 As built surveys

As-built surveys will be undertaken at the end of each set of activities, if required. This may involve visual inspection and/or acoustic survey techniques (see Section 4.2.1 for description of the activity.

4.4 Testing

Valve barrier testing may be conducted at any time during the petroleum activity, where applicable, to verify that the valves provide an acceptable standard of isolation for subsequent tie-ins. Small volumes of MEG may be released during testing (Table 4-8). Once testing is completed the valves are closed.

Additional activities to support system operability, including leak testing or similar, may also being undertaken. Small volumes of treated water or MEG may be released (Table 4-8).

4.5 FCS integration

Preparatory works before umbilical pull-in to the FCS may include:

- relocating and load testing some of the J-IC equipment (e.g. winch, sheaves) that will be used for G&E installation activities
- installation of the G&E umbilical winch system, angled sheave and hoist
- installation and commissioning of topside controls system equipment
- hook-up of hydraulic, electrical, and optical connections from the G&E umbilical to the topside umbilical termination unit
- marine growth removal from the i-tube; mechanical cleaning (such as high-pressure water jetting) and/or acid wash applied directly to the infrastructure may be used. If acid washing is required, only small volumes of chemicals will be discharged (Table 4-8).

No other discharges to the environment are expected.

FCS integration activities (except in-water marine growth removal) will be managed via helicopter transfers for personnel to/from the FCS.

4.6 Pre-commissioning

Pre-commissioning is a group of activities undertaken to prepare the system and equipment for safe operation. It includes inspections, cleaning, flushing, testing, and verification activities to confirm that the equipment or components have been installed correctly, function in accordance with the design and are ready for commissioning.

4.6.1 Production flowline

4.6.1.1 Dry pre-commissioning

The production flowline will be subject to dry pre-commissioning, which relies on data collected during fabrication and installation to verify system integrity.

No planned discharges or emissions are expected during this activity.

4.6.1.2 Contingency flooding, cleaning, gauging and pressure testing

If the production flowline dry pre-commissioning is not successful, FCG and/or pressure testing of the flowline will be undertaken.

A temporary pig launcher and pig receiver will be connected to the production PLETs to facilitate pigging and pressure testing of the production flowline. If the PLET valves are unable to provide an acceptable standard of isolation, the production flowline may first be free-flooded with treated water to equalise pressure, allowing removal of the high-pressure caps and tie-in of the pig launcher and pig receiver.

Following tie-in, a pig train with treated water slugs and pigs will be propelled end-to-end using treated water. The production flowline may then be pressure tested to verify its mechanical integrity.

During these activities, air and small volumes of MEG may be released to the environment. Treated water associated with flooding, pigging, and pressure testing activities may also be discharged. If flowline flooding is required more than once, discharges would occur at separate times rather than consecutively.

The pig launcher and pig receiver will be recovered at any time before the petroleum activity finishes. Disconnection and recovery of the pig launcher and pig receiver will result in a small release of treated water. If the high-pressure caps are re-installed, chemical sticks will be inserted into the open ends.

Estimated discharges and emissions are detailed in Table 4-8.

4.6.1.3 Contingency dewatering

If contingency flooding occurs (Section 4.6.1.2), dewatering is required. Dewatering could occur between a pig launcher and pig receiver connected to the production PLETs or connected to the BFM / G&E PTS structures (with connecting spools installed).

A dewatering pig train would be propelled from end-to-end using nitrogen or air. The pigs in the train will be separated by batches of treated water and MEG. The treated water and MEG within the pipeline will be released to the environment during the dewatering pigging. If flowline dewatering is required more than once, discharges would occur at separate times rather than consecutively.

Upon completion of the dewatering, the pig launcher and pig receiver are recovered, chemical sticks inserted into the open ends, and high-pressure caps installed. Prior to recovering the pig launcher and pig receiver, there may be a requirement to pressurise the flowline to a pressure above subsea ambient using nitrogen, to mitigate the risk of raw seawater ingress.

The flowline would be depressurised either prior to recovery of the pig launcher and pig receiver, or post installation of the high-pressure caps.

Estimated discharges and emissions are detailed in Table 4-8.

4.6.1.4 Conditioning

The production flowline will be conditioned in preparation for the subsequent introduction of hydrocarbons during commissioning, which is outside the scope of this EP (Section 2.3). One of the following methods will be used:

- **option 1–evacuation and nitrogen inerting**: atmospheric air will be evacuated from the G&E PLET, followed by injection of nitrogen via the G&E

PLET. The pressure in the production flowline will then be reduced by evacuating from the BFM PLET.

- **option 2–nitrogen inerting**: nitrogen will be injected to pressurise the production flowline. The flowline may then be depressurised releasing atmospheric air and nitrogen.

Estimated emissions of nitrogen and MEG and treated water releases for both options are detailed in Table 4-8.

4.6.2 MEG pipeline

4.6.2.1 Partial dry pre-commissioning

The MEG pipeline will undergo partial dry pre-commissioning. A pig train containing MEG slugs between pigs may be propelled end-to-end using MEG.

During this activity, air within the pipeline and some MEG would be released (Table 4-8).

The pig launcher and pig receiver will be recovered at any time before the petroleum activity finishes. Disconnection and recovery of the pig launcher and pig receiver will result in a small release of MEG. If the high-pressure caps are re-installed, chemical sticks will be inserted into the open ends.

Estimated discharges and emissions are detailed in Table 4-8.

4.6.2.2 Contingency FCG and/or pressure test

In the event that dry pre-commissioning of the MEG pipeline is not successful, FCG and/or pressure testing of the pipeline may be undertaken. During this activity, discharges of MEG may occur (Table 4-8).

4.6.3 Subsea infrastructure

Subsea infrastructure tie-ins will be subject to leak testing to verify mechanical integrity and will be pressurised using MEG. Tie-ins may be leak tested either individually or simultaneously, including where connecting structures are pressurised concurrently. Small volumes of MEG containing biocide may be released during these activities.

The rigid production spools connecting the production PLETs to the BFM / G&E PTS structures will be flushed to remove any raw seawater that may have entered during installation. Flushing will be undertaken using MEG and will result in the discharge of MEG containing biocide and seawater. Following flushing, the spools will be depressurised, resulting in additional small releases of MEG containing biocide.

Estimated discharges are identified in Table 4-8.

4.6.4 Subsea controls system

The subsea controls system consisting of the umbilical electrical, optical and hydraulic services and will be tested following completion of the umbilical lay and pull-in to the FCS. EFLs, OFLs and STFLs may also be tested following tie-in and completion of umbilical testing. Hydraulic lines and STFLs will be pressure tested using control fluids. In the event of leakage during pressure testing, small volumes of control fluid may be released.

Following umbilical installation and tie-in activities, controls system pre-commissioning activities will also be undertaken. These activities include:

- energisation and testing of G&E umbilical and associated connections; once the G&E umbilical is energised it will remain operational to allow pre-commissioning and commissioning activities
- electro-hydraulic energisation and testing of the subsea systems
- valve actuation on subsea equipment which is performed to confirm that subsea equipment responds correctly to control commands
- emergency shutdown logic testing, conducted to verify the correct operation of the subsea shutdown functions; emergency shutdown logic testing will be performed following energisation and communications testing, with shutdown commands initiated from the Barrow Island central control room.

These activities may be undertaken remotely (e.g. via Barrow Island Central Control) or with support of an MSV and ROV to confirm subsea responses within the G&E infrastructure. During this process, control fluids may be released to the environment. Potential discharges are identified in Table 4-8.

There is no introduction of production fluids to the hydrocarbon system during these activities.

Table 4-1 identifies the estimated duration of control systems pre-commissioning.

4.6.5 Equipment suspension

Once installed, the subsea infrastructure may remain in a suspended state until commissioning starts (commissioning is covered under a separate EP; refer to Section 2.3). During this suspension period, the infrastructure will remain at or below seabed ambient pressure and containing preservation gases/fluids until it is ready for commissioning.

4.7 Installation, hook-up and testing of Jansz infield umbilical

The Jansz infield umbilical is an ~13 km long subsea umbilical with a nominal outer diameter between 160-180 mm. The infield umbilical will be installed between the FCS and the Jansz CDU. The umbilical will have a UTA and electrical junction box at the Jansz field end. Flying leads will provide control connections between the Jansz UTA and CDU.

Installation activities will include:

- pre-lay surveys (as identified in Section 4.3.2)
- installation of one UTA with the associated mudmat foundation
- installation of an electrical Junction Box with the associated mudmat foundation
- as-laid surveys (as identified in Section 4.3.9)
- as-built surveys (as identified in Section 4.3.10).

The umbilical lay direction may be either from the FCS to the Jansz CDU or vice versa. Once installed, energisation and testing will be conducted to confirm system operability (as identified in Section 4.6). Once the infield umbilical is energised it will remain operational to allow pre-commissioning and commissioning activities.

4.8 Summary of discharges, emissions and seabed disturbances

Table 4-8 summarises the planned discharges and emissions associated with petroleum activity.

Table 4-8: Summary of planned and contingent discharges and emissions

Activity	Discharge type [1, 2, 3]	Indicative volume (~m^3)	Discharge location
Planned discharges			
Installation of subsea infrastructure			
Preparatory works–cleaning	Acid washing	≤1 per application	SCMS, DC-2, G&E DC, FCS
Barrier testing, cap replacements and tie-ins	MEG	~70	SCMS, G&E DC
	MEG + trace biocide	~40	SCMS, DC-2
	Condensate	≤ 1per tie-in	SCMS
	Hydrocarbon gas	≤175 per tie-in	SCMS
	Control fluids	~1	SCMS, DC-2, G&E DC
Chemical sticks for cap replacement and tie-ins	Chemical sticks	~170	SCMS, G&E DC, DC-2
FCS integration			
Cleaning	Acid washing	≤1 per application	FCS i-tube at or near sea surface
Pre-commissioning			
Testing	MEG	~140	PLETs
	MEG	≤1 per event	SCMS, G&E DC, DC-2 at or near sea surface
	Treated water	≤1 per event	SCMS, G&E DC, DC-2 at or near sea surface
Chemical sticks for MEG pipeline	Chemical sticks	~1	SCMS, G&E DC, DC-2
MEG pipeline–partial dry pre-commissioning	MEG	~80	PLEMs
	Control Fluid	~1	PLEMs
Subsea infrastructure–leak testing	MEG + trace biocide	~430	Tie-in locations
Subsea infrastructure–production spool flushing and depressurization	MEG + trace biocide	~380	PLETs, BFM, G&E PTS
Conditioning	Treated water	90	SCMS, G&E DC, DC-2
	MEG	90	SCMS, G&E DC, DC-2
Subsea controls system	Control fluids	≤2	Subsea infrastructure
Contingency discharges			
Installation of subsea infrastructure			

Activity	Discharge type [1, 2, 3]	Indicative volume (~m^3)	Discharge location
Flexible jumpers– replacement	MEG + trace biocide	~6	G&E-DC, DC-2
Rigid spools and jumpers– replacement	MEG + trace biocide	~55	SCMS, G&E-DC
Umbilical–damage	Control fluids	~2	Umbilical route
STFLs–damage	MEG	~1	G&E-DC
	Control Fluid	~1	G&E-DC
Pre-commissioning			
Production flowline– FCG and/or pressure testing	Treated water	~10,200 per event	PLETs
	Control fluids	~1	PLETs
Chemical sticks for Production flowline	Chemical sticks	~50	SCMS, G&E DC
Production flowline– dewatering	Treated water	~10,200	PLETs, BFM, G&E PTS
	MEG	~330	PLETs, BFM, G&E PTS
	Nitrogen	~750,000	PLETs, BFM, G&E PTS
MEG pipeline– FCG and/or pressure testing	MEG	~600	PLEMs
Activity	**Emission**	**Indicative volume (~m^3)**	**Emission location**
Planned			
Pre-commissioning			
Conditioning	Nitrogen	305,000	Topside to the air
Contingency			
Pre-commissioning			
Production flowline– dewatering	Nitrogen	~1,500,000	Topside to the air

Notes:

1. MEG is typically used as a blend solution with chemical treatment including a buffering agent, oxygen scavenger and clear UV detectable dye.

2. Treated water chemical treatment consists of water with corrosion inhibitor, oxygen scavenger, and biocide. In some cases, a dye may also be added.

3. Chemical sticks include biocide, oxygen scavenger and dye.

4.9 Contingency IMR

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, including before operations commence.

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.

4.9.1 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.

Inspections are 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 (but are not limited to):

- visual inspections
- marine acoustic surveys (e.g. use of SSS, MBES and/or SBP techniques)
- non-destructive testing, which may include ultrasonic testing and electrical resistance testing
  - NII—may include the placement of retrofit corrosion measuring devices and temperature sensors at targeted locations based on corrosion assessment, which are typically undertaken using ultrasonic measures.
- cathodic protection measurements (e.g. completed using a ROV/AUV and conductivity probes or by making visual assessments of anode wastage)
- contingency pigging, which uses temporary pig launchers into the pipeline termination structure. Pigging activities, including internal inspection of the pipeline, and may use a combination of inhibitors, water, gel, MEG, and/or nitrogen slugs. The estimated discharges may be similar to those identified in Section 4.6.

4.9.2 Maintenance and repair

Maintenance and repair activities are conducted 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 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 spools and jumpers
- 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
- removal of marine biological growth and calcareous deposits on subsea infrastructure. Typically done with potable or seawater, although in cases where significant calcareous deposits are present, acid washing or soaking may be required (estimated discharges are expected to be similar to those identified in Section 4.3)
  - 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.
- pipeline repair—may involve repairing pipeline defects that threaten a pipeline's structural integrity; this activity may use structural or high-pressure repair clamps.

4.10 Support activities

4.10.1 Vessel operations

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

- PLV
- CSV
- PSV
- HCV
- DPTV
- heavy transport vessel (HTV)
- MSV or equivalent
- LCV
- AHT
- MEG supply vessel
- general supply vessels.

Vessel presence within the OA will vary depending on the particular activities being undertaken at the time. For example:

- during pipelay activities, up to five vessels may be present within the OA at any given time. However, more commonly there would be less vessels (e.g. one to three) within the OA for pipelay (including pre-lay and post-lay) activities
- during subsea structures installation, up to four vessels may be present within the OA at any given time. However, more commonly there would be less vessels (e.g. one to two) within the OA.

- during pre-commissioning activities up to two vessels may be present within the OA; however, more commonly this would be a single vessel.

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

There will be a request to other marine users for a 500 m safety SNA around the vessels during the petroleum activity.

Vessels will not use heavy fuel oils within the OA, but may use lighter marine fuels such as marine diesel oil (MDO) or marine gas oil. Given the indicative duration of the installation activities, a supply vessel may be used for fuel bunkering or the transfer of crews and/or supplies to the main installation/construction vessels.

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

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

4.10.2 Helicopter operations

Helicopters may be used to transfer crews and/or freight/goods to and from the main installation/construction vessels and FCS. Helicopters may also be required to evacuate personnel in the event of an emergency.

Refuelling helicopters is not planned to occur within the OA.

4.10.3 AUV and ROV operations

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

- pre- or post-activity site surveys
- positioning of subsea infrastructure
- installation, connection, or testing of subsea infrastructure
- marine growth removal
- IMR activities.

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

AUVs are untethered underwater vehicles. They are typically battery-powered and do not store any chemicals or fuel onboard.

ROV/AUVs 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.

4.11 Simultaneous operations

Based on the indicative pipelay, subsea installation, and pre-commissioning timing (Section 4.1.2), CAPL may also be undertaking other petroleum activities (e.g. J-IC Project and/or other Gorgon Stage 3 activities) at the same time. Any simultaneous operations (SIMOPS) will be managed in accordance with CAPL procedures.

Further information on petroleum activities within the vicinity of the OA is provided in Section 5.4.6.

Any potential cumulative environmental impacts and risks from concurrent petroleum activities are described and evaluated within Section 8 this EP.

4.12 Decommissioning planning

CAPL's approach to decommissioning planning is described in Section 4.3.5 of the Gorgon Backfill Fields Development OPP (Ref. 3). In accordance with regulation 56 of the OPGGS(E)R, as this information has been previously supplied for another purpose, and is publicly available[13], it has not been repeated within this EP.

Consistent with information presented in the OPP, the key focus during this phase of project development is that the design of property considers decommissioning. All subsea property (above the mudline) associated with GS3 is designed to be removable when no longer in use in connection with operations.

Table 4-9 outlines the decommissioning considerations for key property items to be installed under this EP. These considerations include indicative infrastructure specifications (e.g. composition, dimensions, weight). Following installation, G&E property will be incorporated into CAPL's inventory of subsea assets. The subsea inventory includes property that is "operational" as well as "non-operated assets" that are not associated with any of its current operations. Subsea assets classified as abandoned (with relevant supporting regulator documentation) are not included within the subsea inventory.

Section 572(2) of the OPGGS Act requires a titleholder to maintain in good condition and repair all property that is within the title area and is used in connection with the operations authorised by the title. The intent of section 572(2) relates to ensuring that property is fit for purpose and is able to be removed when neither used, nor to be used, in connection with the operations. IMR is included in this EP for the period of time between installation and prior to commissioning and start-up (Section 2.3).

Section 572(3) of the OPGGS Act also requires a titleholder to remove all property that is within the title area and is neither used nor to be used in connection with the operations authorised by the title. Within the in-force period of this EP, there is no plan to cease using any property, and thereby require removal under section 527(3).

[13] The NOPSEMA-accepted Gorgon Gas Development: Backfill Fields Offshore Project Proposal is available online at: https://docs.nopsema.gov.au/A1265361. Section 4.3.5 of the OPP describes CAPL's approach to proactive decommissioning planning for the Backfill Fields Development.

Table 4-9: Overview of decommissioning design considerations for infrastructure installed

Property	EP Section	Infrastructure description	Primary composition of materials
G&E property			
Mudmat foundations	Sections 4.2.3.1 and 4.3.4.1.	The BFM, M1, M2, PLETs, PTS and UTA modules will be installed on mudmat foundations (one for each structure).	Primarily constructed from a variety of structural steel elements, including carbon steel and low alloy steel.
Concrete mattress support	Sections 4.2.3.2 , 4.3.4.4 and 4.3.7.1.	Mattress numbers and dimensions will vary depending on operational requirements.	Consist of logs or blocks of dense concrete material bound together by cables such as polypropylene fibre ropes. Some mattresses include geotextile material on the underside and low friction polyurethane on the top surface.
GRP support	Section 4.3.4.4 and 4.3.7.1.	Mattress numbers and dimensions will vary depending on operational requirements.	Primarily constructed from glass fibre reinforced polyester.
Flowline support	Section 4.2.3.3.	Two flowline support structures adjacent to the PLETs.	Primarily constructed from low alloy structural steel.
Buckle initiator	Section 4.2.3.4.	Five buckle initiator structures along the production flowline.	
Production flowline	Section 4.2.4.	Production flowline to transport production gas from G&E DC to Jansz SCMS.	Pipeline is constructed primarily from carbon steel and CRA with external coatings consisting of polypropylene and epoxy.
MEG pipeline	Section 4.2.4.	MEG pipeline to supply MEG from Jansz DC-2 to the G&E DC and provide access to Jansz utility system.	Pipeline is constructed primarily from carbon steel with external coatings consisting of polypropylene and epoxy.
PLET	Section 4.2.4.	Two PLET top structures to connect the production flowline to the G&E PTS and BFM via rigid production spools.	Primarily constructed from a variety of steel components including carbon steel with corrosion-resistant internal linings, low alloy structural steel, and epoxy external coating.
PLEM	Section 4.2.4.	Two PLEM structures with integrated mudmat foundation to facilitate tie-in of the MEG pipeline to Jansz DC-2 midline pipeline termination structure and G&E PTS and CDU via flexible jumpers.	
Module	Section 4.3.4.2.	Two production manifold modules (M1 and M2) to gather the production gas from the XTs and feed into the PTS. One manifold (BFM) to facilitate tie-in to the Jansz SCMS for bypass and compression production and access to the Jansz utility system. One PTS to gather the production gas from the production manifolds and facilitate tie-in to the production flowline PLET.	Structure piping is constructed from carbon steel with corrosion-resistant internal lining with structural components primarily constructed from low alloy structural steel, and epoxy external coating.

Property	EP Section	Infrastructure description	Primary composition of materials
CDU	Section 4.3.4.3.	One CDU module and integrated mudmat foundation to supply MEG, hydraulics and power to the subsea production system.	Primarily constructed of steel for tubing and structural components, and epoxy external coating.
Flexible jumpers	Section 4.3.5.	Six flexible 8-inch production jumpers to connect the XTs to the production manifolds. Total length ~900 m. Four flexible 6-inch MEG/utility jumpers to connect Jansz DC-2 midline pipeline termination structure to PLEM tie-in and PLEM to PTS and CDU tie-in. Total length ~750 m.	Comprise of steel and polymer materials with a corrosion-resistant stainless-steel internal liner.
Rigid jumpers / spools	Section 4.3.6.	Two rigid 16-inch diameter production jumpers to connect the production manifolds to the PTS. Total length ~275 m. Four rigid 24-inch diameter production jumpers to connect the PTS, PLETs, BFM and existing Jansz SCMS. Total length ~500 m. One rigid 6-inch diameter utility spool to connect the BFM and existing Jansz SCMS. Total length ~75 m.	Constructed primarily from carbon steel and CRA with aluminum or epoxy external coating.
Umbilical	Section 4.3.7.2.	Umbilical connects the FCS to the G&E DC to provide chemicals, hydraulics and power.	Umbilical is composed of a variety of materials, including polyethylene, super duplex steel, carbon steel, glass fibre optic cables, copper cables and polyvinyl chloride filers. Alternative crossing method may also contain polyurethane.
UTA	Section 4.3.7.2.	One UTA module terminates the umbilical and supplies chemicals, hydraulics and power to the CDU.	UTA module is primarily constructed of steel for tubing and structural components.
Flying leads	Section 4.3.8.	Power, control, and preservation capability is provided via STFL, HV EFL, LV EFL and OFLs. Total length vary depending on the flying leads type.	Constructed from a variety of materials including stainless steel, copper, metal alloys, polyethylene protective coatings, and thermoplastics.
Jansz infield property			
Umbilical	Section 4.7	Umbilical connects the FCS to the G&E DC to provide chemicals, hydraulics and power.	Composed of a variety of materials, including polyethylene outer sheathing, duplex ballast rods, glass fibre optic cables, copper electrical cables and PVC profile fillers.
UTA	Section 4.7	One UTA module terminates the umbilical.	Predominately steel.

5 Description of the environment

5.1 Environment that may be affected

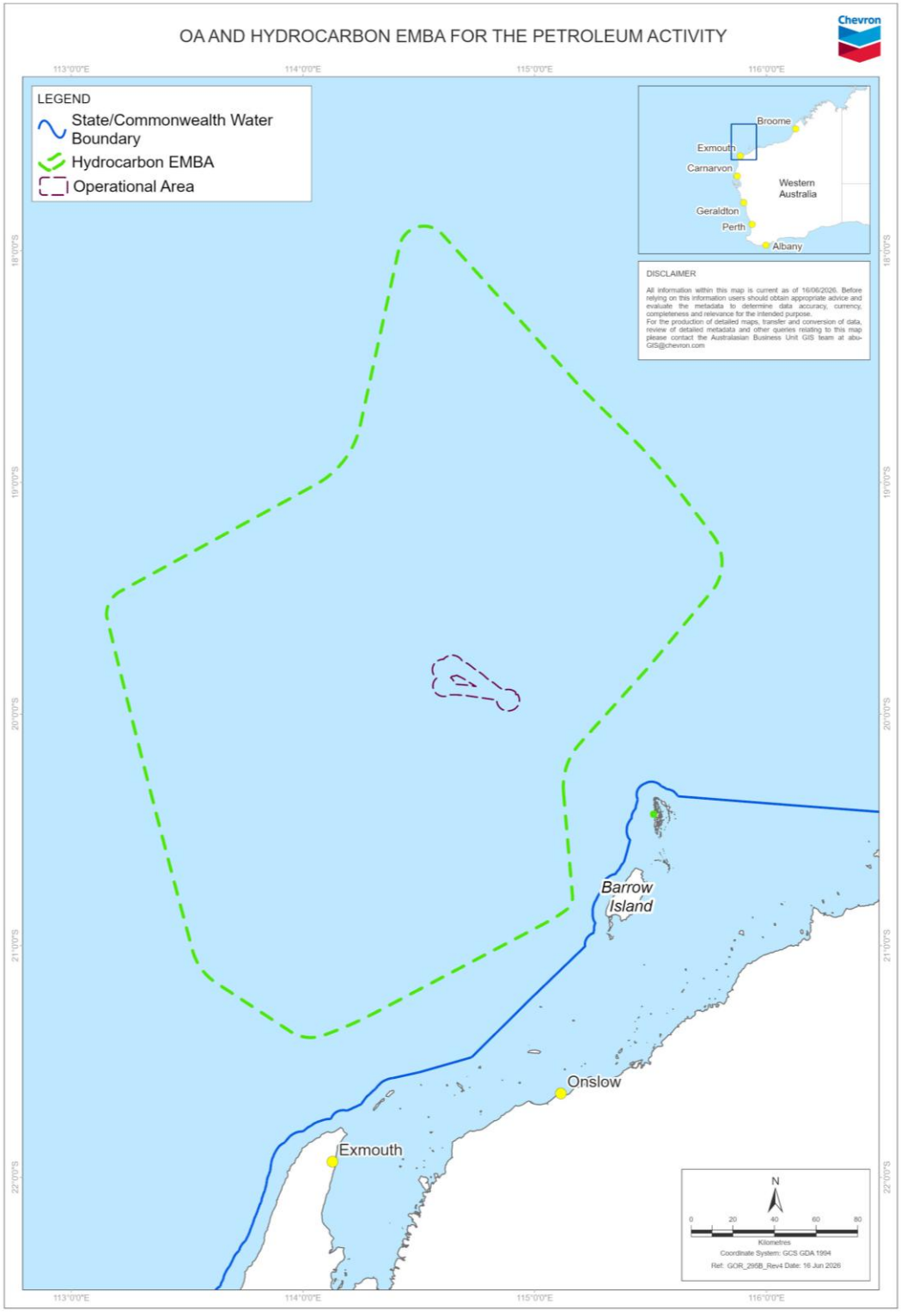
This section provides a description of the environment that may be affected (EMBA) by the petroleum activity as required by regulation 21(2) of the OPGGS(E)R.

The purpose of this requirement is to provide adequate information about the EMBA by the petroleum activity to inform the evaluation of environmental impacts and risks (Ref. 17). As such, this includes the EMBA by both planned activities and unplanned events associated with the petroleum activity (Ref. 17). However, the level of detail provided should be commensurate to the nature and scale of the impacts and risks (e.g. the EMBA by planned activities may be described in greater detail compared to the EMBA in the unlikely event of a worst-case hydrocarbon release) (Ref. 17).

For the purposes of this EP, CAPL has presented the description of the EMBA in two categories:

- OA—the area where the petroleum activity will be undertaken (Section 4.1.1)
- Hydrocarbon EMBA—a broader area based on stochastic modelling results for the worst-case credible unplanned hydrocarbon releases (Section 8.15).

Note: The exposure values adopted to define the Hydrocarbon EMBA are consistent with the exposure values recommended within NOPSEMA's *Information paper: Application of oil spill modelling in Environment Plans* (Ref. 18). See Section 8.15 and Table 8-72 for further information.



Note: The Hydrocarbon EMBA is 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 exposure value occurs. No shoreline contact was predicted.

Figure 5-1: OA and Hydrocarbon EMBA

5.2 Matters of national environmental significance

MNES are protected under the EPBC Act. The presence of MNES within the Hydrocarbon EMBA has been determined from the Australian Government's online Protected Matters Search Tool (PMST) (Ref. 19) and is summarised in Table 5-1. The full PMST reports are included in appendix d.

Note: the EPBC Act PMST is a general database that conservatively identifies areas in which protected species have the potential to occur. Where these species and/or features are not expected to credibly occur within the OA or Hydrocarbon EMBA (e.g. terrestrial species), these do not form part of the following description of the environment.

Table 5-1: Presence of MNES within the OA and Hydrocarbon EMBA

MNES	OA	Hydrocarbon EMBA
World Heritage properties^	×	×
National Heritage places^	×	×
Wetlands of international importance (Ramsar wetlands)^	×	×
Nationally listed threatened species and 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 relevant values and sensitivities under the OPGGS(E)R.*

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

5.3 Ecosystems and their constituents parts, including people and communities

5.3.1 Benthic communities and habitats

Benthic communities are biological communities that inhabit the seabed and are important for primary or secondary production. Benthic habitats are areas of seabed that do, or can, support these communities. Benthic communities play an important role in maintaining the integrity of marine ecosystems and the supply of ecological services. There is strong evidence that benthic communities are also important for the maintenance of biological diversity as they provide structurally complex and diverse habitat, refuge for vulnerable life stages and a varied and increased food supply (Ref. 20).

The OA and Hydrocarbon EMBA occur within the North-west Marine Region (NWMR), which is typically characterised by shallow-water tropical marine ecosystems and high species richness (Ref. 21; Ref. 22). The high species richness is thought to be associated with the diversity of habitats available across the NWMR, such as limestone pavement, coral reefs, and pinnacles (Ref. 21). The broad benthic communities and habitats (BCH) that may be present within the OA and Hydrocarbon EMBA are summarised below, with additional data specific to the OA summarised in Section 5.3.1.1.

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. 23), the geomorphic feature present within the OA and Hydrocarbon EMBA are shown in Table 5-2.

Table 5-2: Geomorphic features

Feature	OA	Hydrocarbon EMBA
Canyon	×	✓
Deep / hole / valley	✓	✓
Plateau	×	✓
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 region of WA comprises bio-clastic, calcareous, and organogenic sediments deposited from relatively slow and uniform sedimentation rates (Ref. 24). 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. 25).

Based on CSIRO's marine benthic substrate database (Ref. 26), the predominant seafloor sediment types within the OA are "calcareous gravel, sand and silt" and "calcareous ooze". Within the Hydrocarbon EMBA three seafloor sediment types were identified: "calcareous gravel, sand and silt", "calcareous ooze" and "mud and calcareous clay".

A previous benthic survey on the North West Shelf (NWS) in water depths >900 m, identified crustaceans and polychaete worms as the dominant taxonomic groups of infauna (Ref. 27). The study (Ref. 27) concluded that infauna associated with soft unconsolidated sediments within the general survey area are widespread and well represented throughout the NWS region.

This survey is consistent with benthic surveys conducted at the Jansz–Io field and along the Jansz Feed Gas Pipeline route, within the western section of the OA, in waters depths ranging from ~210 –1,360 m (Ref. 28; Ref. 29). Like other deepwater habitats on the NWS, benthic fauna was depauperate, with low abundance, richness, and diversity (Ref. 28). Species richness, diversity and abundance decreased with depth (Ref. 29). Standardised comparisons showed that overall diversity, abundance, and species richness were typically greater at sites on the surveyed infrastructure (Ref. 29).

In offshore, deeper regions, epifauna (benthic organisms on the seabed) are typically sparse and patchy in distribution, often associated with areas of hard substrate. The presence of epifauna is closely linked to substrate type, with hard substrates generally supporting more diverse benthic communities (Ref. 30). Offshore seabed surveys across the NWMR have observed a general reduction in epibenthic coverage with increasing depth (Ref. 22; Ref. 25). The benthic survey

for deepwater (>900 m) habitats on the NWS identified the dominant types of epifauna as arthropods and echinoderms (Ref. 27).

The Integrated Marine and Coastal Regionalisation of Australia (IMCRA) is a biogeographic regionalisation of oceanic waters within Australia's EEZ (Ref. 31). The OA occurs within the Northwest Province provincial bioregion[14]. The Hydrocarbon EMBA intersects with three provinces. The geomorphology characteristics and biological communities for each of these bioregions, as described in *The North-west Marine Bioregional Plan: Bioregional Profile* (Ref. 22) are summarised in Table 5-3.

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

Table 5-3: Features of provincial bioregions

IMCRA Provincial Bioregion^	OA	Hydrocarbon EMBA
Northwest Province	✓	✓
Characteristics of the geomorphology and biological communities of the Northwest Province include: • bioregion occurs entirely on the Continental slope and is comprised of muddy sediments • distinguished by a number of topographic features, such as the Exmouth Plateau, terraces and canyons (including the Swan and Cape Range canyons), as well as deep holes and valleys on the inner slope (including the Montebello Trough) • the benthic shelf and slope communities of this bioregion comprise both tropical and temperate species with a north-south gradient • the Continental slope between North West Cape and the Montebello Trough has been identified as one of the most diverse slope habitats of Australia • the Exmouth Plateau is also likely to be an important area for biodiversity as it provides an extended area offshore for communities adapted to depths of ~1,000 m • information available on sediments in the bioregion indicates: – benthic communities are likely to include filter feeders and other epifauna – soft-bottom environments are likely to support patchy distributions of mobile epibenthos, such as sea cucumbers, ophiuroids, echinoderms, polychaetes and sea pens – biological communities within canyons in the bioregion are also 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 and the Exmouth Plateau occur within the Hydrocarbon EMBA. Refer to Section 5.3.6.1 for further descriptions of these features.		
Northwest Shelf Province	✗	✓
Characteristics of the geomorphology and biological characteristics 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		

[14] Provincial bioregions were classified based on fish, benthic (seabed) habitat and oceanographic data at a scale that is useful for regional conservation planning and management (Ref. 22)

IMCRA Provincial Bioregion^	OA	Hydrocarbon EMBA
• continental shelf gradually slopes from the coast to the shelf break, but displays a number of seafloor features such as banks/shoals and holes/valleys, including: – Glomar Shoals occur in ~26–70 m water depth and are distinguished by highly fractured molluscan debris, coralline rubble and coarse carbonate sand – Leveque Rise (large plateau), which is one of only two shelf plateaux within the NWMR – significant areas of tidal sand waves 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 discernible spatial pattern – mud increases within ~100 km of the coast, and within ~100 km of the shelf break, but is mostly absent from other areas • sandy substrates on the shelf withing this bioregion are thought to support low density benthic communities of bryozoans, molluscs, and echinoids • sponge communities are also sparsely distributed on the shelf, but are found only in areas of hard substrate. Features and areas of ecological importance within the Northwest Shelf Province have been identified as: • Browse Island and surrounding waters • Lacepede Islands and surrounding waters • Quondong Point, north of Broome and surrounding waters • West coast of the Dampier Peninsula, including Beagle and Pender bays and surrounding waters • Pilbara coast (between Exmouth and Broome) and surrounding waters • Exmouth Gulf—Muiron Islands and surrounding waters • ancient coastline at 125 m depth contour • Glomar Shoals. Of these features and areas within the Northwest Shelf Province, the ancient coastline at 125 m depth contour occurs within the Hydrocarbon EMBA. Refer to Section 5.3.6.1 for further descriptions of this feature.		
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 • 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)		

IMCRA Provincial Bioregion^	OA	Hydrocarbon EMBA
• 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 Hydrocarbon EMBA. Refer to Section 5.3.6.1 for further descriptions of this feature.		

^*Source: Ref. 22.*

5.3.1.1 Operational area

CAPL conducted surveys (Ref. 32) to characterise the marine environment as part of the Gorgon Backfill Fields Development OPP. Field surveys included benthic habitat, sediment, and benthic infauna data collection.

Habitat mapping (Figure 5-2; Ref. 32) predicted that BCH within the OA would be characterised by low structural complexity, consisting mainly of smooth and irregular seabed with bare substrate and intermittent mounds with bare substrate. Ground truthing transects along the production flowline and MEG pipeline confirmed the absence of complex BCH (Ref. 32).

Crossing the northern section of the proposed G&E umbilical route (i.e. near the Jansz FCS), habitat mapped identified a continuous scarp with bare substrate. Small patches along the scarp were predicted as areas of low likelihood of biota; however, a ground truthing transect of this area did not identify the presence of epifauna due to a thick coverage of sediment (Ref. 32).

The habitats within the G&E DC primarily comprised of smooth seabed with bioturbation and scattered patches of bedforms with bare substrate to the north and north-east of the proposed drill centre. A ground truthing transect confirmed the absence of complex seafloor structures and did not identify any epifaunal communities or benthic infauna (Figure 5-2). No records of endemic benthic infauna were found within this field observation transect (Ref. 32).

Overall, the Gorgon Backfill Fields Development benthic environment is characteristic of the North Carnarvon Basin and the NWS region and is typical of an undisturbed tropical offshore environment. This survey did not find any BCH of regional significance (Ref. 32).

Table 5-4 describes the BCH identified in the OA.

Table 5-4: BCH description

BCH	Description
Depression, bare substrate	Local depression which may be geological or biological in origin (e.g. scour or pockmark). No identifiable biological features on substrate but may include motile echinoderms and/or bioturbation.
Irregular seabed	Mostly flat sediment terrain with minor features which may be derived from underlying geology. Bathymetry is smooth with identifiable, regular but small bedforms or mounds. Fine or coarse sediment. Slope is typically <2°, with minor topographic features.

BCH	Description
Mound, bare substrate	Locally elevated sediment or rock veneer feature. Typically, an isolated, smooth-edged feature with no structure which may be geological or biological in origin. Bathymetric features are measurable in profile. Slope can be varied, but smooth. No identifiable biological features on substrate but may include motile echinoderms and/or bioturbation.
Scarp, bare substrate	Bedrock or other consolidated material outcrop, subject to landslide erosion. Rough bathymetric features measurable in profile. The slope is typically >15° and may have steep sides. No identifiable biological features on substrate.
Scarp, low likelihood biota	Bedrock or other consolidated material outcrop, subject to landslide erosion. Rough bathymetric features measurable in profile. The slope is typically >15° and may have steep sides. Biota is typically absent in areas of smooth or soft seabed, as indicated by low backscatter returns and/or ROV visual verification.
Smooth seabed, bare substrate	Featureless sedimentary terrain. Bathymetry is smooth with no identifiable features. It can comprise of fine or coarse sediments; the slope is typically <2° with no topographic features. No identifiable biological features on substrate but may include motile echinoderms and/or bioturbation.

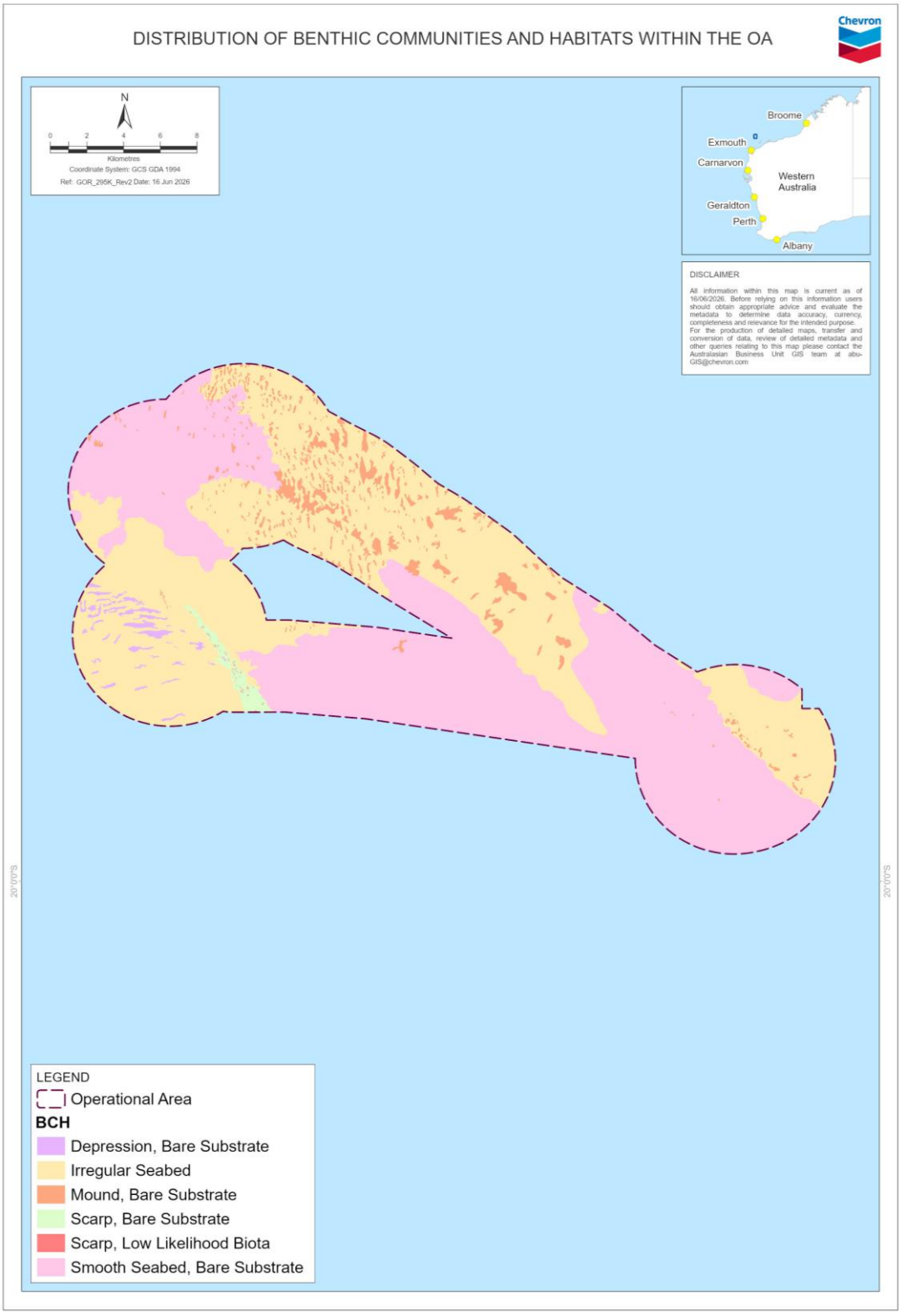


Figure 5-2. Distribution of BCH within the OA

5.3.2 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 5.3.1), 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 Hydrocarbon EMBA occur offshore and do not have any interface with the coast (Figure 5-1).

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

5.3.3 Marine fauna

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

Note: The Australian Government's Australian Marine Spatial Information System (AMSIS) (Ref. 33), geospatial datasets (Ref. 34), and a review of relevant recovery plans adopted under the EPBC Act (Section 3.2.2.1) were used to verify the presence of Biologically Important Areas (BIAs)[15] and habitat critical to survival (HCTS)[16] of the species within the OA and Hydrocarbon EMBA.

5.3.3.1 Marine mammals

Based on searches of the online PMST (Ref. 19; appendix d), the threatened and/or migratory mammal species shown in Table 5-5 may be present within the OA and/or Hydrocarbon EMBA. The full list of marine species identified from the PMST is provided in appendix d. BIAs associated with protected marine species are listed in Table 5-6. No known HCTS (Ref. 37) of threatened marine mammal species were identified within the OA or Hydrocarbon EMBA.

The threatened and/or migratory cetaceans that may be present within the OA and Hydrocarbon EMBA include:

- very low frequency (VLF) cetaceans[17] (blue, fin, and southern right whales)
- low-frequency (LF) cetaceans[17] (Antarctic minke, Bryde's, humpback, Omura's and sei whales)

[15] BIAs are areas and times used by protected marine species for critical life functions, such as reproduction, feeding, migration or resting (Ref. 35). These behaviours are referred to as biologically important behaviours.

[16] HCTS of a species or ecological community are areas necessary (i) for activities such as foraging, breeding, roosting, or dispersal; (ii) for the long-term maintenance of the species or ecological community; (iii) to maintain genetic diversity and long-term evolutionary development; or (iv) for the reintroduction of populations or recovery of the species or ecological community (Ref. 36). HCTS may be identified within a recovery plan for the species or ecological community (Ref. 36).

[17] VLF and LF cetaceans refer to the functional cetacean hearing groups categories for those cetaceans specialised at hearing at very low and low frequencies respectively. These categories split mysticete (baleen whale) species into two hearing groups (Ref. 38; Ref. 316).

- high-frequency (HF) cetaceans[18] (killer and sperm whale, Australian humpback, Australian snubfin, and spotted bottlenose dolphins).

Very-high frequency (VHF) cetaceans[19] (e.g. dwarf sperm and pygmy sperm whales) were also identified within the PMST (Ref. 19; appendix d) as species or species habitat that may occur within the OA and Hydrocarbon EMBA; however, these species are not listed as threatened and/or migratory under the EPBC Act.

CAPL passive acoustic loggers deployed over 2019–2023 (29 instruments; adjacent to existing Jansz field infrastructure and more broadly over the region[20]) have detected several species of cetaceans, including pygmy blue, Antarctic blue, Omura's, Bryde's, dwarf minke, Antarctic minke, fin, humpback, sei, and sperm whales, as well as small odontocetes (dolphins) (Ref. 39; Ref. 40).

As shown in Table 5-6, except for pygmy blue whales, there are no other known BIAs, HCTS or aggregation areas for other cetacean species that intersect with the OA; as such, it is expected that any presence cetacean species would be of a transitory nature.

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

Common name	OA	Hydrocarbon EMBA
Cetaceans (whales)		
Antarctic minke whale (*Migratory*)	✓	✓
Blue whale (*Endangered, migratory*)	✓	✓
Bryde's whale (*Migratory*)	✓	✓
Fin whale (*Vulnerable, migratory*)	✓	✓
Humpback whale (*Migratory*)	✓	✓
Omura's whale (*Migratory*)	✓	✓
Sei whale (*Vulnerable, migratory*)	✓	✓
Southern right whale (*Endangered, migratory*)	×	✓
Sperm whale (*Migratory*)	✓	✓
Cetaceans (dolphins)		
Australian humpback dolphin (*Vulnerable, migratory*)	✓	✓
Australian snubfin dolphin (*Vulnerable, migratory*)	✓	✓
Killer whale (*Migratory*)	✓	✓
Spotted bottlenose dolphin (*Migratory*)	✓	✓
Sirenians		
Dugong (*Migratory*)	×	✓

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

[19] Very high-frequency cetaceans are the functional cetacean hearing group that are specialised for hearing very high frequencies (e.g. Kogia spp)

[20] Refer to soundscape survey area shown in Figure 5-4.

Table 5-6: Presence of BIAs for marine mammals

Common name	BIA behaviour	Seasonal presence	OA	Distance from the OA	Hydrocarbon EMBA
Humpback whale	Migration (north and south)	Northern migration, late July to September	×	~50 km	✓
Pygmy blue whale	Migration	Northern migration (enter Perth canyon January to May; pass Exmouth April to August; continue north to Indonesia) southern migration (follow WA coastline from October to late December)	✓	Intersects the OA	✓

5.3.3.1.1 Pygmy blue whales

The pygmy blue whale (*Balaenoptera musculus brevicauda*) is a subspecies of the blue whale. The blue whale is listed as endangered and migratory under the EPBC Act. A migration BIA for the pygmy blue whale overlaps the OA and Hydrocarbon EMBA (Table 5-6; Figure 5-4).

It was estimated by McCauley and Jenner (Ref. 41) that 662–1,559 pygmy blue whales migrated south past Exmouth in 2004. This is similar to abundance estimates of 532–1,754 blue whales at the Perth Canyon between 1999/2000 to 2004/2005 (Ref. 42). A more recent preliminary abundance estimate by McCauley et al. (Ref. 43) indicated that ~3,554 pygmy blue whales migrated north through the NWS region during 2022. It is unknown what proportion of the total population these seasonal migratory estimates encompass (Ref. 41; Ref. 42).

Migration

Pygmy blue whales migrate along the west coast of Australia in the northern direction to their breeding grounds near the Indonesian Archipelago from approximately January to August (passing through the Perth Canyon region earlier [January to May] than Exmouth [April to August] before continuing north) then south to their feeding grounds in the Southern Ocean from approximately mid-November to early-January (Ref. 41; Ref. 44). 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. 45; Ref. 46; Ref. 47). These seas are considered the northern terminus of the migration and potentially the whales' breeding and calving ground, but may also act as a feeding area (Ref. 48; Ref. 49).

Acoustic monitoring analysed by McCauley and Jenner (Ref. 41), including sites off the North West Cape and north of Montebello Islands, identified pygmy blue whales migrating south past the Exmouth area through November to late-December with a comparatively short burst of animals passing. The pygmy blue whales migrate north passing the Exmouth–Montebello Islands area over a more protracted period ranging from April to August (Ref. 41). The shorter southbound compared to northbound migratory period suggests the animals are swimming purposely through the area to reach southern feeding areas (Ref. 41). A difference in travel speed for pygmy blue whales was also reported by Thums et al. (Ref. 50), 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).

CAPL passive acoustic loggers deployed over 2019–2023 (29 instruments; adjacent to existing Jansz field infrastructure and more broadly over the region [21]) have detected pygmy blue whales migrating south past the Jansz location from early-October to late-January of the following year (peak late-November to early-December); and north from late-March to mid-September (peak late-May to June) (Ref. 43). These migration periods are in agreement with McCauley and Jenner (Ref. 41), Double et al. (Ref. 48) and McCauley et al. (Ref. 51). During the 2019 soundscape monitoring pygmy blue whale song was detected on more days than any other type of mysticete (baleen whale) sound (Ref. 39). Higher numbers of singers were detected during the northern migration compared to southern migration (Ref. 43). The presence of migratory whales was also observed to vary temporally and spatially each year (Ref. 40; Ref. 43).

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. 50). Monthly spatial predictions indicated higher densities around the Montebello Island region during May and June (northern migration) and November and December (southern migration) (Ref. 50).

Previous descriptions, including within the *Conservation Management Plan for the Blue Whale*, of the migration route for pygmy blue whales along the WA coast are that they "tend to pass along the shelf edge at depths between 500 m to 1,000 m" (Ref. 21; Ref. 42). These descriptions appear to have been sourced from acoustic data for a southerly migration of pygmy blue whales past Exmouth, where it was observed that most pygmy blue whales pass along the shelf edge out to water depths of 1,000 m but centred near the 500 m depth contour (Ref. 41). The use of the continental slope habitat in WA is in contrast to southern Australia where use of the continental shelf and shelf break predominates (Ref. 50).

Literature (e.g. Ref. 41; Ref. 44; Ref. 48) supports that many pygmy blue whales follow the continental shelf edge when south of the North West Cape on their north and south migrations. However, north of the North West Cape the pygmy blue whales are more likely to transit through deeper and further offshore waters (e.g. Ref. 43; Ref. 44; Ref. 48).

Double et al. (Ref. 48) described tagged pygmy blue whales (2009, 2011) during their northern migration as travelling 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). Data from tagged pygmy blue whales (2020) also indicated that during their northern migration, the width of the migration corridor increases north of Montebello Islands from ~175 km to ~690 km at its widest point (Ref. 50). Gavrilov et al. (Ref. 44) 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 the coast (Ref. 44).

Based on analysis of CAPL's passive acoustic monitoring data (2019–2023) the northern migration corridor through the Jansz region is broad (i.e. extends further west than the soundscape survey area) and had two focal points: one just west of

[21] Refer to soundscape survey area shown in Figure 5-4.

the continental shelf edge[22], and one ~65 km west of Jansz field infrastructure[23] (Ref. 43). The focal point for the southern migration corridor was also detected ~65 km to the west of the Jansz field infrastructure (Ref. 43). The results of this passive acoustic monitoring data are consistent with previous studies indicating broader migration corridors north of the North West Cape.

Ferreira et al. (Ref. 52) analysed available satellite tracking data for pygmy blue whales (n=38) and environmental data to predict habitat suitability for migration. The analyses determined that areas of high relative habitat suitability for migration were identified along the shelf break (200 m bathymetry contour) and slope between Windy Harbour and Scott Reef, and also in deep areas offshore of Rowley Shoals. From Cape Leeuwin to Ningaloo Reef, the suitable habitat was associated predominantly with the continental slope. North of Ningaloo Reef (and extending to Ashmore Reef) there was a separation of suitable migration habitat between the deep ocean basin area and slope habitat (Ref. 52). The OA does not intersect with areas 'validated as suitable habitat' for migration (Figure 5-4).

Thums et al. (Ref. 50) incorporated data collected from both passive acoustic monitoring (46 instruments, 2006 to 2019) and satellite telemetry data (22 tag deployments, 2009 to 2021) to determine the 'most important areas' for migration[24] along the WA coast. This analysis identified an almost continuous area from southern WA to around the latitude of Rowley Shoals; and thereafter was more dispersed (Ref. 50). The OA does intersect with these 'most important areas' for migration (Figure 5-4).

Therefore, while the OA intersects with the migration BIA for pygmy blue whales, it is expected, based on satellite tracking and acoustic detection studies, that pygmy blue whales have a broader migration corridor at this latitude (i.e. extending further offshore than the defined BIA).

Foraging

Blue whales aggregate in productive upwelling or frontal regions worldwide to prey on dense but patchy krill aggregations (Ref. 53). 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. 50). The areas around the Perth Canyon and Australian Coastal Upwelling System correspond to 'Foraging Areas'[25] and 'Known Foraging Areas' within the *Conservation Management Plan for the Blue Whale* (Ref. 42). Blue whales have the highest known prey requirements of any predator, and Foraging Areas are therefore generally associated with areas of high primary productivity that can support sufficient densities of krill, such as oceanographic upwelling or frontal systems (Ref. 42). The *Conservation Management Plan for the Blue Whale* (Ref. 42) also identifies 'Possible Foraging Areas'[26], including two in WA, one off the Ningaloo coast, and

[22] Where 'continental shelf edge' is defined as the 200 m water depth contour.

[23] This is indicated by the ~260 km distance from mainland in Figure 5-4.

[24] 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. 50)

[25] The *Conservation Management Plan for the Blue Whale* (Ref. 42) defines a Foraging Area as "blue whales are regularly observed on a seasonal basis", and a Known Foraging Area is "[k]nown foraging occurs in these areas but is highly variable both between and within seasons"

[26] The *Conservation Management Plan for the Blue Whale* (Ref. 42) defines a Possible Foraging Area as "[e]vidence 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"

another around Scott Reef. These 'Possible Foraging Areas' have been characterised as foraging BIAs and occur >210 km south-west and >880 km north-east of the OA respectively.

Analyses by Ferreira et al. (Ref. 52) determined that suitable habitat for foraging was identified as a large semi-continuous area from the southern extent (28°S) to the north-eastern edge of the modelled region (11.5°S). The model indicated high habitat suitability extending out from the continental shelf break (200 m bathymetry contour) in the north-west of WA; with the highest relative suitability occurring from just south of Shark Bay to Scott Reef along the continental shelf break and slope, and also extending to the Exmouth Plateau (Ref. 52). The study indicates suitable habitat is related to dynamic and localised oceanic processes that may occur at different temporal scales (Ref. 52). The OA does occur within areas 'validated as suitable habitat' for foraging (Figure 5-5).

Thums et al. (Ref. 50) determined that pygmy blue whale movement off northwest WA were predominantly relatively fast, directed travel (high move persistence) interspersed with relatively short (median 28 h) periods of low move persistence. This high move persistence is indicative of migration, while the low move persistence is generally indicative of foraging (Ref. 50). Data collected from both passive acoustic monitoring and satellite telemetry data was analysed and determined the 'most important areas' for foraging[27] 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. 50). These spatially non-continuous foraging areas may be used by pygmy blue whales during their migration north in the Austral winter (Ref. 54). Although foraging areas are described as static, they are likely to be dynamic given their dependence on presence of prey (Ref. 50; Ref. 55). Feeding behaviour appears to be largely a function of prey availability and their associated oceanographic drivers (i.e. surface currents, light attenuation, upwellings, and seabed features) (Ref. 52; Ref. 56; Ref. 57). The OA does not intersect with these most important areas for foraging (Figure 5-5).

Thums et al. (Ref. 54) analysed diving behaviour of nine tagged pygmy blue whales to determine where foraging actually occurs during their northern migration. Three main foraging areas were identified based on where foraging and feeding dives occurred: Perth Canyon to offshore of Jurien Bay; adjacent to Geraldton and the Abrolhos Islands, and offshore of Ningaloo (extending from near Coral Bay to offshore of the Montebello Islands) (Ref. 54). However, it was noted that more opportunistic foraging occurred off north-west Australia where foraging dives were shallower, horizontal travel rates faster, and there was an absence of a diurnal pattern in diving (Ref. 54). This suggests a reliance on more ephemeral prey in northwest Australia than off southwest Australia where whales have high residency. The foraging/feeding behaviours observed in this study provide support for use of a mixed breeding strategy (income and capital) in pygmy blue whales (Ref. 54).

A review by Pattiaratchi (Ref. 58) demonstrated that there were no clear oceanographic drivers (including seabed features, currents and eddies, or upwelling) within the Jansz area that may result in sustained high primary productivity and/or an increased likelihood of pygmy blue whale foraging in the area. Sonar surveys to determine the presence of sufficient biomass of prey to support foraging pygmy blue whales were undertaken by McCauley and Erbe

[27] 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. 54).

(Ref. 59). This study indicated that the Jansz area may be able to support opportunistic feeding in surface waters (<100 m water depth) for short durations (hours); however, in comparison to known prey aggregations observed at Perth Canyon, the biomass observed at the Jansz area is unlikely to represent a consistent and reliable feeding area (Ref. 59). Therefore, the Jansz field and surrounding areas, which include the OA, are not considered to represent a distinct and sustained Foraging Area, but may provide opportunistic foraging if the environmental conditions provide for the aggregation of prey at sufficient quantities at the time a pygmy blue migrates through the area. This is consistent with studies of tagged pygmy blue whales that demonstrated more opportunistic foraging in northwest Australia, compared to southern areas (e.g. Perth Canyon, Ningaloo) (Ref. 54).

Owen et al. (Ref. 60) deployed a multi-sensor tag on a single pygmy blue whale and tracked its movement from the Perth Canyon region to Geraldton. The whale completed a total of 1,677 dives over the duration of the tag was attached (7.6 days). Three types of movement behaviour (migratory, exploratory dives, and feeding [lunge dives]) were identified. The feeding behaviours (lunge dives) were characterised by a mean maximum depth of 129±183 m (range 13–505 m) and a mean dive duration of 5.2 minutes for shallow feeding and 11.4 minutes for deep feeding.

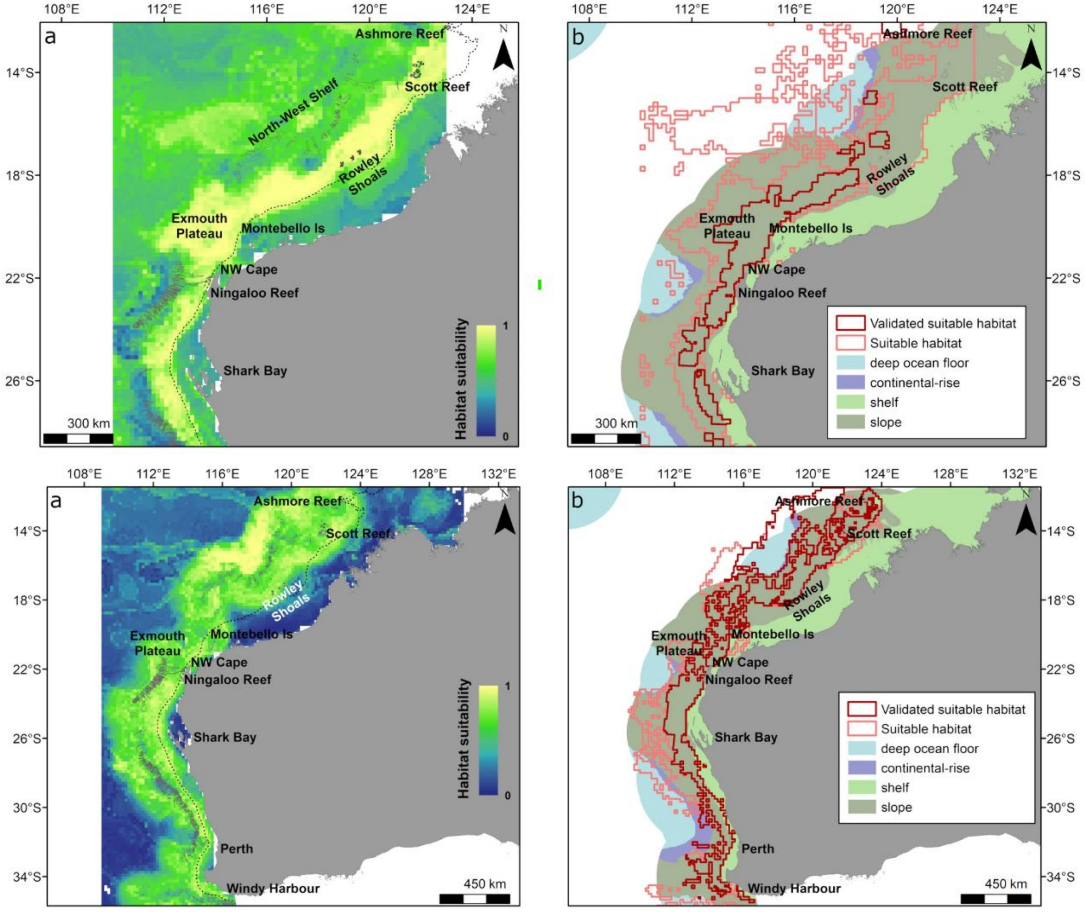
Based on analysis of nine tagged pygmy blue whales (eight at Perth Canyon, one at Ningaloo), Thums et al. (Ref. 54) determined that maximum dive depths of foraging and lunge feeding dives were deeper in the Perth (321 m, 31–540 m) and Geraldton (338 m, 64–483 m) regions, followed by Savu Sea (176 m, 42–259 m), with Ningaloo being the shallowest (99 m, 39–306 m). As part of a different study, Thums et al. (Ref. 50) also describes 10 of the 24 pygmy blue whales that were encountered during a 2020 field trip off the North West Cape were observed to be surface feeding (implied by the visible baleen and pleats on the surface).

Biologically, surface feeding is an optimal behavioural response for pygmy blue whales, given the significantly reduced energetic costs associated with this strategy over lunge feeding at depth, which requires a significant oxygen and energetic demand (Ref. 61). Studies have demonstrated that feeding at depth is thought to only be energetically efficient if krill density at depth is three times higher than in surface waters (Ref. 61). Studies in several locations where pygmy blue whales are known to aggregate (southern Australia [Ref. 62], New Zealand [Ref. 61]; California [Ref. 63], Canada [Ref. 64]; Chile [Ref. 65]) have demonstrated evidence of surface or sub-surface (<100 m) foraging, determined through visual observations of lunge feeding and/or analysis of tagged data. In these instances, surface foraging was driven by the aggregation of krill at the surface (or sub-surface). Torres et al. (Ref. 61) noted that surface foraging adheres to the principles of the ‘optimal foraging theory’, which states that to maximise fitness, an animal adopts a foraging strategy that provides the most benefit (i.e. energy) for the lowest cost, thereby maximising the net energy gained.

Pattiaratchi (Ref. 58) demonstrated that chlorophyll production within the Pilbara region was highest in <100 m of water depth (particularly in summer), where sufficient light still penetrates to allow for photosynthesis and nutrients are highest within the thermocline (80–100 m). In winter the data demonstrated that the chlorophyll was mixed throughout the upper 80–100 m, corresponding to the well-mixed conditions in the upper surface waters. There is a generally accepted correlation between increased chlorophyll production (i.e. phytoplankton biomass) and increased krill density (Ref. 66). Furthermore, a krill biomass survey

undertaken by McCauley and Erbe (Ref. 59) demonstrated that around the Jansz field region, aggregations of krill dense enough to support opportunistic feeding by pygmy blue whales were only found within surface or sub-surface waters (<100 m).

In summary, a range of evidence (i.e. visual observations of feeding individuals, diving data from tagged whales, prey biomass surveys, and biological theory) indicates that pygmy blue whales within the Pilbara region preferentially forage at the surface or sub-surface, where studies demonstrates that productivity is concentrated within the photic zone (<100 m).



Source: Ref. 52

Figure 5-3: Predicted habitat suitability for foraging (top panel) and migration (bottom panel)

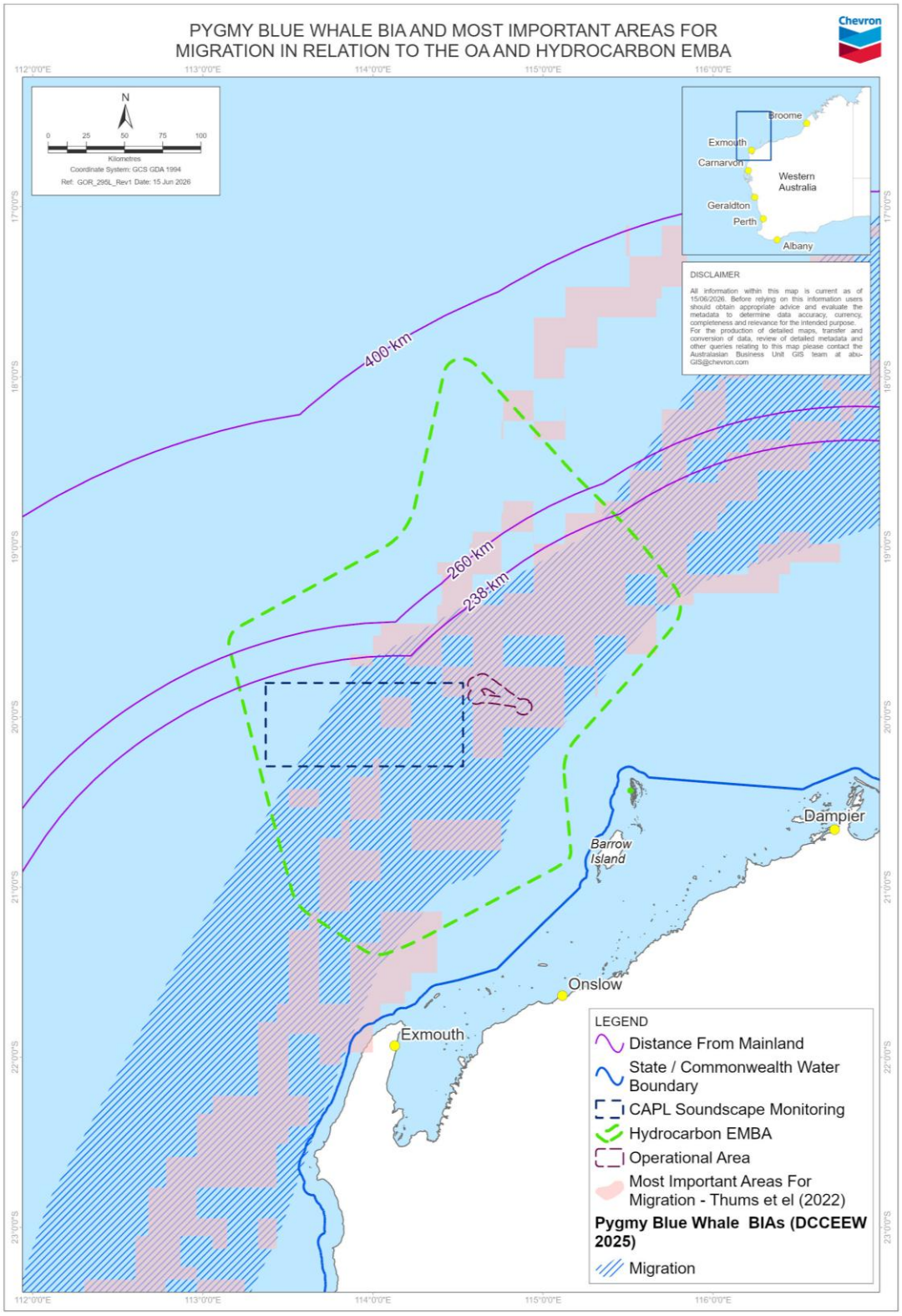


Figure 5-4: Pygmy blue whale BIA and most important areas for migration in relation to the OA and Hydrocarbon EMBA

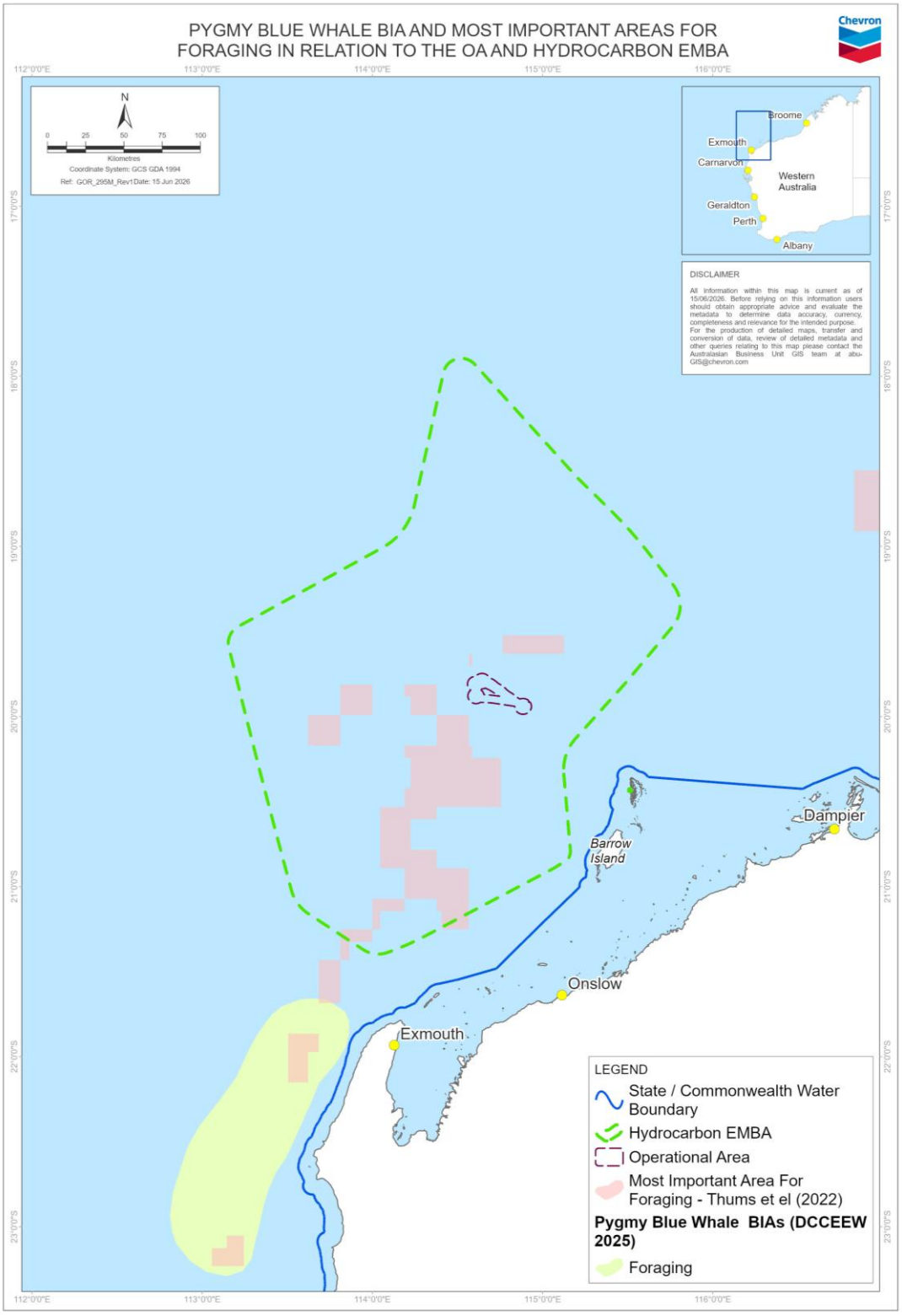


Figure 5-5: Pygmy blue whale BIA and most important areas for foraging in relation to the OA and Hydrocarbon EMBA

5.3.3.2 Marine reptiles

Based on searches of the online PMST (Ref. 19;appendix d), the threatened and/or migratory reptile species shown in Table 5-7 may be present within the OA and Hydrocarbon EMBA. The full list of marine species identified from the PMST is provided in appendix d. HCTS of threatened marine reptiles species and BIAs for protected marine reptiles species are listed in Table 5-8 and Table 5-9, respectively.

No threatened and/or migratory species with BIAs, or HCTS of a species, were identified within the OA. Further details on other threatened and/or migratory species are included in the CAPL Planning Area Description of the Environment (Appendix G of the Operational and Scientific Monitoring Bridging Implementation Plan [OSM-BIP; Ref. 6]).

The salt-water crocodile was identified within the PMST as potentially being present within the OA, however this species is not considered likely to be present. The salt-water crocodile inhabits Australian coastal waters, estuaries, lakes, inland swamps, and marshes (Ref. 67). The OA occurs offshore and is >75 km west-northwest of Montebello Islands. There are no islands or other emergent features within or adjacent to the OA.

Table 5-7: Presence of threatened and/or migratory reptiles

Common name	OA	Hydrocarbon EMBA
Crocodiles		
Salt-water crocodile (*Migratory*)	✓	✓
Turtles		
Flatback turtle (*Vulnerable, migratory*)	✓	✓
Green turtle (*Vulnerable, migratory*)	✓	✓
Hawksbill turtle (*Vulnerable, migratory*)	✓	✓
Leatherback turtle (*Endangered, migratory*)	✓	✓
Loggerhead turtle (*Endangered, migratory*)	✓	✓
Sea snakes		
Leaf-scaled sea snake (*Critically Endangered*)	×	✓
Short-nosed sea snake (*Critically Endangered*)	×	✓

Table 5-8: Presence[28] of HCTS of marine turtles

Common name	Nesting location	Internesting buffer	Seasonal presence	OA	Distance from the OA	Hydrocarbon EMBA
Flatback turtle[29]	Barrow Island, Montebello Islands, coastal	60 km	October to March	×	~16 km	✓

[28] Nesting locations, internesting buffer, and seasonal presence as defined in the *Recovery Plan for Marine Turtles in Australia* (Ref. 264) and/or DCCEEW geospatial datasets (Ref. 34).

[29] Although the PMST report (appendix d) indicates the HCTS for flatback turtles overlaps with the OA, the PMST map viewer (figure attached in appendix d), the AMSIS map viewer and the geological dataset from the DCCEEW do not show any overlap.

Common name	Nesting location	Internesting buffer	Seasonal presence	OA	Distance from the OA	Hydrocarbon EMBA
	islands from Cape Preston to Locker Island					
Green turtle	Barrow Island, Montebello Islands, Serrurier Island, and Thevenard Island	20 km	November to March	×	~55 km	✓
Hawksbill turtle	Cape Preston to mouth of Exmouth Gulf including Montebello Islands and Lowendal Islands	20 km	October to February	×	~55 km	✓

Table 5-9: Presence of BIAs for marine reptiles

Common name	BIA behaviour	Seasonal presence	OA	Distance from the OA	Hydrocarbon EMBA
Flatback turtle	Foraging	Early in summer	×	~75 km	✓
	Internesting buffer	Early in summer[30]	×	~19 km	✓
		Summer	×	~68 km	✓
	Mating	Early in summer	×	~75 km	✓
	Nesting	Early in summer	×	~75 km	✓
Green turtle	Foraging	Green Turtle aggregation inside of North west Island. Early in summer	×	~75 km	✓
		Summer	×	~70 km	✓
	Internesting	Summer	×	~70 km	✓
	Internesting buffer	Green Turtle aggregation inside of North west Island. Early in summer	×	~56 km	✓
		Summer	×	~51 km	✓
	Mating	Green Turtle aggregation inside of North west	×	~75 km	✓

[30] Although the PMST report (appendix d) indicates the Internesting buffer BIA for flatback turtles overlaps with the OA, the PMST map viewer (figure attached in appendix d), the AMSIS map viewer and the geological dataset from the DCCEEW do not show any overlap.

Common name	BIA behaviour	Seasonal presence	OA	Distance from the OA	Hydrocarbon EMBA
		Island. Early in summer			
		Summer	×	~70 km	✓
	Nesting	Green Turtle aggregation inside of NW Is. Early in summer	×	~75 km	✓
		Summer	×	~70 km	✓
Hawksbill turtles	Foraging	Early in summer	×	~75 km	✓
	Internesting buffer	Early in summer	×	~56 km	✓
		Peak nesting in spring and early summer	×	~67 km	✓
		Spring and early summer, peak nesting October	×	~68 km	✓
	Mating	Early in summer	×	~75 km	✓
	Nesting	Early in summer	×	~75 km	✓
Loggerhead turtles	Internesting buffer	Not identified in the database	×	~62 km	✓

5.3.3.3 Fishes, including sharks and rays

Based on searches of the online PMST (Ref. 19;appendix d), the threatened and/or migratory fish species shown in Table 5-10 may be present within the OA and Hydrocarbon EMBA. The full list of marine species identified from the PMST is provided in appendix d. HCTS of a species and BIAs associated with protected marine species are listed in Table 5-11 and Table 5-12. No BIAs or HCTS of listed threatened species were identified within the OA (Ref. 68; Ref. 69; Ref. 70).

Further details on other threatened and/or migratory species are included in the CAPL Planning Area Description of the Environment (Appendix G of the OSM-BIP [Ref. 6]).

A fish assemblage survey was undertaken as part of the benthic survey (Ref. 32) that supported the Backfill Fields Development OPP. While no fish assemblage survey sites were located directly within the G&E or Jansz fields, there were survey sites in adjacent fields of similar water depths.

Across all survey sites, observations were predominantly pelagic fishes (Ref. 32). The fish assemblages of the deeper continental slope were mostly dominated by Carangidae, Macrouridae (rat tails), Halosauridae (halosaurs) and unidentified anguilliform (eel-like) fishes (Ref. 32). Pelagic fishes are generally considered mobile and/or transient in nature (Ref. 71). The demersal fishes observed throughout soft sediment habitats (Ref. 32) are also generally mobile taxa without any site attachment (Ref. 71).

The survey results also indicated the presence of distinct fish assemblages, which were strongly influenced by water depth and water masses; this included a distinct assemblage associated with the deeper waters of >800 m depth and the Antarctic Intermediate Water mass (Ref. 32). The lowest fish diversity and abundance was

observed within the deeper Antarctic Intermediate Water mass of the Exmouth Plateau key ecological feature (KEF) area (>25 km further offshore from the OA).

Table 5-10: Presence of threatened and/or migratory fishes, including sharks and rays

Common name	OA	Hydrocarbon EMBA
Sharks		
Dwarf sawfish (*Vulnerable, migratory*)	✓	✓
Green sawfish (*Vulnerable, migratory*)	✓	✓
Grey nurse shark (*Migratory*)	✓	✓
Grey nurse shark (west coast population) (*Vulnerable*)	✓	✓
Largetooth sawfish (*Endangered, migratory*)	✓	✓
Longfin mako (*Migratory*)	✓	✓
Narrow sawfish (*Migratory*)	✓	✓
Oceanic whitetip shark (*Migratory*)	✓	✓
Scalloped hammerhead (*Conservation dependent*)	✓	✓
Shortfin mako (*Migratory)*	✓	✓
Whale shark (*Vulnerable, migratory*)	✓	✓
White shark (*Vulnerable, migratory*)	✓	✓
Rays		
Giant manta ray (*Migratory*)	✓	✓
Reef manta ray (*Migratory*)	✓	✓

Table 5-11: Presence of BIAs for fishes, including sharks and rays

Common name	BIA behaviour	Seasonal presence	OA	Distance from the OA	Hydrocarbon EMBA
Whale shark	Foraging[31]	Spring	×	~20 km	✓

Table 5-12: Presence of HCTS fishes, including sharks and rays

Common name	HCTS location	OA	Hydrocarbon EMBA
Dwarf sawfish	Areas where aggregations of individuals have been recorded displaying biologically important behaviour such as breeding, foraging, resting or migrating, are considered critical to the survival of the species (Ref. 68).	×	May be present (based on species distribution mapping for the 'species or species habitat likely to occur' category (Ref. 72); and the distribution mapping of the 'adult/juvenile sawfish known to occur' and 'pupping likely to occur' categories from Figure 1c of the Recovery Plan (Ref. 68).
Green sawfish		×	May be present (based on species distribution mapping within the 'species or species habitat likely to occur' category (Ref. 72); and the distribution mapping of the 'adult/juvenile sawfish known to occur' and 'pupping likely to occur' categories from Figure 1b of the Recovery Plan (Ref. 68).

[31] Although the PMST report (appendix d) indicates the foraging BIA for whale shark overlaps with the OA, the PMST map viewer (figure attached in appendix d), the AMSIS map viewer and the geological dataset from the DCCEEW do not show any overlap.

5.3.3.4 Seabirds and shorebirds

Based on searches of the online PMST (Ref. 19; appendix d), the threatened and/or migratory seabird and shorebird species shown in Table 5-13 may be present within the OA and Hydrocarbon EMBA. The full list of marine species identified from the PMST is provided in appendix d. BIAs and HCTS associated with protected marine species are listed in Table 5-14 and Table 5-15.

For the threatened and/or migratory species with BIAs within the OA, additional information has been provided in the following subsections. Further details on other threatened and/or migratory species are included in the CAPL Planning Area Description of the Environment (Appendix G of the OSM-BIP [Ref. 6]).

Table 5-13: Presence of threatened and/or migratory seabirds and shorebirds

Common name	OA	Hydrocarbon EMBA
Abbott's Booby (*Endangered*)	×	✓
Australian fairy tern (*Vulnerable*)	✓	✓
Australian painted snipe (*Endangered*)	×	✓
Barn swallow (*Migratory*)	×	✓
Bar-tailed godwit (*Migratory*)	×	✓
Bridled Tern (*Migratory*)	×	✓
Caspian tern (*Migratory*)	×	✓
Common noddy (*Migratory*)	✓	✓
Common sandpiper (*Migratory*)	✓	✓
Curlew sandpiper (*Critically endangered, migratory*)	✓	✓
Eastern curlew (*Critically endangered, migratory*)	✓	✓
Flesh-footed shearwater (*Migratory*)	×	✓
Golden bosun (*Endangered*)	✓	✓
Great frigatebird (*Migratory*)	×	✓
Greater crested tern (*Migratory*)	×	✓
Grey wagtail (*Migratory*)	×	✓
Indian yellow-nosed albatross (*Vulnerable, migratory*)	×	✓
Lesser frigatebird (*Migratory*)	✓	✓
Little tern (*Vulnerable, migratory*)	×	✓
Northern Siberian bar-tailed godwit (*Endangered*)	×	✓
Oriental plover (*Migratory*)	×	✓
Oriental pratincole (*Migratory*)	×	✓
Osprey (*Migratory*)	✓	✓
Pectoral sandpiper (*Migratory*)	✓	✓
Red knot (*Vulnerable, migratory*)	✓	✓
Red-tailed tropicbird (*Migratory*)	✓	✓
Red-tailed tropicbird (Indian Ocean) (*Endangered*)	✓	✓
Roseate tern (*Migratory*)	×	✓

Common name	OA	Hydrocarbon EMBA
Sharp-tailed sandpiper (*Vulnerable, migratory*)	✓	✓
Soft-plumaged petrel (*Vulnerable*)	×	✓
Southern giant petrel (*Endangered, migratory*)	✓	✓
Streaked shearwater (*Migratory*)	✓	✓
Wedge-tailed shearwater (*Migratory*)	×	✓
White-tailed tropicbird (*Migratory*)	✓	✓
Yellow wagtail (*Migratory*)	×	✓

Table 5-14: Presence of BIAs for seabirds and shorebirds

Common name	BIA behaviour	Seasonal presence	OA	Distance from the OA	Hydrocarbon EMBA
Fairy tern	Breeding	Breeding from July to late September.	×	~66 km	✓
Lesser crested tern	Breeding	Breeding March to June.	×	~68 km	✓
Roseate tern	Breeding	Breeding from mid-March to July.	×	~72 km	✓
Wedge-tailed shearwater	Breeding	Breeding visitor arriving in mid-August and leaving in April in Pilbara and mid-May in Shark Bay.	✓	Intersects the southern section of the OA	✓

Table 5-15: Presence of HCTS seabirds and shorebirds species

Common name	HCTS location	OA	Hydrocarbon EMBA
Australian fairy tern	Suitable habitat where the species is known or likely to breed or forage as shown in the indicative distribution map in Figure 1 of the National Recovery Plan (Ref. 73).	×	May be present (based on species distribution mapping for the 'species or species habitat known or likely to occur' category (Ref. 72; Ref. 73).

5.3.3.4.1 Wedge-tailed shearwater

The wedge-tailed shearwater (*Ardenna pacifica*) is listed as migratory under the EPBC Act. A breeding BIA for the wedge-tailed shearwater intersects with the southern section of the OA and Hydrocarbon EMBA (Figure 5-6). The BIAs for this species are buffers around islands that this species is known to nest on. Bird species may forage in the waters surrounding the islands during nesting seasons. The wedge-tailed shearwater 'foraging in high numbers' BIA is much further (>660 km from the OA and ~490 km beyond the Hydrocarbon EMBA).

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. 75); out of an estimated global population of five million (Ref. 76). The wedge-tailed shearwaters typically begin arriving at their WA rookeries around August each year and begin to 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 (Ref. 77; Ref. 78). Migration from the rookery is very synchronous, but the return is less so (Ref. 78). Once adults cease returning to feed their young, the young (fledgling) wedge-tailed shearwaters fledge and depart nests (Ref. 79; Ref. 80). Breeding behaviours are nocturnal in wedge-tailed shearwaters. Adults return to and depart the colony at night, and fledglings depart the colony at night. Adults may not return to feed chicks each night. In the lead up to fledging, chicks also leave their burrows to exercise their wings

Known breeding locations in the NWMR[32] include Forestier Island (Sable Island), Bedout Island, Dampier Archipelago, Passage Island, Lowendal Islands, islands off Barrow Island (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. 76). One of the closest rookeries to the OA is Double Island (east of Barrow Island, outside of the OA), supporting 5,000–10,000 pairs of wedge-tailed shearwaters (Ref. 83 as cited in Ref. 82).

When foraging, wedge-tailed shearwaters fly <10 m above the water and dive to depths around 2–3 m (Ref. 84). Their diet consists of squid, fish, and crustaceans (Ref. 76). This species is known to forage relatively close to breeding islands (Ref. 76); however, other studies (e.g. Ref. 78; Ref. 85) 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. 78). 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; a consistent pattern of foraging near seamounts was observed (Ref. 78). 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. 78; Ref. 85). The use of a bimodal foraging strategy suggests that prey availability close to the rockery (i.e. areas that would be utilised on short trips) are inadequate for the large numbers of breeding shearwaters (Ref. 78).

[32] None of these breeding locations occur within the OA or Hydrocarbon EMBA.

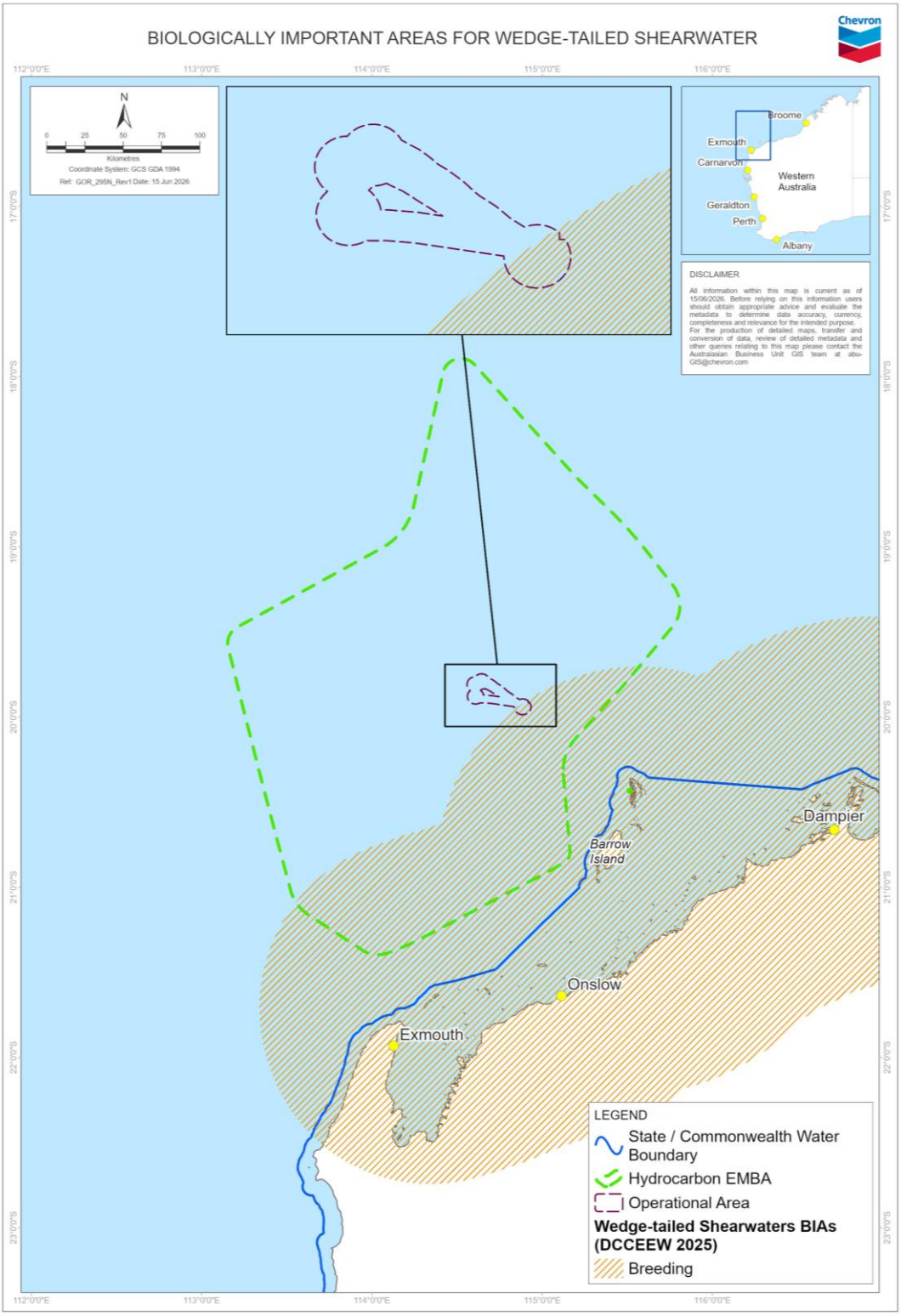


Figure 5-6. Biologically important areas for wedge-tailed shearwater

5.3.3.5 Summary of marine fauna seasonal sensitivities

Periods of the year coinciding with key biologically important behaviours for EPBC Act listed threatened and/or migratory species that may potentially be present within the OA are presented in Table 5-16.

Table 5-16: Seasonal presence of marine fauna with biologically important behaviours within the OA

Activity/Species	January	February	March	April	May	June	July	August	September	October	November	December
Petroleum activity												
G&E pipeline and subsea infrastructure installation and pre-commissioning activites[1]												
IMR	(as required)											
Pygmy blue whale												
Northern migration[2]												
Southern migration[2]												
Opportunistic foraging[3]												
Wedge-tailed shearwater												
Migration[4]												
Breeding[4]												

	Indicative petroleum activity timing.
	Species may be present and display biologically important behaviour in the region.
	Predicted peak period.
	Species presence detected during CAPL's soundscape monitoring.

1. As described in Section 4.1.2 the G&E pipeline and subsea installation and pre-commissioning activities are planned to commence from 2027 and occur over multiple campaigns.

2. Pygmy blue whale presence during northern migrations along the WA coast have been detected between approximately January and August (Ref. 41; Ref. 45) and during southern migrations between November and January (Ref. 41; Ref. 45). Pygmy blue whale presence within the Jansz region has been recorded from late-March to mid-September (peak late-May to June) during northern migration, and from early-October to late-January (peak late-November and early-December) for the southern migration (Ref. 44).

3. Habitat suitability modelling indicates that foraging habitat may exist along the continental shelf break and slope in north-west WA (Ref. 50). Utilisation of the 'most important areas' for foraging for the pygmy blue whale were identified to be correlated to the species northern and southern migrations (Ref. 54).

4. Wedge-tailed shearwaters typically begin arriving at their WA colonies around August and begin to excavate burrows for nesting. Peak egg laying typically occurs during November, and they will typically leave nests in early-April to early-May (Ref. 77; Ref. 78). Once adults cease returning to feed their young, the young (fledging) wedge-tailed shearwaters fledge and depart nests (Ref. 79; Ref. 80).

5.3.4 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. 86).

5.3.4.1 Water quality

Water clarity on the NWS is variable according to movement, depth and sediment; however, nearshore waters in the NWS may have high turbidity due to local current-induced resuspension of fine sediments and episodic run-off from adjacent rivers (Ref. 87). Baseline monitoring (pre-construction of the GFP, in the waters off the west coast of Barrow Island (~90 km south-east of the OA), turbidity and concentrations of suspended sediments were generally low (Ref. 88).

CAPL conducted surveys (Ref. 32) to characterise the marine environment as part of the Gorgon Backfill Fields Development OPP; these surveys included water quality data collection close to the G&E DC tie-in location. Concentrations of hydrocarbons and metals in the G&E DC samples were compared against the Australian and New Zealand Guidelines (ANZG) default guideline values (DGVs) for 99% species protection (Ref. 89). Concentrations of metal and hydrocarbon (total recoverable hydrocarbons [TRH], benzene, toluene, ethylbenzene and xylenes [BTEX] and polycyclic aromatic hydrocarbons [PAH]), were mostly below laboratory limits of reporting (LoR) or, where applicable, below 99% species protection DGVs, which is typical of an undisturbed offshore tropical environment (Ref. 32). Concentrations of arsenic and barium were above the LoR for surface and near-seabed water samples; no 99% DGV has been established for these metals. Barium concentrations were notably higher (more than double) in the near seabed sample compared to the surface sample; this trend didn't exist for other constituents (Ref. 32). Total dissolved solids range from 38,050 mg/L at the seabed to 38,350 mg/L at the surface (Ref. 32). Nutrient levels were generally low; total phosphorus (TP) concentrations were 0.02–0.09 mg/kg, and total nitrogen (TN) was 0.25–0.70 mg/kg. TP and TN concentrations were higher in near-seabed samples compared to those from the surface samples (Ref. 32).

Water temperature and salinity

Waters in north-west WA are tropical year-round, with sea surface temperature in open shelf waters reaching ~26°C in summer, and dropping to ~22°C in winter. Nearshore temperatures of north-west WA fluctuate through a higher temperature range from ~17°C in winter to ~31°C in summer (Ref. 83).

Baseline monitoring (pre-construction of the GFP, in the waters off the west coast of Barrow Island (~90 km south-east of the OA), recorded salinity levels of 34.9–35.1 psu in both near-surface and near-seabed (Ref. 88). Within the nearshore waters of Barrow Island, temperature stratification is infrequent and there is little evidence of salinity stratification. However, rainfall events are expected to cause localised salinity stratification in coastal waters adjacent to discharging watercourses (Ref. 90).

Salinity and temperature water column profiles were collected as part of Gorgon Backfill Fields Development surveys (Ref. 32), which includes the OA. Across the full survey area (i.e. all sites across the Development Area[33]. Temperatures in the top 50 m of water ranged from 27.7°C to 29.2°C, decreasing gradually with increasing depth, reaching a minimum of ~3.9–4.2°C in water depths of ~1,350 m. Salinity was relatively consistent with depth, ranging from 32.3 psu to 36.3 psu. Conductivity showed a similar trend to temperature, in which conductivity ranged from 52.9 to 57.4 mS/cm in the top 50 m of water, and gradually declined with depth, reaching a minimum of ~33.1 mS/cm at ~1,350 m (Ref. 32).

[33] This is Development Area for the Backfill Fields Development as defined within Section 4.1.3 of the OPP (Ref. 3).

Temperature-salinity profiles were typical for the region (Ref. 32). Across the full survey area (the Development Area), three separate water masses within the water column were identified:

- low salinity surface water ranging from 34.6–35.3 psu with a temperature range of ~18–28°C; upper ~180 m of water column
- higher salinity mid-waters with a salinity and temperature range of 35.4–36 psu and 15–20°C, respectively; centred between 185 and 250 m water depth
- lower salinity bottom waters with a salinity and temperature range of 34.7–35.4 psu and ~3.5–15°C, respectively; between 250 m to ~1,310 m water depth.

Water quality profiles indicate that surface waters correspond with the southward-flowing Leeuwin Current and the deeper south Indian central water mass along with the subsurface Leeuwin Undercurrent, which moves towards the equator along the WA coast at deeper depths (Ref. 32).

5.3.4.2 Sediment quality

Marine sediment quality within the OA and broader Hydrocarbon EMBA is generally expected to be representative of high-sediment quality typically found in offshore areas away from anthropogenic sources of contamination.

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. 90). Sediment tributyltin 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. 90). Total petroleum hydrocarbons and total 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. 90).

Sediment quality samples were collected as part of Gorgon Backfill Fields Development surveys (Ref. 32), which includes samples close to the G&E DC tie-in location. The concentrations of hydrocarbons (TRH, BTEX, and PAH), were all below the LoR. Concentrations of metals and metalloids were below ANZG DGVs (where they are established). Given that this was a baseline study and no previous petroleum activity has occurred in the vicinity of the G&E DC tie-in location, it is expected that this sediment chemistry would be representative of natural background levels within the OA (unless within the immediate vicinity of an offshore point source).

Particle size

Sediment samples collected from the G&E DC tie-in location were predominantly composed of fine particles, with ~45% clay (<2 µm) and ~50% silt (2–60 µm), and minor (~5%) proportions of sands (0.06–2 mm) (Ref. 32).

5.3.4.3 Air quality

Air quality within the OA and Hydrocarbon EMBA is expected to be representative of the typically high air quality found in offshore areas, away from industrial point sources.

For the 2020–2025 reporting period, the Ambient Air Quality Monitoring Program on Barrow Island indicated there were no exceedances for nitrogen dioxide (NO_2), sulfur dioxide (SO_2), or carbon monoxide (CO) against the relevant National Environment Protection Measure (NEPM) guidelines (Ref. 91). There have been exceedances of PM_{10} and ozone (O_3) above NEPM guidelines, around facilities on Barrow Island; however, these are likely associated with vehicle traffic and/or regional weather events (Ref. 91).

It is expected that these low levels of contamination would continue throughout the OA and Hydrocarbon EMBA, unless within the immediate vicinity of an offshore point source such as a vessel or offshore petroleum activity where presence of atmospheric emissions would be slightly elevated.

5.3.5 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 affect, or are affected by the existing physical and biological environments within the OA and Hydrocarbon EMBA.

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. 21). These uses of the NWMR make an important economic and social contribution to settlements along the coast (Ref. 21). Industry activities present within the OA and Hydrocarbon EMBA are identified and described in Section 5.4.

5.3.5.1 Land use

The OA and Hydrocarbon EMBA occur entirely offshore and do not interact with the shoreline (Figure 5-1). Therefore, no land uses activities were identified.

5.3.5.2 Heritage

Australia’s 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. 92).

Where known heritage sites and/or artefacts are formally protected under specific heritage legislation, these are described within Section 5.6. The following sections summarise other known heritage values identified within the OA and Hydrocarbon EMBA.

5.3.5.2.1 First Nations cultural activities, connections, and obligations

First Nations People have an ongoing cultural and spiritual connection to Sea Country, as well as islands within the Hydrocarbon EMBA, and the adjacent mainland areas, which includes an obligation to protect cultural values and features such as songlines, dreaming stories, and flora and fauna connected to them.

For First Nations People, every aspect of the land, sea and sky is infused with meaning and life, from the waterways that snake across the country to the rocks that rise up to meet the sky. The concept of 'Country' is holistic, encompassing all elements of the environment, and is central to their identity and sense of belonging. This deep connection is reflected in their languages, ceremonies, and customs, which are all rooted in the land, providing a sense of continuity and

connection to their ancestral heritage. This brings with it, personal, cultural and spiritual obligations and responsibilities, such as an obligation to protect cultural heritage values, which is integral for their existence and wellbeing.

Cultural heritage values are not only comprised of tangible (archaeological) values; it also includes intangible (anthropological) values. Tangible values are those with physical aspects of Aboriginal cultural heritage that are visible, touchable, and measurable (such as stone artefacts, shelters, middens, and art). While intangible values refer to the non-physical aspects of Aboriginal cultural heritage that are transmitted, shared and expressed through language, stories, ceremonies, rituals, and practices (such as songlines, sacred sites, and kinship).

Sea Country is a concept that encompasses the marine environments, coastal areas, and the cultural landscapes that are deeply connected to Aboriginal peoples. Like the concept of ‘Country’, Sea Country is not just a source of food and resources but a living entity that holds stories, spirits, songlines and ancestral connections.

Songlines are paths that track across Country and skies, representing First Nations knowledge, linking people, places, and practices (Ref. 93). They are not only a means of cultural expression but also serve as a guide for navigating and understanding the natural world, woven into song, dance, and memory. These songlines are the living tools that embed and mediate history, ecological knowledge, relationships ancestral beings, and cultural belonging on Country (Ref. 94), guiding not just movement, but culture, lore, and identity. Kearney et al. (Ref. 95) describe that for saltwater peoples “stories and songlines locate, interpret and inscribe knowledges of both the Dreaming tracks, bodies and movements of ancestral beings that criss-cross over Sea Country and the permanent sites of ancestral inhabitation within the marine environment”. Songlines rely on the continued health of Country, and people’s continued access and connection to it (Ref. 96). When Country is damaged or altered, so too are songlines and the knowledge they embody and enact (Ref. 94).

Nunn and Reid (Ref. 97) discuss how First Nations oral traditions have documented sea level rise over the last 7,000 years. Kearney et al. (Ref. 95) also discusses how seabed mapping near Murujuga (Burrup Peninsula) identified two submerged waterholes that were identified by local senior elders as belonging to the Kangaroo songline. A song line from the mainland to Barrow Island has been referenced during surveys involving Thalanyji knowledge holders (Ref. 98). Underwater cultural heritage (UCH), including First Nations UCH, as protected under the UCH Act is discussed in Section 5.6.1.

First Nations People have a profound understanding of the marine ecosystems, developed over thousands of years through observation and interaction which is not merely scientific but deeply intertwined with their cultural practices and beliefs. This knowledge includes seasonal patterns, breeding cycles of marine life, and the sustainable harvesting of resources. This holistic understanding allows them to manage and utilise marine resources in a way that ensures sustainability and respects the natural balance. Supporting First Nations people to engage in a diverse range of marine resource use activities that are sustainable and support to provide for their families and communities (such as hunting, egg collecting, fishing and gathering shellfish).

This deep spiritual connection to marine life is also reflected in their customs, beliefs, and traditions as some marine species hold totemic and kinship significance, and are woven into Dreaming, songlines, and stories. For example, some First Nations People have a strong connection to whales, which has

significance as totemic ancestors to some groups (Ref. 37). The arrival of whales along Australia's coast marked the arrival of the "elders of the sea", which follows a songline that traces the journeys of ancestral spirits as they created the land, animals, and lore (Ref. 37).

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. 99). For coastal First Nations People, it also remains a vital part of their lore and governance, as they have responsibilities as the Traditional Custodians to care for and protect their Sea Country to ensure that it remains healthy and productive for future generations. This stewardship is often guided by principles of reciprocity and respect, where the well-being of the sea is directly linked to the well-being of the people. Their commitment to protecting 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. 99).

Based on previous engagements with First Nations groups, CAPL understands that Thalanyji, Nhuwala, Mardathoonera, Yaburara, and Baiyungu people have connections to the Sea Country and/or islands within the Hydrocarbon EMBA and adjacent land areas. Previous consultation with these groups has confirmed that Sea Country is a significant cultural value which comes with cultural obligations. These Sea Country values include coastal and marine areas, offshore islands, marine fauna, and traditional stories (Table 5-17).

Table 5-17: Cultural values or features identified through consultation

Source	Cultural value or feature
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	The Thalanyji people have a deep connection to Sea Country north of Onslow, extending out into the islands[34] off the coast of the Pilbara including: • Montebello Islands • Barrow Island^ • Mackerel Islands^ • Direction Island^ • Airlie Island^ • Weld Island^ • North and South Islands^ • Ashburton Island^ • Twin Islands^ • any island or atoll proximate to the above islands • a general radius of 150 km from Onslow.
Mardathoonera Cultural Heritage Pty Ltd (MCH)	Cultural heritage values and features identified through consultation were requested to be treated as confidential. As such, heritage values and features identified by MCH have been captured in the sensitive information report provided separately to NOPSEMA.
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	No specific areas have been identified through consultation however NTGAC has noted the cultural importance of Sea Country to the Baiyungu people and the need to ensure it is protected. In addition, CAPL understands the Ningaloo Coast is culturally significant to the Baiyungu people.

[34] These islands (^) occur outside of the Hydrocarbon EMBA. Some nearshore waters adjacent to western Montebello Islands are within the Hydrocarbon EMBA.

Source	Cultural value or feature
Nhuwala Claim Group	Cultural heritage values and features[35] identified through consultation were requested to be treated as confidential. As such, heritage values and features identified by Nhuwala Claim Group have been captured in the sensitive information report provided separately to NOPSEMA.
Wirrawandi Aboriginal Corporation (WAC)	The coastal area, Sea Country, and adjacent islands are highly valuable to the Yaburara and Mardudhunera People. WAC should be consulted where activity EMBAs intersect with a ~120 km radius from the mouth of the Fortescue River (i.e. coastal environments and Sea Country broadly including the Dampier Archipelago, Barrow Island, Montebello Islands). A connection to Barrow Island has also been identified.

5.3.5.2.2 Historic 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. 21). British colonisation didn't begin in the Pilbara until the 1860s; pastoralism was the first major industry, followed by small ports and service centres (Ref. 21). The pearling industry began in the late-1800s, and remains a significant contributor to the economy of northwest WA (Ref. 21). 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. 21). Petroleum discovery and development commenced from the 1950s, with both onshore and offshore discoveries (Ref. 21).

The marine industries that still exist and operate within the NWMR are further described in Section 5.4.

5.3.6 Commonwealth marine areas

The Commonwealth marine area is a MNES under the EPBC Act, and a relevant value and sensitivity under the OPGGS(E)R. The OA and Hydrocarbon EMBA for this petroleum activity occurs within Commonwealth waters off WA that are part of the NWMR.

The NWMR comprises the Commonwealth waters and seabed from the WA—Northern Territory border south to Kalbarri (Ref. 21). 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. 21). 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. 23). 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. 21).

Conservation values of the Commonwealth marine area include:

- protected species and/or their habitat (Section 5.3.3)

[35] The Nhuwala Claim Group's claim area is located in the Onslow region and adjacent waters. The Hydrocarbon EMBA does not intersect the claim area; however, the Group identified cultural heritage values beyond the claim boundaries that may overlap with the Hydrocarbon EMBA.

- protected places including Australian Marine Parks (AMP; Section 5.5.1) and heritage places (Section 5.6)
- KEFs (Section 5.3.6.1).

5.3.6.1 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 are considered as components of the Commonwealth marine area.

KEFs meet one or more of these criteria (Ref. 100):

- a species, group of species, or a community with a regionally important ecological role (e.g. a predator, 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.

The Australian Government has identified KEFs based on scientific advice about ecological processes and characteristics of the area (Ref. 100).

The presence of KEFs within the OA and Hydrocarbon EMBA are shown in Figure 5-7, and a description of the KEFs values and characteristics is provided in Table 5-18. No KEFs were identified within the OA; the closest is the continental slope demersal fish communities KEF, located ~12 km southeast of the OA.

Table 5-18: Values and characteristics of KEFs

KEF[36]	OA	Distance from the OA	Hydrocarbon EMBA
Ancient coastline at 125 m depth contour	✗	**~28 km**	✓
Parts of the Ancient coastline, particularly rocky escarpments, 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. 21). 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. According to the *Marine bioregional plan for the North-west Marine Region* (Ref. 21), little is known about fauna associated with the hard substrate of the escarpment			

[36] Although the PMST report (appendix d) indicates the three KEFs overlap with the OA, the PMST map viewer (figure attached in appendix d), the AMSIS map viewer and the geological dataset from the DCCEEW do not show any overlap.

KEF[36]	OA	Distance from the OA	Hydrocarbon EMBA
across the entire KEF, but it is likely to include sponges, corals, crinoids, molluscs, echinoderms and other benthic invertebrates representative of hard substrate fauna in the NWS. **Values:** Unique sea floor feature with ecological properties of regional significance (Ref. 21).			
Continental slope demersal fish communities	✗	**~12 km**	✓
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. 101). According to the *Marine bioregional plan for the North-west Marine Region* (Ref. 21), the demersal fish species occupy 2 distinct demersal community types associated with the upper slope (water depths: 225–500 m) and the mid-slope (750–1,000 m). Bacteria and fauna present on the continental slope are the basis of the food web for demersal fish and higher-order consumers in this system (Ref. 21). **Values:** High levels of endemism (Ref. 21).			
Exmouth Plateau	✗	**~27 km**	✓
The Exmouth Plateau is a regionally and nationally unique deep-sea plateau (water depths: 800–4,000 m) in tropical waters. The plateau is a very large topographic obstacle that may modify the flow of deep waters, generating internal tides and may contribute to upwelling of deeper-water nutrients closer to the surface, thus serving an important ecological role (Ref. 21). The topography of the plateau (with valleys and channels), in addition to potentially comprising a range of benthic environments, may provide conduits for moving sediment and other material from the plateau surface through the deeper slope to the abyss. The Exmouth Plateau is generally an area of low habitat heterogeneity; however, it is likely to be an important area of biodiversity as it provides an extended area offshore for communities adapted to water depths of ~1,000 m. Sediments on the plateau suggest that biological communities include scavengers, benthic filter feeders and epifauna (Ref. 21). Fauna in the pelagic waters above the plateau are likely to include small pelagic species and nekton (Ref. 25). **Values:** Unique sea floor feature with ecological properties of regional significance (Ref. 21).			

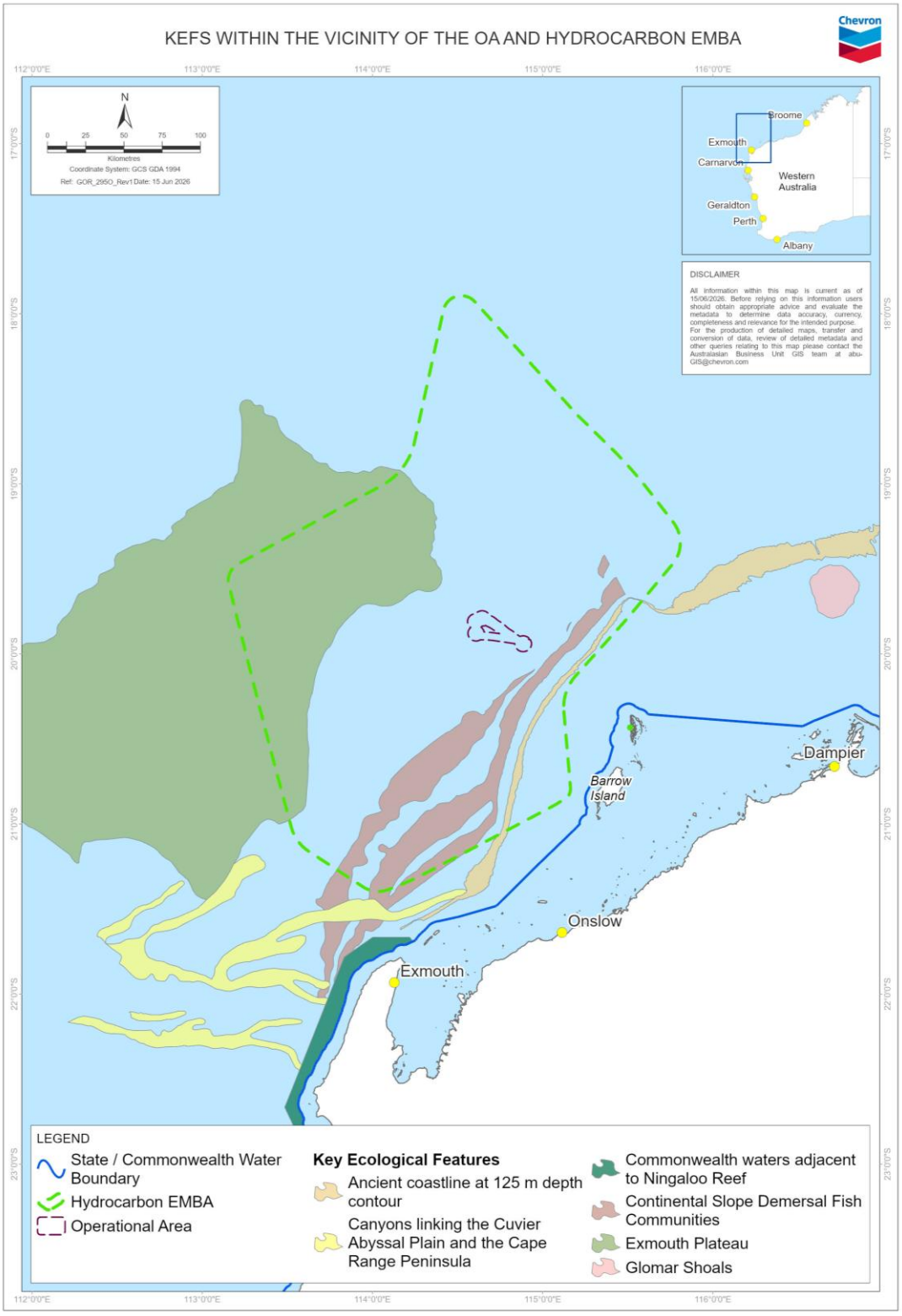


Figure 5-7. KEFs within the vicinity of the OA and Hydrocarbon EMBA

5.3.7 Commonwealth land area

Commonwealth land[37] is a relevant value and sensitivity under the OPGGS(E)R. The OA and Hydrocarbon EMBA occur entirely offshore and do not interact with the shoreline (Figure 5-1). In addition, based on searches of the online PMST (Ref. 19;appendix d) there is no Commonwealth land within the OA and Hydrocarbon EMBA.

5.4 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 resources such as fishing stocks, petroleum reservoirs, or values of the Commonwealth marine area. Marine industries have been developed based on natural and physical resources, and where these industries may intersect with the OA or Hydrocarbon EMBA they have been identified and described in the following sections.

5.4.1 Commercial fisheries

5.4.1.1 Commonwealth managed fisheries

The Commonwealth-managed commercial fisheries with fishing management areas that intersect the OA or Hydrocarbon EMBA, and that have fishing effort recorded over a 10-year period (2015–2024) (Ref. 102) are listed in Table 5-19.

Only one fishery, the North West Slope Trawl Fishery (NWSTF), with recorded fishing effort within the 60 nm graticular reporting block intersects with the OA.

Table 5-19: Presence of recent (2015-2024) fishing effort recorded within Commonwealth-managed commercial fisheries

Fishery	OA	Hydrocarbon EMBA
North-West Slope Trawl Fishery	✓	✓
Western Deepwater Trawl Fishery	×	✓

NWSTF

The NWSTF uses bottom (or demersal) trawl gear methods to target deepwater prawn and scampi, typically in water depths of 350–600 m. The primary species landed in the NWSTF is the Australian scampi (*Metanephrops australiensis*), with smaller quantities of velvet scampi (*M. velutinus*), Boschma's scampi (*M. boschmai*) and mixed scampi (*Metanephrops spp*. and *Nephropsis spp*.) (Ref. 103). A quantity of prawns is typically harvested each season, and mixed squids can be significant component of the catch in some years. Finfish species are also taken in some years, with mixed snappers (Lutjanidae) and redspot emperor (Lethrinus lentjan) having an important component of the NWSTF catch at times (Ref. 103).

Fishing intensity data for the NWSTF is only available for the 2019–2020 reporting period and this data does not overlap the Hydrocarbon EMBA (Figure 5-8; Ref. 102). The OA only overlaps the recorded fishing effort for 2015. The

[37] 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.

Hydrocarbon EMBA overlaps multiple reporting grids with recorded fishing effort for the NWSTF (Figure 5-8; Ref. 102).

The total catch for the 2023-2024 season was 85.9 t (similar to the 85.3 t in the previous 2022-2023 season), with seven permits and three vessels operating over 232 days. Australian scampi made up ~65% of the total catch in 2023–24 season. According to the Australian Bureau of Agricultural and Resource Economics (ABARES) Fishery Status Report 2025, the NWSTF is not subject to overfishing (Ref. 103).

Tuna fisheries

While the OA and Hydrocarbon EMBA may occur within the broad management areas for some tuna-based fisheries (e.g. Southern Bluefin Tuna Fishery [SBTF], Western Tuna and Billfish Fishery [WTBF]), no fishing effort has been recorded within the vicinity of the OA and Hydrocarbon EMBA. The SBTF is active within waters in the Great Australian Bight and south-eastern Australia, and the WTBF is mainly active off central and south-western WA.

A known spawning ground for southern bluefin tuna occurs in the Indian Ocean, between Java and northern WA (Ref. 103, Ref. 104). This spawning ground (based on geospatial data provided by ABARES, and as shown in annual Commonwealth fishery status reports) may occur within the OA (<0.1% of the spawning ground) and does extend into the Hydrocarbon EMBA. Spawning can take place from September to April (Ref. 105; Ref. 106), with two peaks observed in their spawning activity: September–October and February–March (Ref. 107; Ref. 108). Spawning typically occurs near the surface, after which adults regularly dive to deeper, cooler waters to thermoregulate, as they cannot tolerate warm surface temperatures for extended periods (Ref. 107). A female can release ~14 to 15 million eggs during a spawning period (Ref. 109). Individual fish probably stay in the spawning area for one month or so (Ref. 107; Ref. 110). Larvae drift passively and become entrained in the southward-flowing South Java and Leeuwin Currents, transporting them along the Western Australian coast (Ref. 107). During summer (December to April), juveniles tend to aggregate near the surface in coastal waters off southern Australia, before moving into deeper, temperate oceanic waters during winter (Ref. 105). One to two-year old juveniles then migrate either east to the Great Australian Bight, or west to the waters off South Africa (Ref. 108). After about five years of age, southern bluefin tuna are seldom found in nearshore surface waters, and their distribution extends over the southern circumpolar area throughout the Pacific, Indian and Atlantic Oceans (Ref. 105).

Known spawning grounds for yellowfin tuna generally occur in equatorial waters (~15 ºS –10ºN), with peak spawning typically occurring between November and April (Ref. 111; Ref. 112; Ref. 113). Recent habitat suitability modelling (Ref. 106) identified high-probability areas of larval occurrence for yellowfin tuna, was concentrated across the Indo-Pacific, particularly Northwestern Pacific in boreal spring/summer, and east of Papua New Guinea and north-west of Australia in austral spring/summer. In northwestern Australia during austral spring/summer, spawning hotspots were often co-located across pelagic fish species, including several tuna (skipjack, yellowfin, bigeye, and southern bluefin) (Ref. 106). Yellowfin tuna are multiple batch spawners, releasing batches of eggs multiple times throughout the spawning period (e.g. ~6—7 batches of eggs per spawning season within the western Indian Ocean), with spawning generally occurring at night (Ref. 112). As adults, yellowfin tuna can undertake extensive migrations

between spawning areas in equatorial waters and feeding grounds in southern and northern latitudes (Ref. 114 cited in Ref. 113).

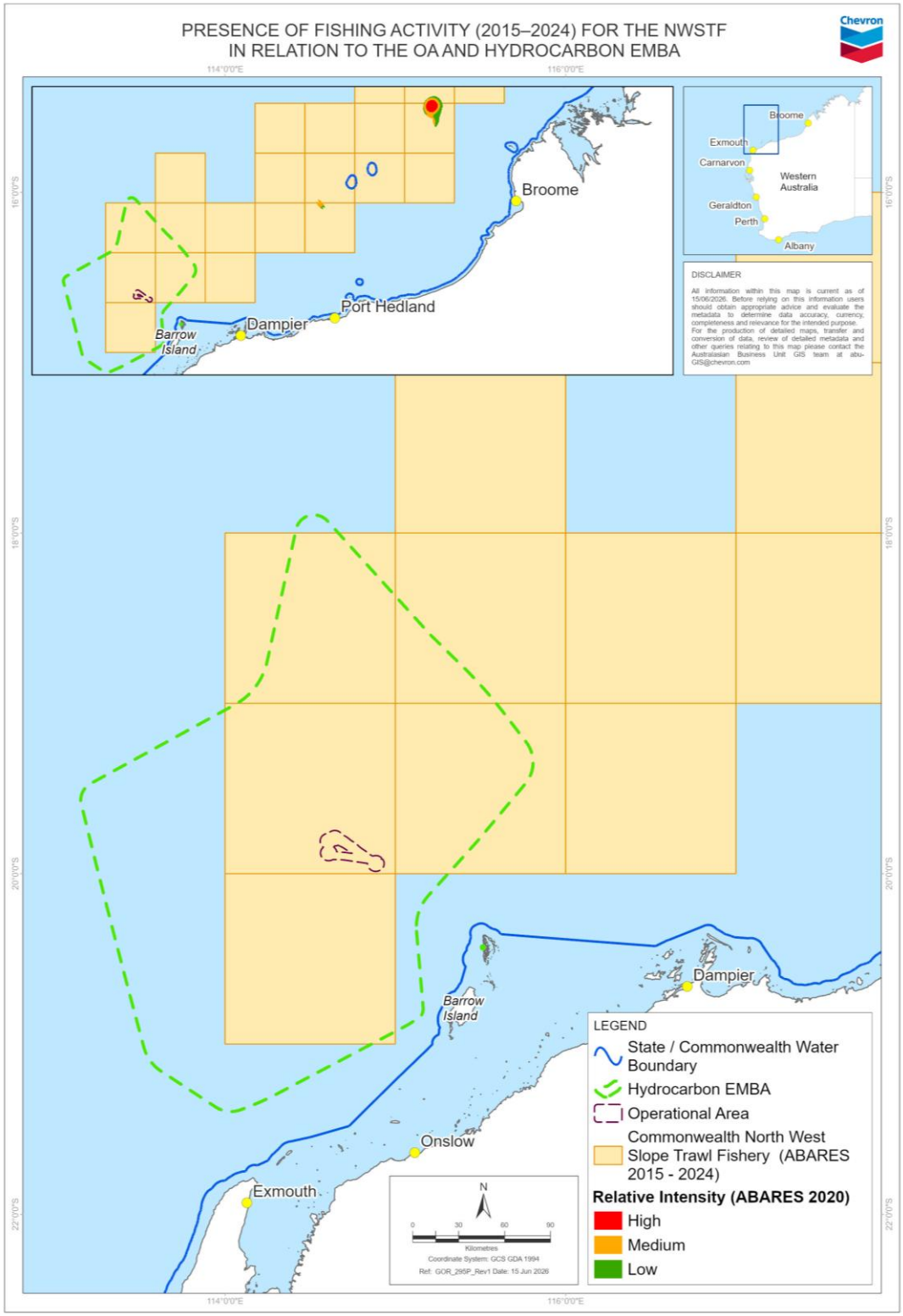


Figure 5-8: Presence of fishing activity (2015–2024) for the NWSTF in relation to the OA and Hydrocarbon EMBA

5.4.1.2 State managed fisheries

The State-managed commercial fisheries with fishery management areas that intersect the OA and Hydrocarbon EMBA, and that have fishing effort recorded over a 10-year period (2015–2024) (Ref. 115) are listed in Table 5-20 and shown in Figure 5-9.

Only one fishery, the Pilbara Line Fishery, with recorded fishing effort within the 60 nm graticular reporting block intersects with the OA.

Table 5-20: Presence of fishing effort recorded during 2015–2024 within State-managed commercial fisheries

Fishery	OA	Hydrocarbon EMBA
North Coast Bioregion		
Mackerel Managed Fishery	×	✓
Pilbara Crab Managed Fishery	×	✓
Pilbara Line Fishery	✓	✓
Pilbara Trap Managed Fishery	×	✓
Gascoyne Bioregion		
Exmouth Gulf Prawn Managed Fishery	×	✓
West Coast Deep Sea Crustacean Fishery	×	✓
Statewide		
Marine Aquarium Fish Managed Fishery	×	✓
Specimen Shell Managed Fishery	×	✓

Pilbara Line Fishery

The Pilbara Line Fishery (line fishing methods) operates on an exemption basis that limits fishing activity to a nominated five-month block period each year and a maximum of nine vessels (Ref. 116), typically May to 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 for the fishery in 2023 was 114 t (Ref. 117). According to the fishing effort records from Department of Primary Industries and Regional Development (DPIRD, Ref. 115), fishing effort activity within the 60 nm graticular reporting block that intersects with the OA was only recorded in 2015 and 2016, limited to three months across those years, with <3 vessels operating.

This fishery is part of the broader Pilbara Demersal Scalefish Fishery. For the 2023 fishing year, the bulk of the catch within the Pilbara Demersal Scalefish Fishery was landed by the trawl and trap sectors (which do not occur within the OA); with a smaller contribution (4%) from the line sector (Ref. 117). Note: Under the WA demersal fishing reforms there is a 50% catch reduction of commercial fisheries in-effect (from 1 January 2026) and permanent closure of trawl fishing for demersal scalefish in the Pilbara.

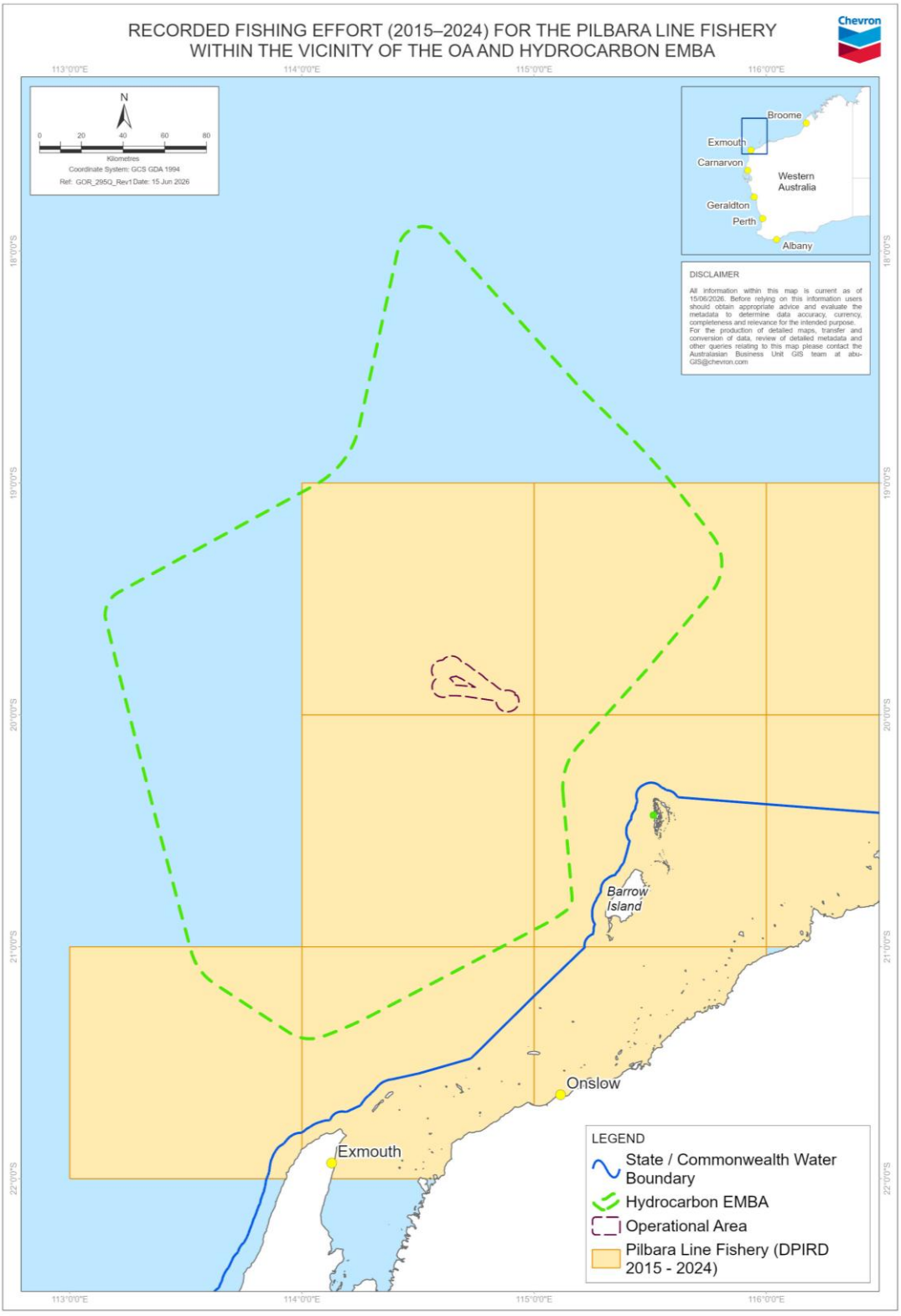


Figure 5-9: Recorded fishing effort (2015–2024) for the Pilbara Line Fishery within the vicinity of the OA and Hydrocarbon EMBA

5.4.1.3 pearling and aquaculture

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

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

The Hydrocarbon EMBA also occurs offshore and does not have any interface with the coast; however, there may be some interfaces with nearshore waters around the Montebello Islands (Figure 5-1). There are known pearl farm leases around the Islands.

5.4.2 Recreational fisheries

Recreational fishing is one of the most popular activities in WA with around 753,000 people fishing recreationally during 2023–2024 (Ref. 118; Ref. 119). The WA DPIRD conducts state-wide boat-based recreational fishing surveys every two to three years, with the first survey completed in 2011–2012.

The 2023–2024 survey report (Ref. 119) identified that most boat-based State-wide recreational fishing effort occurred within the West Coast bioregion (68% boat days), followed by the North Coast (13%), Gascoyne Coast (12%) and South Coast (7%) bioregions. The OA and Hydrocarbon EMBA are within the North Coast bioregion and the Gascoyne bioregion. Within the North Coast bioregion most boat-based regional fishing occurs in nearshore habitat (53%), followed by inshore demersal (25%) and estuarine (13%), with lower proportions in pelagic (5%), offshore demersal (2%) and freshwater (2%) habitats31 (Ref. 119). Within the Gascoyne most boat-based recreational fishing effort occurred in nearshore (57%) and inshore demersal (32%) habitats, with lower proportions in pelagic (7%) and offshore demersal (4%) habitats (Ref. 119). Fishing effort in the North Coast bioregion was highest in winter (40%), followed by spring (28%) and autumn (24%), while in the Gascoyne Coast bioregion it was highest during autumn (40%), then winter (33%) and spring (18%). Given the location and water depths of the OA and Hydrocarbon EMBA, high levels of recreational boat-based fishing is not expected to occur.

Tour operator fishing efforts recorded over a 10-year period (2015–2024) (Ref. 115) did not identify activity within the OA. Some shore-based fishing may occur in the shallow waters within the Hydrocarbon EMBA.

5.4.3 Traditional fisheries

According to the Act, customary fishing means fishing by an Aboriginal person that (a) is in accordance with the Aboriginal customary law and tradition of the area being fished; and (b) is for the purpose of satisfying personal, domestic, ceremonial, educational or non-commercial communal needs. Customary fishing includes fish and does not apply to other species of marine fauna (e.g. crocodile, turtle, or dugong).

Under amendments made in 2012 to the CALM Act 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.

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 Hydrocarbon EMBA.

The Hydrocarbon EMBA does not intersect with the Memorandum of Understanding (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.

5.4.4 Commercial shipping

AMSA collects vessel traffic data from a variety of sources, including satellite shipborne automated identification system data, across Australia's Search and Rescue region. This data has been used to develop Figure 5-10, which shows vessel traffic within the vicinity of the OA and Hydrocarbon EMBA.

AMSA has established a network of shipping fairways off the north-west coast of Australia (Ref. 120). These fairways were intended to direct large vessels trading to the major ports into pre-defined routes; however, the use of these fairways is not mandatory, and do not grant users any special right-of-way. A section of the OA intersects part of the NWS shipping fairway system (Figure 5-10).

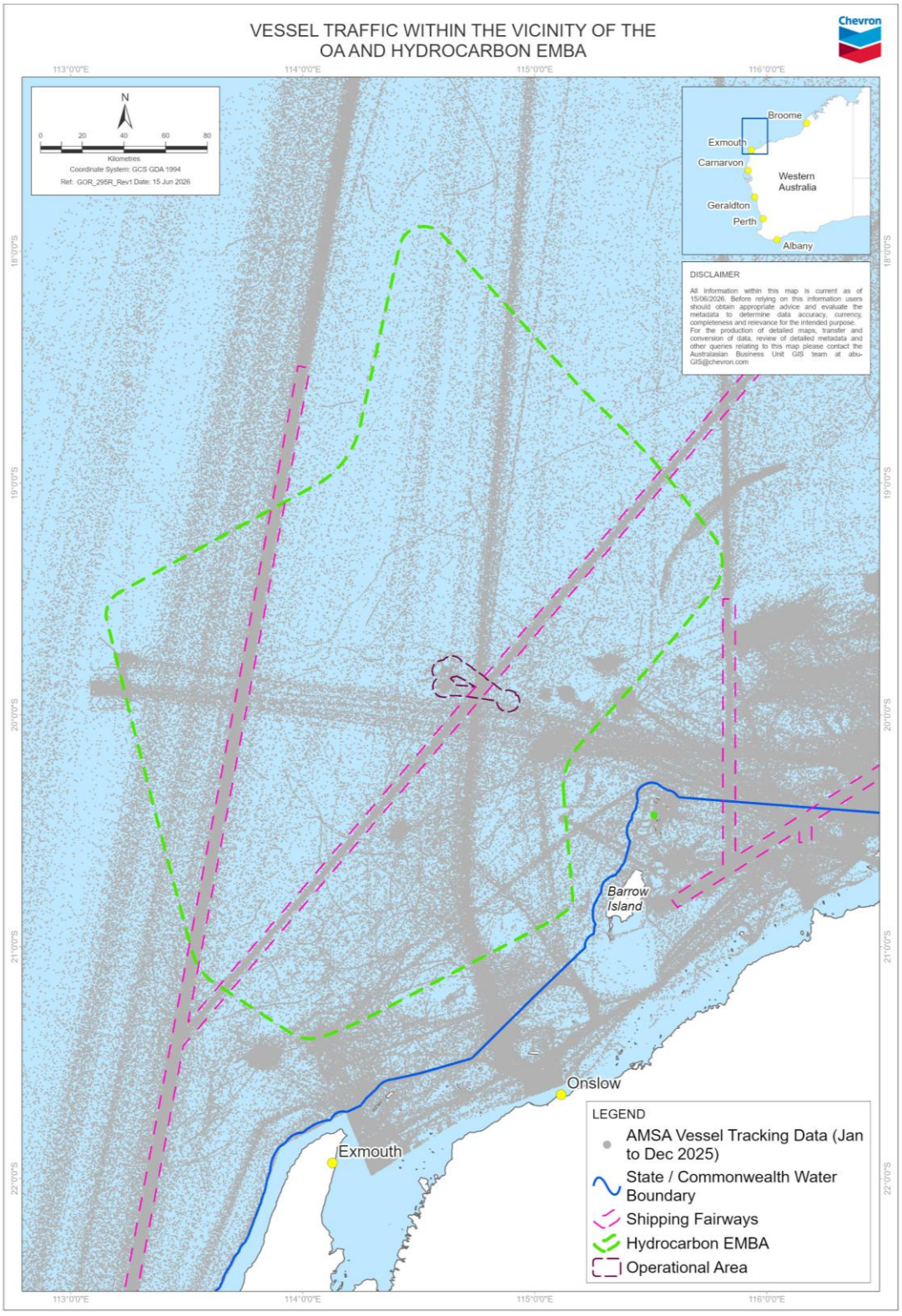


Figure 5-10. Vessel traffic within the vicinity of the OA and Hydrocarbon EMBA

5.4.5 Tourism and recreation

Tourism is an important industry for WA, directly employing 72,700 people and indirectly employing a further 47,400 in 2023–2024 (Ref. 121). Charter fishing, diving, snorkelling, wildlife watching, and cruising are some of the commercial tourism activities in and adjacent to the NWMR (Ref. 21). With the exception of some offshore recreational fishing (Section 5.4.2), most marine tourism and recreational activities occur in the shallower State waters (Ref. 21).

The OA occurs offshore and does not have any interface with nearshore waters or the coast, and as such limited tourism and recreational activities are expected (Section 5.4.2). The Hydrocarbon EMBA also occurs offshore and does not have any interface with the coast; however, there may be some interfaces with nearshore waters around the Montebello Islands (Figure 5-1) from in-water exposure; tourism and recreational activities may occur around these places.

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 (~180 km south-west of the OA; outside of the Hydrocarbon EMBA). Activities undertaken include recreational fishing, snorkeling and scuba diving, wildlife watching and encounters (including whale sharks, manta rays, humpback whales and turtles) (Ref. 122), 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. 123).

5.4.6 Other petroleum activities

The OA is located within the Northern Carnarvon Basin. The Northern Carnarvon Basin is Australia’s premier hydrocarbon-producing province and contains an established network of oil, condensate and gas production infrastructure (Ref. 124) run by various operators. According to Australia's Energy Commodity Resources 2025 (Ref. 125), ~93% of conventional gas resources are located on the NWS where gas is produced from the Northern Carnarvon, Browse, and Bonaparte basins.

In order to identify potential concurrent petroleum activities from CAPL or third-party operators, activities currently being assessed by NOPSEMA or accepted (but not yet conducted) were identified from the NOPSEMA website (Ref. 126). Those activities that may occur in the vicinity (≤20 km) of the OA[38] are described in Table 5-21.

Table 5-21: Petroleum activities within ~20 km from the OA

Operator and EP	Key Characteristics of petroleum activity	Distance from the OA
Operations (Accepted EPs)		
CAPL–Gorgon and Jansz Feed Gas Pipeline and Wells Operations	Activities include: • commissioning and start-up associated with the J-IC Project. Commissioning is anticipated	Some activities for J-IC Project would occur within or adjacent to the OA. The northern section

[38] Given that the largest predicted exposure area from planned activities under the scope of this EP was predicted to be <10 km, a conservative 20 km buffer was applied for the review of concurrent petroleum activities. This buffer represents a conservative approach to assessing potential cumulative impacts.

Operator and EP	Key Characteristics of petroleum activity	Distance from the OA
(Commonwealth Waters) EP	to commence from 2026, with start-up and operations from 2027 or 2028 • ongoing operations and IMR of the GFP hydrocarbon system. If required, IMR activities would typically involve a single vessel for a duration of ~10-200 days, depending on the activity.	of the Jansz Feed Gas Pipeline route also occurs within the OA.
CAPL–Wheatstone Project Start-Up and Operations EP	Activities include ongoing operations and IMR of the Wheatstone Platform and subsea hydrocarbon system. Note: The Wheatstone Platform, Wheatstone trunkline, and all subsea wells (including Wheatstone, Iago, Julimar, and Brunello fields) are >20 km from the OA.	~18 km (based on the potential for vessel-based IMR activities associated with the Julimar wells).
Woodside–Scarborough Offshore Facility and Trunkline (Operations) EP	Activities include: • ongoing IMR, including for the Scarborough trunkline • all other Scarborough facilities are >100 km west from the OA and any activities have not been described.	~3 km (based on the potential for vessel-based IMR activities within parts of the Scarborough pipeline licence).
Other (Accepted EPs)		
CAPL–Gorgon Gas Development Jansz Umbilical EP	Activities include installation, hook-up and contingency IMR of the Jansz umbilical. It may occur between mid-2026 to mid-2028 for an estimated duration of ~3–6 months.	The proposed northern section of the Jansz umbilical route occurs within the western section of the OA.
CAPL–Gorgon Gas Development Pipeline and Subsea Infrastructure Installation and Pre-Commissioning EP	Activities include installation and pre-commissioning associated with the J-IC Project. Activities are indicatively scheduled to occur from early-2026 to mid-2027.	Some activities for J-IC Project would occur within or adjacent to the OA. The northern section of the J-IC occurs within the western section of the OA.
Woodside–Julimar-Brunello Plug and Abandonment	Activities include: • IMR and permanent plug and abandonment (P&A) of three wells (Julimar East-1, Brulimar-1, and Brunello 1 ST1) Note: Only the OA for Julimar East-1 is within the 20 km buffer. Activities are planned to commence in March 2026 and are expected to occur within a 3-year period • P&A: ~10-60 days per well • IMR: 1-7 days per well. The OA is defined by a 4 km radius around each well.	~18.5 km (based on activities with the Julimar East-1 OA).
Woodside–Pluto 4D Monitor Marine Seismic Survey (MSS)	Activities include MSS using an airgun array: • a seismic survey vessel supported by a support and chase vessels will undertake the activity. Activities are planned to be undertaken from late-December 2026 to February-2027 or late December-2027 to February-2028 (contingency): • the duration of the petroleum activity is expected within a window of ~40 days.	~20 m (potential for vessel presence) to >11 km (potential for active seismic source).

Operator and EP	Key Characteristics of petroleum activity	Distance from the OA
	The Pluto 4D OA is located ~20 m east of the OA; however, the active source area (i.e. the area where the seismic source may be discharged) is >11 km east of the OA.	
EPs under assessment		
CAPL–G&E Drilling and Completions EP	Activities include drilling and completions of six subsea production wells and contingency IMR. Activities are indicatively scheduled to occur early-2027 but may occur within a 5-year period. The activity is estimated to take ~12–18 months to complete. Up to two vessels, in addition to the mobile offshore drilling unit (MODU) may be within the G&E Drilling OA.	The proposed G&E drilling and completions activity is part of the GS3 project. G&E drilling OA occurs within the OA.
CAPL–Backfill fields Site investigation surveys	Activities include site investigation (geophysical, geotechnical, and environmental) surveys to support future development of Chrysaor and Dionysus (C&D) and Chandon gas fields. Note: Only part of the C&D OA is within the 20 km buffer. Activities are indicatively scheduled to commence from late-2026 / early-2027, with an estimate combined duration of ~4–6 months and may be undertaken as a single campaign or occur over multiple campaigns.	Chandon OA is located in the northwest section of the OA. C&D OA is located ~7 km from the southern section of the OA.
CAPL–Legacy wellhead Decommissioning	Activities include removal of nine wellheads and associated infrastructure as well as visual inspections. Note: Only three (Io-2, Jansz-3 and Jansz-4) out of the nine OAs are within the 20 km buffer. Activities are planned to commence in 2027 but may occur within a 3-year period. The activity is estimated to take ~five weeks to complete. The OA is defined as a 1.8 km radius around each well.	Jansz-3 OA is located in the northwest section of the OA. Jansz-4 and Io-2 OAs are located ~5 km and 14 km from the OA, respectively.

5.4.7 Other marine industries

Several other marine and coastal industries may be present within the OA and Hydrocarbon EMBA (Table 5-22; Figure 5-11). There were no offshore renewable energy facilities, ports, salt mines, or onshore processing facilities identified within or adjacent to the Hydrocarbon EMBA.

Table 5-22: Presence of industries

Industry	OA	Hydrocarbon EMBA
Defence	✓	✓
Submarine cable	×	✓

The Royal Australian Air Force have a base located at Learmonth, and there is a designated maritime firing practices and exercise area associated with this base (Ref. 127) which overlaps with the OA and Hydrocarbon EMBA. 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. 128) There are no known sites of unexploded ordnance within the OA (Ref. 129).

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 bulk of Australia's international voice and data traffic. One known submarine cable intersects with the Hydrocarbon EMBA: the Highclere Cable. This cable links the Australia Singapore Cable to the North-West Cable System; combined the three cables form the Darwin-Jakarta-Singapore Cable system. Under Part 2 of the *Telecommunications Act 1997* (Cth), the Australian Communications and Media Authority (ACMA) 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 for the Highclere Cable.

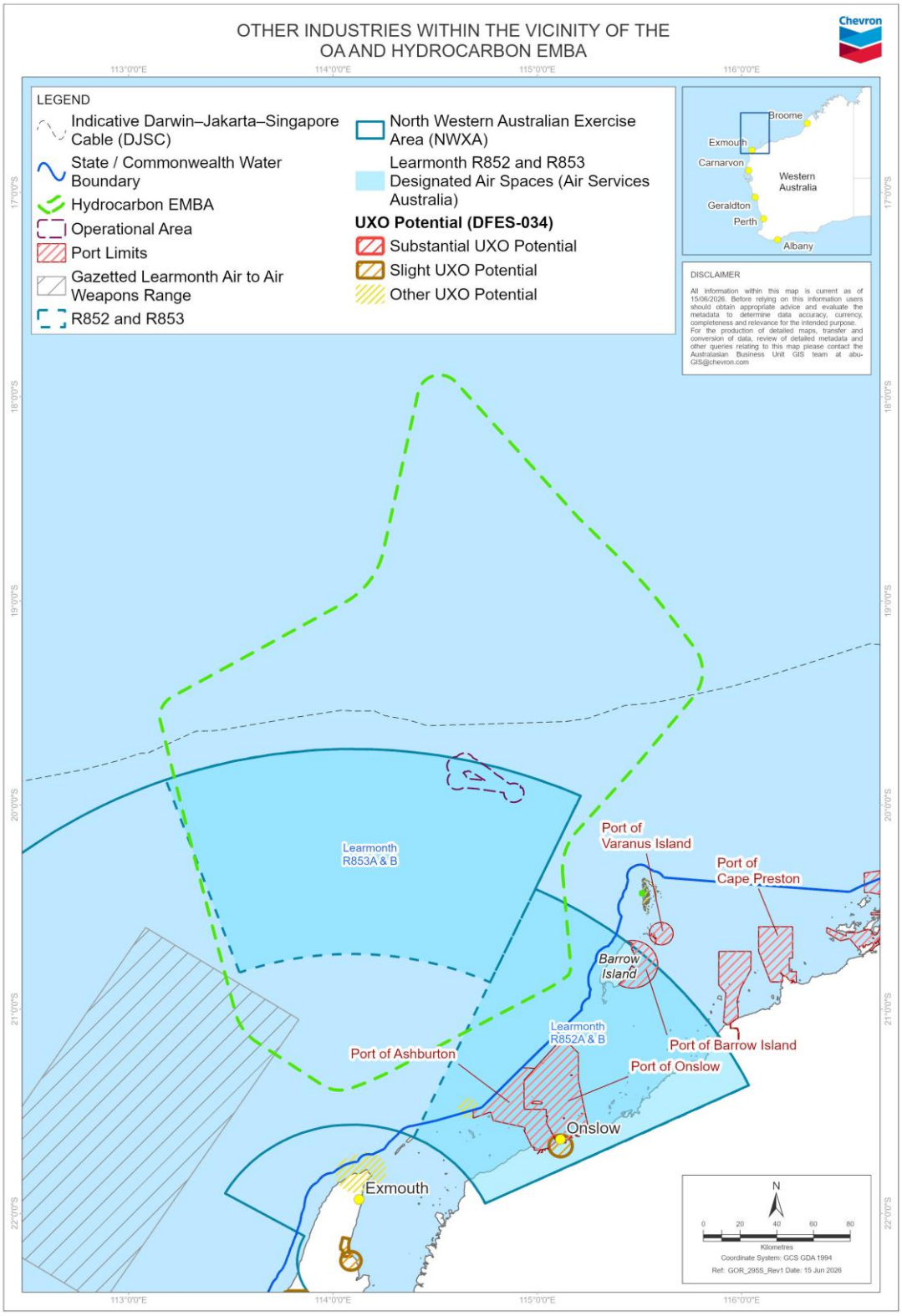


Figure 5-11. Other industries within the vicinity of the OA and Hydrocarbon EMBA

5.5 Qualities and characteristics of locations, places and areas

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

5.5.1 Australian Marine Parks

Marine parks help conserve marine habitats and the marine species that live within and rely on these habitats. Marine parks also provide places for people to watch wildlife, dive, and go boating, snorkelling, or fishing (Ref. 130).

The *North-west Marine Parks Network Management Plan* (Ref. 131) 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. 131) 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).

AMPs occur within Commonwealth waters and have been proclaimed under the EPBC Act. There are no AMPs within the OA; the closest is the Montebello Marine Park boundary located ~34 km south-east of the OA. The presence of AMPs within the Hydrocarbon EMBA, and a summary of values, is described in Table 5-23 and shown in Figure 5-12.

Table 5-23: Presence of AMPs

AMP^	OA	Distance from the OA	Hydrocarbon EMBA
Gascoyne (Multiple use zone International Union for Conservation of Nature [IUCN] VI)	✗	**~123 km**	✓
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			

AMP^	OA	Distance from the OA	Hydrocarbon EMBA
• 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 First Nations cultural identity, health and wellbeing. Across Australia, First Nations people have been sustainably using and managing their Sea Country for tens of thousands of years. The Baiyungu, Thalanyji and Yinikurtura People have a responsibility for Sea Country in the Marine Park. CAPL's understand through consultation that the Baiyungu, Thalanyji and Yinggarda People are the Traditional Custodians of the Sea Country in the Gascoyne 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 heritage area. **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])	✖	**~34 km**	✓
The Montebello Marine Park is located offshore of Barrow Island and 80 km west of Dampier extending from the WA state waters boundary, and is adjacent to the Barrow Island and Montebello Islands Marine Parks. The Marine Park covers an area of 3,413 km² and water depths from <15 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. 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 First Nations cultural identity, health and wellbeing. Across Australia, First Nations 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. CAPL's understand through consultation that the Thalanyji and Nhuwala People are the Traditional Custodians of the Sea Country in the Montebello Marine Park. **Heritage values** No international, Commonwealth or national listings apply to the Marine Park, however the Marine Park is adjacent to the Western Australian 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.			

^*Source: Ref. 131.*

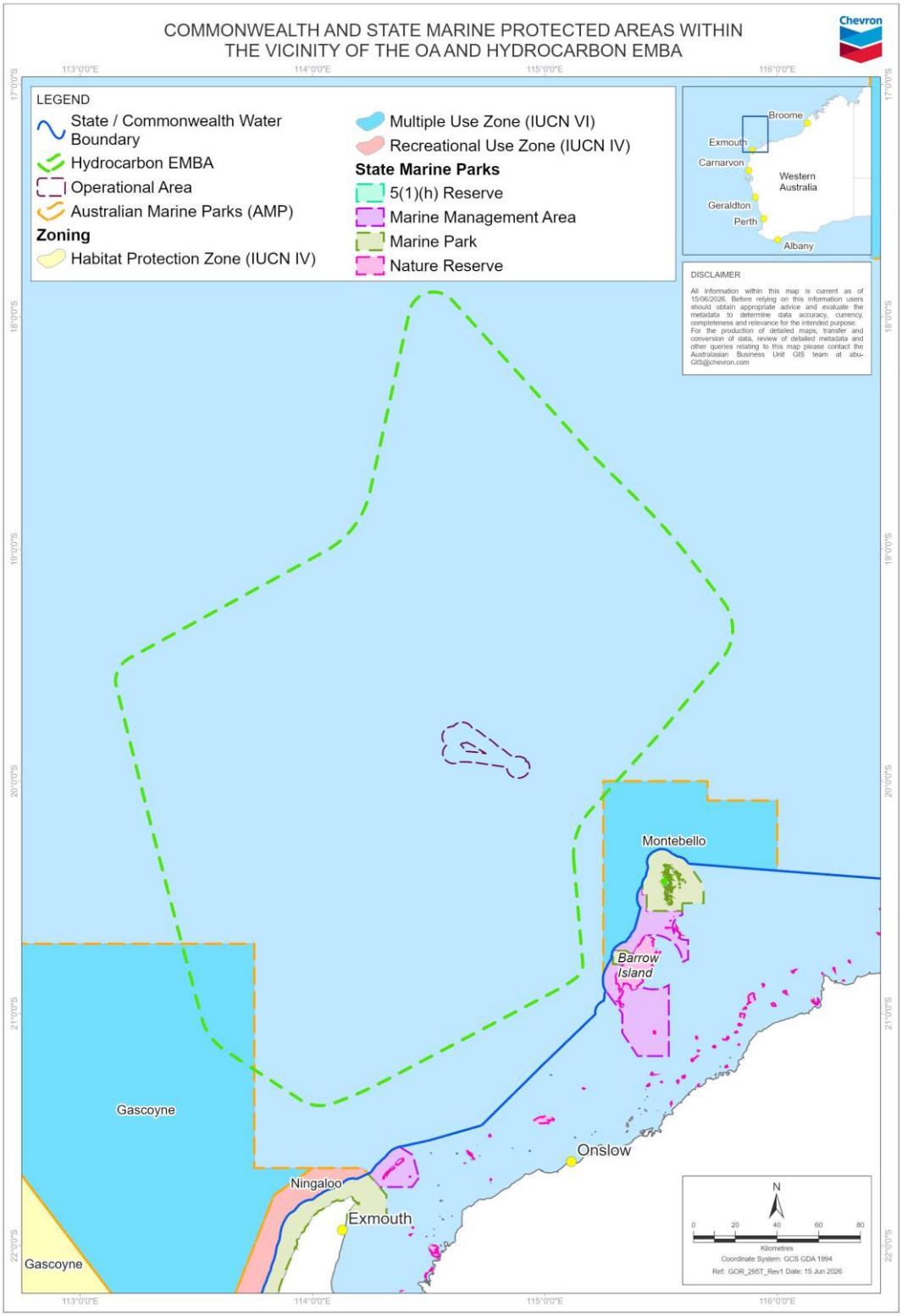


Figure 5-12. Commonwealth and State marine protected areas within the vicinity of the OA and Hydrocarbon EMBA

5.5.2 State marine protected areas

State marine parks, management areas and reserves, proclaimed under the 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; the closest is the Montebello Islands Marine Park, located ~65 km south-east of the OA. The presence of marine parks or management areas within the Hydrocarbon EMBA is shown in Table 5-24 and Figure 5-12.

Table 5-24: Presence of state marine parks, management areas and reserves

State marine parks protected areas	IUCN Zones	OA	Distance from the OA	Hydrocarbon EMBA
Montebello Islands – Marine Park	General Use Zone (IUCN II)	×	~65 km	✓
	Sanctuary Zone (IUCN IA)	×	~74 km	✓
	Special Purpose Zone (Pearling) (IUCN VI)	×	~80 km	✓

5.5.3 State terrestrial protected areas

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

The OA and Hydrocarbon EMBA occur offshore and do not have any interface with the coast. Therefore, no State terrestrial protected areas intersect with these areas.

5.6 Heritage value of places

Listed World Heritage properties, and National Heritage places, are MNES under the EPBC Act, and a relevant value and sensitivity under the OPGGS(E)R. Table 5-25 identifies the presence of these, and other marine heritage protected places, within the OA and Hydrocarbon EMBA.

Table 5-25: Presence of heritage values

Feature	OA	Hydrocarbon EMBA
World Heritage property		
N/A	(none identified within the OA and Hydrocarbon EMBA)	
National Heritage place		
N/A	(none identified within the OA and Hydrocarbon EMBA)	
Commonwealth Heritage place		
N/A	(none identified within the OA and Hydrocarbon EMBA)	
Indigenous Protected Area		
N/A	(none identified within the OA and Hydrocarbon EMBA)	
UCH protected under the UCH Act		
Historic shipwrecks (>75 years old)	×	✓
Shipwrecks	×	✓
Sunken aircraft	(none identified within the OA and Hydrocarbon EMBA)	
In situ artefacts	(none identified within the OA and Hydrocarbon EMBA)	

Feature	OA	Hydrocarbon EMBA
UCH protected under the *Aboriginal Cultural Heritage Act 1972* (WA)[39]		
N/A	(none identified within the OA and Hydrocarbon EMBA)	
Determined areas under the *Native Title Act 1993* (Cth)		
N/A	(none identified within the OA and Hydrocarbon EMBA)	
Claim areas under the *Native Title Act 1993* (Cth)		
N/A	(none identified within the OA and Hydrocarbon EMBA)	

5.6.1 Underwater cultural heritage

Australia's UCH is primarily protected under the UCH Act; this legislation protects shipwrecks, sunken aircraft and other types of underwater heritage, including First Nations UCH in Australian waters[40]. Additional Acts that further provide for the recognition, protection and management of Aboriginal UCH within Australian waters include the:

- *Aboriginal Heritage Act 1972* (WA) to the extent located within the territorial waters of WA
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth)
- *Native Title Act 1993* (Cth).

Under section 15 of the UCH Act, UCH is defined as "any trace of human existence that has a cultural, historical, or archaeological character, and is located under water". The UCH Act protects physical sites and artefacts; intangible heritage values with no physical component are not protected under the Act (Ref. 9). Types of physical UCH protected may include sites, structures, buildings, artefacts, human or animal remains, vessels, aircraft, or other vehicles, together with their archaeological and natural context (Ref. 9).

No known UCH was identified in the OA which is located in water depths of >1,100 m and has been assessed as having a very low probability of encountering any historic UCH (Ref. 133). Within the Hydrocarbon EMBA there are known UCH that comprise mainly shipwrecks and two military sea dumping sites. The exact location of many of the lost ships are not known and there is also the possibility of unknown UCH to be present in the Hydrocarbon EMBA. The shallower waters within the Hydrocarbon EMBA have a higher relative likelihood of encountering UCH than the deeper waters, given the concentration of maritime infrastructure, anchorage activity, navigational hazards, and vessel groundings, as well as increased potential for the survival of remains (Ref. 133).

Although outside the Hydrocarbon EMBA, evidence from offshore waters near Murujuga (Burrup Peninsula) and on the archipelagos are indicative of the historical and ongoing connection of First Nations people to the NWMR. Australia's first confirmed First Nations underwater archaeological sites were identified in 2020 in waters offshore from Murujuga (Burrup Peninsula) during the

[39] Only Aboriginal Sites, being a place described under Section 5 of the *Aboriginal Heritage Act 1976* (WA), with a potential marine interface that intersect with the geographic extent of the Hydrocarbon EMBA have been included. This is considered a conservative approach, as the heritage sites within the *Department of Planning, Lands and Heritage spatial dataset* (Ref. 132) include a buffer around sites to protect privacy regarding the location. As such, the identified heritage sites may not be present within the Hydrocarbon EMBA.

[40] 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).

Deep History of Sea Country Project (Ref. 134). These findings confirmed an understanding that First Nations people would have lived on lands that are now submerged in water from rising seas after the last glacial maximum (LGM)[41]. Recent studies at Murujuga have demonstrated that archaeological material can remain on the seabed, predating inundation by rising seas (Ref. 134; Ref. 136).

At the LGM sea level was ~125 m below present (Ref. 137); this coincides with the ancient coastline at 125 m depth KEF (see Section 5.3.6.1 for a description of this KEF). The OA is in >1,100 m water depth and has never been part of habitable land and therefore, no Aboriginal UCH is expected.

Sea Country values (intangible values) may be identified through the consultation process. Although not protected under the UCH Act, it is however noted that consideration of intangible cultural heritage can contribute to the understanding and potential identification of Aboriginal UCH that is eligible to be protected under the UCH Act (Ref. 9).

The consultation undertaken during the preparation of this EP is summarised in Section 7. During this consultation, no Aboriginal UCH has been identified within the OA where seabed disturbance could credibly occur.

5.6.2 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).

No Native Title claims or determined areas were identified within the OA and Hydrocarbon EMBA (Table 5-25).

[41] The period of the LGM in Australia is described as 24 to 18 ka (Ref. 135).

6 Environmental impact and risk assessment method

This section describes the methods used to identify and evaluate the environmental impacts and risks arising directly or indirectly from the petroleum activity and any potential emergency conditions as required under regulations 21(5) and 21(6) of the OPGGS(E)R.

CAPL undertakes environmental impact and risk assessments in accordance with Chevron Corporation's *Environment Risk Management Process* (ERMP) (Ref. 138), and *Environmental Risk Assessment Management Procedure* (ERAM Procedure) (Ref. 139), and uses Chevron Corporation's Integrated Risk Prioritisation Matrix (Table 6-2) from the Australian Business Unit *(ABU) OE Risk Management RiskMan Procedure* (Ref. 140). This approach generally aligns with the processes outlined in *ISO 31000:2018 Risk Management – Guidelines* (Ref. 141).

The potential environmental impacts and risks identified and evaluated in this EP were informed by:

- expertise and experience of CAPL and Chevron Corporation personnel
- relevant persons consultation (Section 7).

6.1 Description of the petroleum activity

The petroleum activity is described in Section 4.

6.2 Identification of relevant values and sensitivities

The presence of environmental values and sensitivities within the OA and Hydrocarbon EMBA are described in Section 5.

In accordance with regulation 21(3) of the OPGGS(E)R, relevant values and sensitivities may include any of the following:

- the world heritage values of a declared World Heritage property
- the national heritage values of a National Heritage place
- the ecological character of a declared Ramsar wetland
- the presence of a listed threatened species or listed TEC
- the presence of a listed migratory species
- any values and sensitivities that exist in, or in relation to, part or all of:
  - a Commonwealth marine area
  - Commonwealth land.

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

Environmental values and sensitivities are also considered to be associated with each of the receptor groups identified and described in Section 5 (i.e. in addition to those relevant values and sensitivities as identified under the OPGGS(E)R). All environmental values and sensitivities have been taken into consideration during the relevant persons consultation process (and the identification of associated

functions, interests, or activities; Section 7), and the environmental impact and risk evaluation (Section 8).

6.3 Identification of relevant environmental aspects

The ERAM Procedure (Ref. 139) describes an environmental aspect as an element of CAPL's products, services, or activities that interact with the environment while within CAPL's operational control.

After the petroleum activity was described, an assessment was done to identify potential interactions between the petroleum activity and the receiving environment by identifying the environmental aspects. The outcomes of relevant persons consultation also contributed to this scoping process.

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

Environmental aspects categories included in the impact and risk assessment of this petroleum activity are:

- physical presence
- planned emissions
- planned discharges
- unplanned disturbance
- non-indigenous species
- unplanned releases
- oil spill response
- cultural heritage.

Table 6-1 maps these environmental aspects against the petroleum activity.

Table 6-1: Relationship between environmental aspects and the petroleum activity

Environmental aspect		Petroleum activity						
Category	Description	Installation of production flowline and MEG pipeline	Installation of subsea infrastructure	FCS Integration	Pre-commissioning	Contingency IMR	Support activities	Emergency response
Physical presence	Vessels, infrastructure and/or equipment	✓	✓				✓	
	Seabed disturbance	✓	✓			✓	✓	
Planned emissions	Atmospheric				✓		✓	
	Greenhouse gases				✓		✓	
	Artificial light						✓	
	Underwater sound (non-impulsive)	✓	✓			✓	✓	
	Underwater sound (impulsive)	✓	✓			✓	✓	
Planned discharges	Vessel operations						✓	
	Operational discharges		✓	✓	✓	✓		
Unplanned disturbance	Fauna interaction	✓	✓	✓	✓		✓	
	Seabed disturbance	✓	✓	✓		✓	✓	
Non-indigenous species	Introduction of invasive marine pests						✓	
Unplanned releases	Solid waste						✓	
	Leaks and spills	✓	✓	✓	✓	✓	✓	
	Loss of containment (vessel collision event)						✓	
Oil spill response	Oiled wildlife response							✓
Cultural heritage	Intangible values	✓	✓	✓	✓	✓	✓	✓

6.4 Identification of relevant environmental impacts and risks

The ERAM Procedure (Ref. 139) describes:

- **environmental impact**—as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an environmental aspect
- **environmental risk**—as a measure of environmental impacts caused by environmental aspects in terms of both likelihood and consequence (magnitude) of the impact.

Potential environmental impacts and risks arising from the environmental aspects were identified during a scoping exercise.

Note: An environmental aspect can result in both environmental impacts and risks.

6.5 Evaluation of environmental impacts and risks

After identifying the credible interactions between environmental aspects and environmental values and sensitivities (receptors), each potential environmental impact and risk was evaluated. This evaluation involved:

- determining the consequence of each impact and risk
- for risks, determining the likelihood of the consequence occurring (with control measures in place) and corresponding residual risk level.

The consequence, likelihood, and residual risk levels were determined using Chevron Corporation's Integrated Risk Prioritisation Matrix (Table 6-2).

Table 6-2: Integrated risk prioritisation matrix[42]

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
				6	5	4	3	2	1
				Incidental	Minor	Moderate	Major	Severe	Catastrophic
			Consequence Descriptions	Limited impact	Localised short-term impact	Localised long-term impact, or widespread short-term impact	Localised persistent impact, or widespread long-term impact	Widespread persistent impact, or landscape-scale long-term impact	Landscape-scale persistent impact

[42] Where likelihood is with confirmed and verified safeguards; consequence is without safeguards.

6.5.1 Consequence

The consequence levels are determined by considering:

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

To inform the consequence evaluation, data may be drawn from engineering analysis, generic industry data, or operator-specific data to provide confidence in the assigned consequence level. Different techniques to inform the consequence evaluation may be required for complex aspects (Ref. 142), such as modelling to define the spatial scale of an aspect relative to sensitive receptors.

Values and sensitivities may be grouped together (e.g. marine fauna) in the same impact or risk assessment, if they have the same consequence ranking and it is appropriate to nature and scale.

6.5.2 Control measures

The OPGGS(E)R defines a **control measure** (CM) as “a system, an item of equipment, a person or a procedure, that is used as a basis for managing environmental impacts and risk of an activity”. Regulation 21(5)(c) of the OPGGS(E)R requires this EP to include details of the control measures that will be used to reduce the impacts and risks of the petroleum activity to ALARP and an acceptable level.

The ERAM Procedure (Ref. 139) adopts an environmental mitigation hierarchy based on the International Petroleum Industry Environmental Conservation Association mitigation hierarchy (Ref. 143). The application of the environmental mitigation hierarchy identifies opportunities to limit potential negative impacts on environmental receptors of concern. The two preventative mitigation steps are:

- **avoid**— measures taken to anticipate and prevent potential negative impacts before actions or decisions are taken that could lead to such impacts
- **reduce**—measures taken to reduce the duration, intensity, significance and/or extent of potential impacts (including direct, indirect, and cumulative impacts, as appropriate) that cannot be completely avoided.

In accordance with NOPSEMA guidance (Ref. 144), the effort given to exploring control measures must be commensurate with the predicted level of impact and risk; i.e. higher-order impacts and risks require a level of evaluation that is higher than what would be required for lower-order impacts and risks where good practice control measures exist.

6.5.2.1 ALARP decision context

The process for identifying control measures to demonstrate ALARP depends on the ALARP decision context set for that environmental aspect.

In alignment with NOPSEMA's ALARP guidance note (Ref. 145), CAPL has adapted the approach developed by Offshore Energies Unite Kingdom (OEUK) (Ref. 142) for use in an environmental context to determine the assessment technique(s) required to demonstrate that impacts and risks have been reduced to ALARP. The ALARP decision making framework (Ref. 142) provides a structured approach to the determination of whether it is reasonably practicable to implement a control measure.

The first step in applying the framework is to determine the decision context. Three key factors are considered in determining the decision context (Figure 6-1):

- activity type
- risk and uncertainty
- stakeholder influence.

For the different decision contexts, the decision-making framework (Figure 6-1) suggests appropriate assessment techniques to support an ALARP demonstration.

A **type A decision context** (Figure 6-1) is made for lower-order impacts and risks (Table 6-3) where they are relatively well understood, activities are well-practised, and there is no significant stakeholder interest. In general, the assessment technique to demonstrate ALARP is the application of good practice control measures. However, additional assessment may be required on a case-by-case basis (e.g. if good practice is not sufficiently well defined, as requested by regulator or other stakeholders, etc). In addition, where an environmental aspect associated with the petroleum activity is listed as either a threat to a protected matter under an instrument made or implemented under the EPBC Act (such as recovery plans, conservation advices, threat abatement plans, or wildlife conservation plans), 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 may be undertaken.

A **type B decision context** (Figure 6-1) is made for higher-order impacts and risks (Table 6-3) if there is greater uncertainty or complexity around the petroleum activity, and there are relevant concerns from stakeholders. In this instance, established good practice is not considered sufficient (but must still be met) and further engineering risk assessment is required to demonstrate the impact or risk has been reduced to ALARP.

A **Type C decision context** (Figure 6-1) typically involves sufficient complexity, higher-order impact and risks (Table 6-3), uncertainty, or stakeholder interest to require a precautionary approach. In this case, relevant good practice must still be met, additional engineering risk assessment is required, and the precautionary approach must be considered in the decision to adopt or not adopt the control measure.

The decision context and relevant assessment technique is applied to each aspect evaluated in Section 8.

Good practice

OEUK defines good practice as “the generic term for those standards for controlling risk which have been judged and recognised by health, safety and environment (HSE) as satisfying the law when applied to a particular relevant case in an appropriate manner” (Ref. 142). The OEUK guidance notes that good practice may take multiple forms, including both written (e.g. codes, guidelines, standards) and unwritten (e.g. well-defined and established standard industry practice) sources.

For this EP, sources of good practice include:

- requirements from Australian legislation and regulations
- relevant Australian Government policies and 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 control measures.

Engineering risk assessment

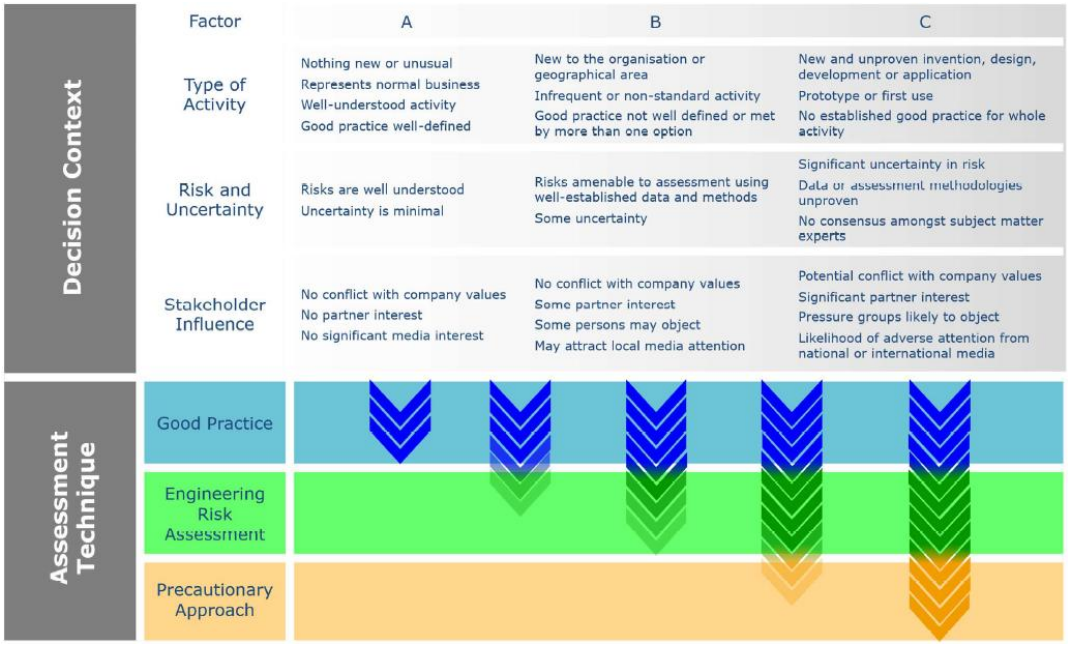
Based on the various assessment techniques identified by OEUK (Ref. 142), CAPL believes the technique most suited to an EP is a cost benefit analysis, a comparative assessment to show the balance between the risk benefit (or environmental benefit) and the cost of implementing the control measure.

The cost benefit analysis should differentiate whether a control measure is reasonably practicable to implement, or if the cost is grossly disproportionate to the benefits of the risk reduction.

Precautionary approach

OEUK (Ref. 142) indicate that if the assessment, taking account of all available engineering and scientific inputs, is insufficient, inconclusive, or uncertain, then a precautionary approach to management is needed. A precautionary approach will mean that uncertain analysis is replaced by conservative assumptions that will result in a control measure being more likely to be implemented. The level to which this precautionary approach is adopted should be commensurate with the level of uncertainty in the assessment and the magnitude of potential adverse consequences (Ref. 142).

Under the precautionary principle, 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. While the control measures adopted should be proportionate to the potential impact or risk, in this decision context, the decision could have significant economic consequences to an organisation (Ref. 142).



Source: Ref. 142.

Figure 6-1: ALARP decision support framework

6.5.2.2 Lower and higher order impacts and risks

CAPL define lower-order and higher-order impacts and risks (Table 6-3) based on a consequence or risk level from the Integrated Risk Prioritization Matrix (Table 6-2).

CAPL consider that lower-order impacts and risks with a type A decision context (Table 6-3) have been reduced to ALARP if the identified control measures meet good practice. For higher-order impacts and risks with a type B or type C decision context, CAPL consider that ALARP has been demonstrated if both good practice control measures have been adopted, and reasonably practicable control measures that are not grossly disproportionate to the risk benefit have been adopted.

Table 6-3: Lower and higher order environmental impacts and risks

Category	Impact	Risks	ALARP decision context
Lower order	Consequence level: 4–6	Risk level: 6–10	A
Higher order	Consequence level: 1–3	Risk level: 1–5	B or C

6.5.3 Likelihood

For environmental impacts likelihood is not considered.

For environmental risks, where the environmental aspect or unplanned event may lead to environmental impacts under certain circumstances, the likelihood (probability) of the defined consequence occurring is determined. The likelihood is considered by assuming that all control measures are in place. The likelihood of a consequence occurring was identified using one of the six likelihood categories, as shown in Table 6-2.

6.5.4 Residual risk

For environmental risks, the combination of the consequence and likelihood indices from the Integrated Risk Prioritisation Matrix (Table 6-2) result in a residual risk level between one (highest residual risk) and 10 (lowest residual risk).

Risk assessment outcomes are based solely on assessment of risk to the environment (as defined under the OPGGS(E)R).

6.6 Acceptable levels

Regulation 34(c) of the OPGGS(E)R requires that an EP "demonstrates that the environmental impacts and risks of the activity will be managed to an acceptable level".

NOPSEMA's guidance for EPs (Ref. 17) defines an acceptable level as "the specified amount of environmental impact and risk that an activity may have which is tolerable, is consistent with all relevant principles, and does not compromise the management/conservation/protection objectives of the environment".

Acceptable level(s) of impact and risk should be defined having regard to all relevant contexts including, but not limited to:

- principles of ESD
- legislative and other requirements (e.g. laws, policies, standards, conventions, statutory instruments such as recovery plans for threatened species, plans of management for protected places)
- internal context (e.g. corporate policies, culture, processes, standards and systems)
- external context (e.g. existing environment, stakeholder expectations).

Acceptable levels for the Backfill Fields Development were identified and described in Section 7.6 of the Gorgon Backfill Fields Development OPP (Ref. 3). Acceptable levels relevant to the petroleum activity within this EP are presented in Table 6-4.

Table 6-4: Backfill Fields Development acceptable levels relevant to this petroleum activity

Aspect	Environmental value or sensitivity	Acceptable level(s)[43],[44]
Planned activities		
Physical presence–vessels and equipment	Commercial fisheries	**AL-18**: No interference with other lawful marine users within the petroleum title areas to a greater extent than is necessary for the reasonable exercise of the rights and performance of duties as conferred to the titleholder under section 280 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth).
	Commercial shipping	
Physical presence–seabed disturbance	Water quality	**AL-01**: Impacts on marine environmental quality from the Development will not prevent the conservation of biodiversity and maintenance of ecosystem integrity within the Development Area.

[43] Acceptable level numbering is consistent with the Backfill Fields Development OPP (Ref. 3).

[44] Where an acceptable level refers to the 'Development Area', this is Development Area for the Backfill Fields Development as defined within Section 4.1.3 of the OPP (Ref. 3).

Aspect	Environmental value or sensitivity	Acceptable level(s)[43],[44]
	BCH	**AL-02:** Impacts on benthic habitats and associated communities from the Development will not prevent the conservation of biodiversity and maintenance of ecosystem integrity within the Development Area.
	Underwater cultural heritage	**AL-04**: No adverse impact[45] on declared or protected underwater cultural heritage[46] from the Development that would be inconsistent with the protection and conservation objects of the *Underwater Cultural Heritage Act 2018* (Cth).
Planned emissions–atmospheric	Air quality	**AL-01** (see above).
Planned emissions–greenhouse gases	Atmospheric GHG concentration	**AL-08**: Greenhouse gas emissions from the Gorgon Gas Development[47,48,49] will be within limits as set by the *National Greenhouse and Energy Reporting Act 2007* (Cth) and *Environmental Protection Act 1986* (WA).
Planned emissions–artificial light	Ambient light	**AL-12**: Impacts from the Development will not interfere with the recovery of the population of an EPBC Act listed threatened species. **AL-13**: Impacts from the Development will not be inconsistent with the requirements of threatened species recovery plans made or adopted under the EPBC Act. **AL-14**: Impacts from the Development will not decrease the availability or quality of marine fauna habitat to the extent that it interferes with the recovery of the population of an EPBC Act listed threatened species. **AL-15**: Impacts from the Development will not decrease the availability or quality of important habitat[50] to the extent that it interferes with the survival of the population of an EPBC Act listed migratory species.
	Marine reptiles	
	Fishes, including sharks and rays	
	Seabirds and shorebirds	
Planned emissions–underwater sound (non-impulsive) Planned emissions–	Ambient sound	**AL-12**, **AL-13**, **AL-14**, and **AL-15** (see above).
	Marine mammals	
	Marine reptiles	
	Fishes, including sharks and rays	

[45] Where 'adverse impact' is defined under section 30 of the UCH Act.

[46] Where underwater cultural heritage is defined under section 15 of the UCH Act.

[47] The Gorgon Gas Development includes the GFP, the Development, and potential future development of other Greater Gorgon Area fields. GHG emissions from the Gorgon Gas Development incorporates direct (Scope 1) GHG emissions from the Gorgon GTP and Gorgon Operations Facility.

[48] The 'Gorgon GTP' includes all direct (Scope 1) GHG emissions from the current operational Gorgon Gas Development facilities (as outlined in MS 800).

[49] 'Gorgon Operations' is registered with the CER as a facility under both the NGER and Safeguard Mechanism schemes (Section 8.4.3). The reporting boundary of the Gorgon Operations Facility includes relevant Scope 1 emissions from the 'Gorgon GTP' and associated facilities on Barrow Island, as well as relevant Scope 1 emissions from activities or facilities in Commonwealth waters as determined in accordance with CAPL's reporting obligations under the NGER Scheme.

[50] Where important habitat for migratory species are defined within the MNES Significant Impact Guidelines (Ref. 36).

Aspect	Environmental value or sensitivity	Acceptable level(s)[43],[44]
underwater sound (impulsive)		
Planned discharges–vessels operations	Water quality	**AL-01** (see above).
	Fishes, including sharks and ray	**AL-12**, **AL-13**, **AL-14**, and **AL-15** (see above).
	Seabirds and shorebirds	
Planned discharges—subsea operations	Water quality	**AL-01** (see above).
	BCH	**AL-02**(see above).
Unplanned events		
Unplanned disturbance–fauna interaction	Marine mammals	**AL-19**: No death or injury to an EPBC Act listed threatened species, migratory species, marine species or cetacean species within the Commonwealth marine area attributable to the Development.
	Marine reptiles	
	Fishes, including sharks and rays	
	Seabirds and shorebirds	
Unplanned disturbance–seabed disturbance	BCH	**AL-21**: No unplanned release of solid objects to the environment from the Development.
	UCH	
Non-indigenous species–introduction of invasive marine pests	BCH	**AL-20**: No introduction and establishment of an invasive marine pest attributable to the Development.
Unplanned releases–solid waste	Marine mammals	**AL-21** (see above).
	Marine reptiles	
	Fishes, including sharks and rays	
	Seabirds and shorebirds	
Unplanned releases–leaks and spills	Water quality	**AL-22**: No minor loss of containment of hydrocarbons or chemicals to the environment from the Development.
	Marine mammals	
	Marine reptiles	
	Fishes, including sharks and rays	
Unplanned releases–loss of containment (vessel collision)	Water quality	**AL-23**: No unplanned release of hydrocarbons to the environment from the Development.
	BCH	
	Marine mammals	
	Marine reptiles	
	Fishes, including sharks and rays	
	Seabirds and shorebirds	

Aspect	Environmental value or sensitivity	Acceptable level(s)[43],[44]
	KEFs	
	AMPs	
	Commercial fisheries	
	Tourism and recreation	
	Underwater cultural heritage	
	Listed heritage places	
Oil spill response–oiled wildlife	Marine mammals	**AL-23** (see above).
	Marine reptiles	
	Fish, including sharks and rays	
	Seabirds and shorebirds	
Planned activities and/or unplanned events		
Cultural heritage–intangible values	Sea Country	**AL-07**: No interference with known Sea Country values (as identified from engagement with First Nations peoples) to a greater extent than is necessary for the reasonable exercise of the rights and performance of duties as conferred to the titleholder.

6.7 Demonstration of acceptability

6.7.1 Comparison with acceptable level

The predicted level of environmental impact and risk will be evaluated against the defined acceptable level(s) to determine if they can be met, or if additional management (e.g. additional control measures) may be required to further reduce the predicted level of impact or risk so that they do not exceed the acceptable level(s) (Ref. 17).

6.7.2 Principles of ESD

The principles of ESD are considered in Table 6-5 in relation to acceptability demonstration.

Under the EPBC Act, the decision-maker must also consider the precautionary principle in determining whether to approve the taking of an action. The precautionary principle (section 391(2) of the EPBC Act) “is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there may be threats of serious or irreversible environmental damage”.

Table 6-5: Principles of ESD in relation to petroleum activity acceptability demonstration

Principles of ESD	How they have been applied
Integration Principle (a) decision-making processes should effectively integrate both long-term and short-term economic,	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 6-2), which includes provision for understanding the

Principles of ESD	How they have been applied
environmental, social, and equitable considerations.	long-term and short-term impacts associated with its activities, and the ALARP process for mitigating and managing environmental impacts and risks. The impact and risk assessment process also provides for, and integrates any matters raised during relevant persons consultation into the evaluation of impacts and risks. As this principle is inherently met by applying the assessment process, it is not considered separately for each aspect's impact and risk evaluation.
Precautionary Principle (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.	CAPL considers if there is the potential for serious or irreversible environmental damage by assigning these as equivalent to a consequence level between Severe (2) and Catastrophic (1) from the Integrated Risk Prioritization Matrix (Table 6-2). Where a potential for serious or irreversible environmental damage is identified, then CAPL assess whether there is a lack of full scientific certainty associated with the aspect. Then, if there is a lack of full scientific certainty, CAPL will use a precautionary approach to implement control measures to avoid or reduce the threat of serious or irreversible environmental damage.
Intergenerational Principle (c) the principle of inter-generational equity – that the present generation should ensure that the health, diversity, and productivity of the environment is maintained or enhanced for the benefit of future generations.	The impact and risk assessment process ensures that impacts and risks are reduced to levels that are considered ALARP and acceptable. CAPL considers if there is the potential to affect the maintenance of health, diversity, and productivity of the environment; by determining if there is potential for serious or irreversible environmental damage by assigning these as equivalent to a consequence level between Severe (2) and Catastrophic (1) from the Integrated Risk Prioritization Matrix (Table 6-2). Where a potential for serious or irreversible environmental damage is identified, then the Precautionary Principle is implemented to ensure that impacts and risks are managed to ensure that the environment is maintained for the benefit of future generations.
Biodiversity Principle (d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.	The impact and risk assessment process ensures that impacts and risks are reduced to levels that are considered ALARP and acceptable. CAPL will consider if there is the potential to affect biological diversity and ecological integrity.
Valuation Principle (e) improved valuation, pricing, and incentive mechanisms should be promoted.	Not considered relevant for petroleum activity acceptability demonstration.

6.7.3 Legislative and other requirements

This acceptability criterion includes a review of legislative or other requirements relevant to the environmental management of the petroleum activity.

Matters protected under Part 3 of the EPBC Act are also considered under this acceptability criterion such that impacts and/or risks are consistent with relevant statutory instruments made or adopted under the EPBC Act (e.g. threatened species recovery plans, AMP management plans).

6.7.4 Internal context

This acceptability criterion includes a review of the environmental aspect against relevant requirements under CAPL's management systems to ensure that environmental impact and risk management is consistent with company policy, culture, and standards.

6.7.5 External context

The impact and risk assessment process is informed by relevant persons consultation. The process for relevant persons consultation is described in Section 7. and a summary of the outcomes of this consultation are provided in appendix e.

If feedback is received that results in a change to the environmental impact and risk evaluation (including the identification or refinement of control measures to manage the potential impacts and risks) this context is also summarised in the relevant aspect in Section 8.

If feedback is received that relates to other sections of the EP, this is incorporated directly into those sections. For example, information relating to environmental values and sensitivities (including cultural heritage) is included in Section 5, and any requests for activity notifications or ongoing engagement is included in Section 10.3.4.

6.7.6 Summary of acceptance criteria

Table 6-6 outlines the criteria that CAPL use to demonstrate that potential impacts and risks from each environmental aspect are acceptable.

Table 6-6: Acceptability criteria

Criteria	Test
Acceptable level(s)	Confirm that the predicted level of impact or risk can be managed to achieve the defined acceptable level(s) for that environmental aspect.
Principles of ESD	Confirm that the predicted level of impact or risk is consistent with the ESD principes (b), (c), and (d) as per Table 6-5.
Relevant requirements	Confirm that impact and risk management is consistent with relevant Australian environmental management laws and other regulatory or statutory requirements.
Internal context	Confirm that impact and risk management is consistent with CAPL's management systems, company policy, culture, and standards.
External context	Confirm that impact and risk evaluation has considered relevant persons consultation.

6.8 Environmental performance

CAPL is committed to conducting 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 and acceptable levels.

Regulation 21(7) of the OPGGS(E)R requires an EP to set out **environmental performance outcomes** (EPOs) and **environmental performance standards** (EPSs) for managing the environmental performance of the petroleum activity. The OPGGS(E)R defines EPOs and EPSs as:

- EPO—means a measurable level of performance required for the management of environmental aspects of the activity to ensure that environmental impacts and risks of the activity will be of an acceptable level.
- EPS—means a statement of the performance required of a control measure.

The OPGGS(E)R also requires that an EP include **measurement criteria** (MC) that the titleholder will use to determine whether each EPO and EPS is being met.

For EPs submitted subsequent to an OPP, the EPOs must be consistent (i.e. need to achieve the same (or better) environmental outcome) with those set out in this OPP (Ref. 17; Ref. 146). A concordance table for EPOs from the Gorgon Backfill Fields Development OPP that are relevant to the petroleum activity within this EP [51] are summarised in appendix b.

[51] Where relevant the EPO numbering in this EP is consistent with that from the Gorgon Backfill Fields Development OPP (Ref. 3).

7 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 25 of the OPGGS(E)R.

Ongoing consultation, as required under regulation 22(15) of the OPGGS(E)R, is described in Section 10.3.4.

7.1 Purpose

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

> *"[Regulation 25], like most statutory consultation provisions, imposes an obligation that must be capable of practicable and reasonable discharge by the person upon whom it is imposed. Consultation is a "real world" activity, with specific purposes. Here, its purpose is to ensure that the titleholder has ascertained, understood and addressed all the environmental impacts and risks that might arise from its proposed activity. Consultation facilitates this outcome because it gives the titleholder an opportunity to receive information that it might not otherwise have received from others affected by its proposed activity. Consultation enables the titleholder to better understand how others with an objective stake in the environment in which it proposes to pursue the activity perceive those environmental impacts and risks. As the Regulations expressly contemplate, it enables the titleholder to refine or change the measures it proposes to address those impacts and risks by taking into account the information acquired through the consultations. Objectively, the scheme intends that this is likely to improve the minimisation of environmental impacts and risks from the activity."*[52]

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

- identify the social and cultural features of communities within the ecosystem
- inform the control measures to avoid or reduce impacts and risks to those socio-cultural values and sensitivities in response to relevant persons concerns
- demonstrate to NOPSEMA that consultation has been carried out and to inform NOPSEMA of relevant persons' identities, the nature of the consultation, and that the control measures adopted are both appropriate and comply with legislation (Ref. 147 at paragraphs 55–57, Ref. 149 at paragraph 48).

[52] Paragraph 89 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147). Note: The regulation number in the above quoted text has been revised to reflect the OPGGS(E)R 2023, from the original *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC* judgement transcript.

In particular, the details of the potential environmental impacts and risks of the petroleum activity cannot be ascertained unless the EMBA by the activity is known, which includes an understanding of the social, economic and cultural features of the environment (Ref. 150 at paragraph 11).

In essence, the purpose of consultation is to enhance EPs through the incorporation of input from relevant persons during consultation.

Regulation 25 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. 148).

Consultation is undertaken in the course of preparing an EP (Ref. 148). Once consultation has been closed and prior to finalising and submitting an EP, further consultation (including consultation during the assessment of the EP) is considered as contributing to discharging the ongoing consultation obligations in regulation 22(15) (see Section 10.3.4). This is because if the EP is in the assessment phase, any further consultation is no longer 'in the course of preparing an EP' for the purposes of regulation 25.

7.2 Regulatory guidance

The consultation design for preparation of this EP was undertaken in accordance with CAPL's *Stakeholder Engagement and Issues Management Process: Standardised OE Process* (Ref. 151) and further guided by:

- NOPSEMA's *Environment plan decision making* guideline (Ref. 144)
- NOPSEMA's *Environment plan content requirements* guidance note (Ref. 17)
- NOPSEMA's *Consultation in the course of preparing an environment plan* guideline (Ref. 148)
- NOPSEMA's *Consultation with Commonwealth agencies with responsibilities in the marine area* guideline (Ref. 152)
- NOPSEMA's *Petroleum activities and Australian Marine Parks* guidance note (Ref. 153)
- Full Court of the Federal Court of Australia's decision in *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147)
- Colvin J of the Federal Court in *Cooper v National Offshore Petroleum and Safety Management Authority [2023] FCA 1112* (Ref. 149)
- Colvin J of the Federal Court in *Cooper v National Offshore Petroleum and Safety Management Authority (No 2) [2023] FCA 1158* (Ref. 150)
- Australian Government's *interim guidance on engaging with First Nations People and Communities on Assessments and Approvals under the EPBC Act 1999* (Ref. 154)
- Government of WA's *Consultation policy for Section 18 applications under the Aboriginal Heritage Act 1972* (WA) (Ref. 155)
- Western Australian Department of Mines, Petroleum and Exploration (DMPE) Guideline for the *Development of Petroleum, Geothermal and Pipeline Environment Plans in Western Australia* (Ref. 156)

- Australian Fisheries Management Authority's (AFMA's) *information for the offshore energy industry on consulting with the commercial fishing industry* (Ref. 157)
- Western Australian Fishing Industry Council's (WAFIC) *Consultation Approach for Unplanned Events* (Ref. 158)
- DPIRDs *Guidance statement for oil and gas industry consultation with the Department of Fisheries* (Ref. 159)
- Western Australian Department of Transport and Major Infrastructure's (DTMI's) *offshore petroleum industry guidance note for marine oil pollution response and consultation arrangements* (Ref. 160).

7.3 Consultation principles

Consistent with NOPSEMA's *Consultation in the course of preparing an EP* guideline (Ref. 148), CAPL conducts consultation consistently with the following key principles:

- **effective**–CAPL as titleholder is responsible for running an effective consultation process that meets the OPGGS(E)R
- **timely**–Sufficient time will be allocated for consultation and for the provision of sufficient information to relevant persons. Relevant persons engagement is encouraged to take place early during the development of an EP with the timing and frequency guided by the nature and scale of the petroleum activity, environmental risks and impacts of the activity, Hydrocarbon EMBA, and co-design of consultation with relevant persons.
- **communication**–Titleholders are responsible for letting potentially relevant persons know if they may be affected by a petroleum activity, giving relevant persons an opportunity to identify as such, and the process for making comments, and for providing sufficient information (including information that is accurate and relevant). Relevant persons are expected to identify their function, activity or interest that may be affected, communicate their requirements and availability regarding consultation co-design, and provide comment on how their function, activity or interest may be affected. Communication with relevant persons should be open, accurate, accessible, clearly-defined and two-way. Relevant objections and claims from relevant persons must be used to inform risk assessments and control measures.
- **transparent and accountable**–The process and outcomes of relevant persons engagement should, wherever possible, be open and transparent. NOPSEMA will receive all copies of consultation correspondence (or in the case of face-to-face consultation, then consultation summaries or meeting minutes or equivalent) in the EP. CAPL will respect cultural concerns in providing copies of consultation correspondence in the EP, including engaging with NOPSEMA to share gender-specific information with the appropriate gender and not sharing culturally sensitive information at the relevant person's request. CAPL is accountable for ensuring that the EP complies with EP acceptance criteria in regulation 34 so that NOPSEMA can be reasonably satisfied that the EP should be accepted under regulation 33.
- **clear and sufficient**–Sufficient information must be provided to relevant persons, and it should be simple, clear, and accurate. CAPL should avoid providing unnecessarily detailed and technical information unless of particular relevance to a relevant person (e.g. other titleholder) or requested by the

relevant person. CAPL must give relevant persons sufficient time to respond to requests for consultation and provide comment on the information provided. Relevant persons have a right to request additional information in order to determine how they might be affected.

- **collaboration**–A collaborative approach is key to effective engagement, and may include working with representative organisations to help reduce 'consultation fatigue', and relevant persons working with industry to provide evidence of how their function, interest, or activities may be affected
- **inclusiveness**–Identify and involve relevant persons early and throughout the process
- **integrity**: engagement with relevant persons should aim to establish and foster mutual trust and respect (even in cases where relevant persons oppose a petroleum activity)
- **scalability**–Consultation should be scalable based on the nature and scale of the petroleum activity, Hydrocarbon EMBA, the potential environmental impacts and risks of the activity, the likelihood of the risks, and how familiar relevant persons are with petroleum activities based on past consultation on similar petroleum activities (e.g. location).

7.4 Consultation process for this EP

The consultation undertaken during the preparation of this EP used the following process (Figure 7-1):

- described the petroleum activity
- identified environmental aspects
- defined the Hydrocarbon 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 co-design of consultation and provision of sufficient information to enable relevant persons to understand how this activity may affect their functions, interests, or activities
- assessed the merit of any objections or claims raised by relevant persons, and, if appropriate, incorporated information from consultation into this EP to enhance the EP (e.g. through description of additional values and sensitivities, updates to the risk assessment, additional control measures, additional information in the implementation strategy regarding capacity building for emergency response, etc.)
- provided a response to the objection or claim, and ensured the response was captured in the EP.

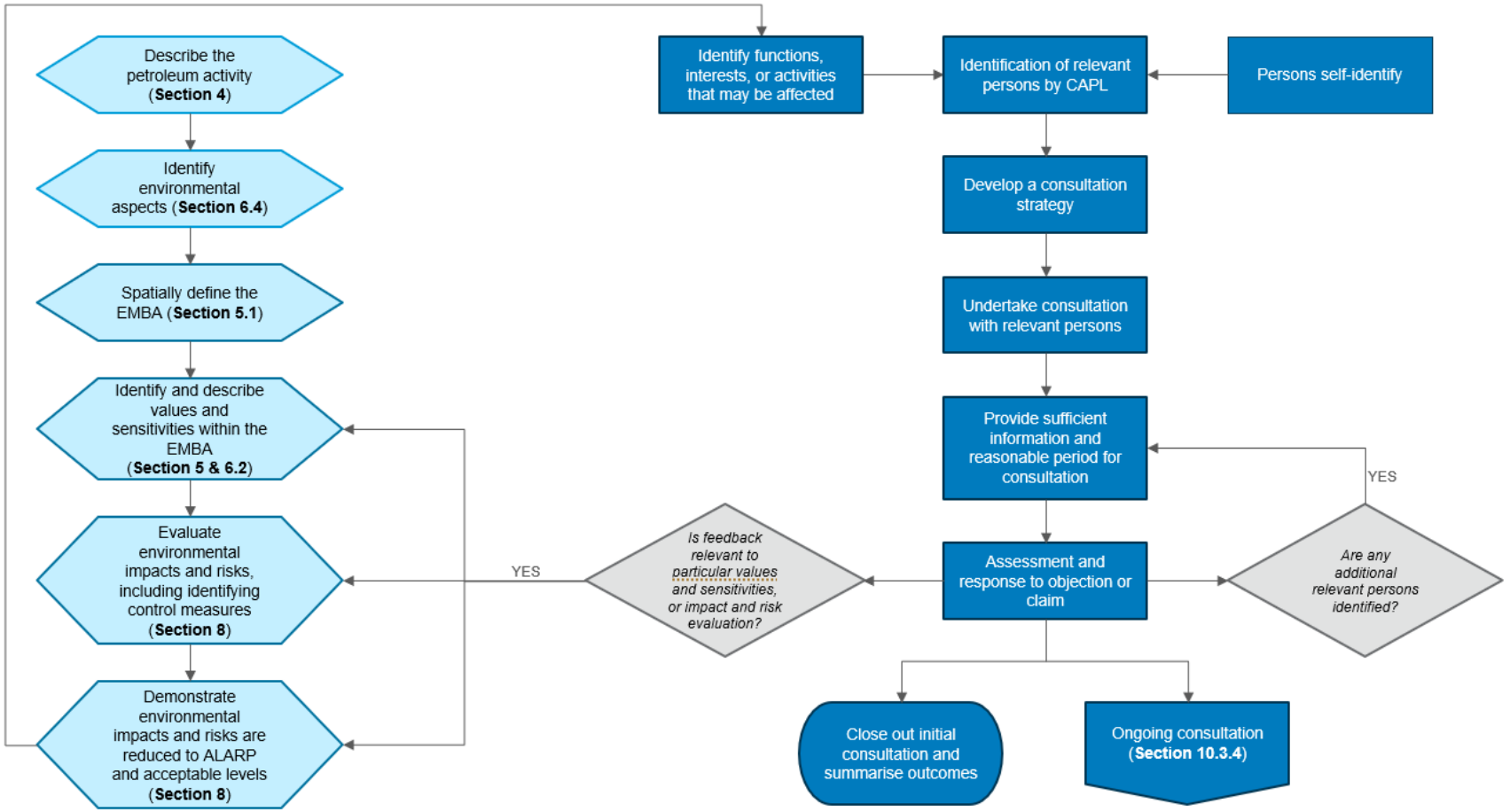


Figure 7-1: Relevant persons consultation process

7.5 Identification of relevant persons

In accordance with NOPSEMA's guideline for consultation (Ref. 148), titleholders must identify who is a relevant person as defined by regulations 25(1)(a)–(e) of the OPGGS(E)R and the rationale used to determine that identification as a relevant person. CAPL has a process to identify and 'screen in' potentially relevant persons and also provides for self-identification.

CAPL achieved this in two ways, first by an assessment process supported by research and historical consultation and advice, secondly, by providing an opportunity for those who may not have been identified through the assessment process to self-identify.

Identifying relevant persons requires an assessment of the:

- petroleum activity (Section 4)
- environment in which the petroleum activity is being undertaken, including:
  - environmental, socio-economic, and cultural values and sensitivities of the environment
  - spatial extent of the Hydrocarbon EMBA
  - any intersection between the Hydrocarbon EMBA and BIAs.
- potential 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 Hydrocarbon 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, including:
  - existing industry guidance (e.g. Ref. 152; Ref. 153; Ref. 157; Ref. 158; Ref. 159; Ref. 160)
  - online searches
  - review of publicly available databases or registers (e.g. access and use authorisations within AMPs, DPIRD's register of fishery licence holders)
  - historical consultation and advice
    - CAPL's previous identification of relevant persons for consultation history for an extensive history of multiple prior petroleum activities on the NWS within the Hydrocarbon EMBA and in the same geographic area
    - advice from representative industry organisations, community organisations and representative organisations for Traditional Custodians.

The outcomes of this process are detailed in Table 7-1, which lists the categories of relevant persons that were identified for this EP, and CAPL's reasoning for determining their inclusion. Table 7-3 identifies the specific persons or

organisations within these categories who were ultimately identified as relevant persons and consulted with for this EP.

In addition to this process, individuals and organisations were also given the opportunity to self-identify as relevant persons, which is further outlined in Section 7.5.6. Where individuals or organisations have been identified as relevant persons for previous petroleum activities, but fall outside the Hydrocarbon EMBA and are not relevant persons for this activity under regulation 25(1)(d), CAPL may consider them relevant persons under regulation 25(1)(e) (see Section 7.5.5).

Table 7-1: Potential authority, persons, or organisations that have functions, interests, or activities that are associated with environmental values or sensitivities present within the Hydrocarbon 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—Vessels, infrastructure and equipment • long term presence of infrastructure within the OA • temporary presence of vessels and ROV/AUV during the petroleum activity.	Commercial fishing Commercial shipping	• interest and activity—commercial fishing • interest and activity—Commercial shipping.	• potential change to the functions, interests, and activities of other marine users.	Refer to evaluation in Section 8.1.	• commercial fishery licence holders and/or representative bodies • commercial shipping industry • government departments or agencies.
Physical presence—Seabed disturbance • installation and permanent presence of subsea infrastructure during installation activities • temporary wet-parking of subsea and support infrastructure, transponders and clump weight (if used) during installation activities • IMR (contingency)–as required by maintenance and repair activities (e.g. stabilisation / span rectification) • temporary ROV/AUV wet parking, and vessel anchoring during emergencies within the OA.	BCH UCH	• interest and activity—Environmental conservation • cultural values, activities and obligations.	• localised and temporary change in water quality • localised alteration of BCH • potential adverse effect to unknown UCH sites and/or artefacts.	Refer to evaluation in Section 8.2.	• government departments or agencies • First Nations people and/or representative bodies • environmental non–government organisations (ENGOs).

Environmental aspect (and aspect source)	Values and sensitivities	Function, interest, or activity	Potential impact or risk	Intersection	Category of persons or organisations
Planned emissions—Air • combustion of fuel from portable powered equipment, vessels and helicopters • release of nitrogen during pre-commissioning.	Air quality	• interest and activity—Environmental conservation.	• localised and temporary reduction in air quality.	Refer to evaluation in Section 8.3.	• government departments or agencies • ENGOs.
Planned emissions—GHG • combustion of fuel from portable powered equipment, vessels and helicopters • release of nitrogen during pre-commissioning.	Atmospheric GHG concentration	• Interest and activity—Environmental conservation.	• A potential reduction to Intergovernmental Panel on Climate Change (IPCC) estimated 'remaining carbon budget' to limit global warming to 1.5–2.0°C.	Refer to evaluation in Section 8.4.	• government departments or agencies • ENGOs.
Planned emissions—artificial light • navigational and operational lighting on vessels.	Ambient light Marine fauna	• interest and activity—Environmental conservation.	• localised and temporary change in ambient light • potential change in behaviour of marine fauna.	Refer to evaluation in Section 8.5.	• government departments or agencies • ENGOs.
Planned emissions—underwater sound • Vessel, ROV/AUV, and helicopter operations • acoustic survey equipment during installation and contingency IMR activities • use of acoustic position equipment.	Ambient sound Marine fauna	• interest and activity—Environmental conservation.	• localised and temporary change in ambient underwater sound • potential change in behaviour of marine fauna • potential auditory impairment or injury to marine fauna.	Refer to evaluation in Sections 8.6 and 8.7.	• government departments or agencies • ENGOs.
Planned discharges—Vessel operations	Water quality Marine fauna	• interest and activity—Environmental conservation.	• localised and temporary change in water quality	Refer to evaluation in Section 8.8.	• 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
• general vessels operations.			• potential change in behaviour of marine fauna.		
Planned discharges—Operational discharges • installation of subsea infrastructure • FCS integration • pre-commissioning • contingency IMR.	Water quality	interest and activity—Environmental conservation.	• localised and temporary change in water quality	Refer to evaluation in Section 8.9.	government departments or agencies.
Unplanned disturbance—Fauna interaction • temporary presence of vessels and ROV/AUV within the OA during the petroleum activity • temporary presence of helicopters within the OA during the petroleum activity • seawater intake associated with contingency flooding during pre-commissioning activities.	Marine fauna	• interest and activity—Environmental conservation.	• Potential injury or mortality to marine fauna.	Refer to evaluation in Section 8.10.	• government departments or agencies • ENGOs.
Unplanned disturbance—Seabed disturbance • incorrect position of infrastructure during installation activities • dropped objects from the vessels or ROV/AUV during installation, pre-	BCH UCH	• interest and activity—Environmental conservation • cultural values, activities and obligations.	• potential localised alteration of BCH • a potential adverse effect to unknown UCH sites and/or artefacts.	Refer to evaluation in Section 8.11.	• 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
commissioning and FCS integration activities.					
Non-indigenous species—Introduction on invasive marine pests • planned discharged of ballast water or the presence of biofouling on vessels undertaking activities within the OA • presence of biofouling on subsea equipment used within the OA.	BCH	• interest and activity—Environmental conservation.	• potential alteration of BCH.	Refer to evaluation in Section 8.12.	• government departments or agencies • ENGOs.
Unplanned release—Solid waste • inappropriately handled or stored solid waste onboard vessels.	Marine fauna	• interest and activity—Environmental conservation.	• potential injury or mortality of marine fauna.	Refer to evaluation in Section 8.13.	• government departments or agencies.
Unplanned release—Leaks and spills • using, handling, and transferring hazardous materials and chemicals • bunkering of marine fuel between a support vessel and the main vessels • hydraulic line failure from equipment • release of operational chemicals and/or hydrocarbons during tie-in, FCS integration activities or as a response to unplanned events.	Water quality Marine fauna	• interest and activity—Environmental conservation.	• localised and temporary reduction in water quality • potential adverse effects to marine fauna.	Refer to evaluation in Section 8.14.	• 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
Unplanned release—Loss of containment • Vessel collision event.	Water quality BCH Marine fauna Commercial fishing Tourism and recreation Other petroleum or marine industries Protected areas, sites, or artefacts	• interest and activity – environmental conservation. – commercial fishing – commercial shipping – tourism and recreation • cultural values, activities and obligations.	• change in water quality • potential adverse effects to BCH • potential adverse effects to marine fauna • potential changes to the functions, interests and activities of other marine users • potential changes to values and sensitivities of protected areas • potential changes to tangible cultural heritage values.	Refer to evaluation in Section 8.15.	• government departments or agencies • First Nations people and/or representative bodies • ENGOs • commercial fishery licence holders and/or representative bodies • commercial shipping industry • tourism and recreation operators • other petroleum titleholders • submarine cable operators • research organisations.
Oil spill response—Oiled wildlife	Marine fauna	• interest and activity—Environmental conservation.	• potential adverse effects to marine fauna.	Refer to evaluation in Section 8.17.	• government departments or agencies.
Cultural heritage—Intangible values	Sea Country	• cultural values, activities and obligations	• potential interference with Sea Country values.	Refer to evaluation in Section 8.18.	• First Nations people and/or representative bodies.

7.5.1 Relevant persons under regulation 25(1)(a)

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.

CAPL determined relevant persons under regulation 25(1)(a) by considering the:

- spatial extent of the Hydrocarbon EMBA
- environmental aspects, and potential environmental impacts and risks associated with the petroleum activity
- 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. 152).

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 7-3.

7.5.2 Relevant persons under regulation 25(1)(b)

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

The petroleum activity within scope of this EP occurs in Commonwealth waters off the coast of WA. As such, the Western Australian DMPE has been identified as a relevant person for consultation during the preparation of this EP (Table 7-3).

7.5.3 Relevant persons under regulation 25(1)(c)

In accordance with the OPGGS(E)R, if the petroleum activity occurs in the Principal Northern Territory (NT) offshore area, the department of the responsible NT Minister is a relevant person.

The petroleum activity within the scope of this EP occurs in Commonwealth waters off the coast of WA. As such, the department of the responsible NT Minister has not been identified as a relevant person for consultation during the preparation of this EP.

7.5.4 Relevant persons under regulation 25(1)(d)

In accordance with the OPGGS(E)R, relevant persons include a person or organisation whose functions, interests or activities may be affected by the activities under this EP. The considerations for determining the relevance of a person or organisation are described below and Table 7-2.

Table 7-2: Identification 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: • recent active fishing effort (based on ABARES fishery status reports and data) occurring within the Hydrocarbon EMBA • fishing method, preferred locations or water depths, fishing season • key target species, distribution, and behaviour • potential for temporal and/or spatial interaction between the petroleum activity and the commercial fishery. State commercial fisheries: • guidance from WAFIC (Ref. 158) 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 the OA, and a record of recent active fishing effort (based on DPIRD fishery status reports and 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 the 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 Hydrocarbon 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 Hydrocarbon EMBA • a review of Native Title determinations to determine cultural and/or spiritual link with BIAs • where an AMP is present within the Hydrocarbon EMBA, a review of any identified First Nations people or groups • Country located within or coastally adjacent to the Hydrocarbon EMBA. Representative bodies: • CAPL’s operating experience in the NWS and previous interactions with First Nations representative bodies • Where people or a group has been determined as relevant, the representative body is also considered relevant.
Local government departments or agencies	• local government boundary intersects the Hydrocarbon EMBA.
Other petroleum titleholders	• CAPL’s operating experience in the NWS and pre-existing knowledge of other petroleum operators • other Commonwealth (based on spatial data from NOPTA) petroleum titles that intersect with the Hydrocarbon EMBA, and

Category of persons or organisations	Considerations for identifying a relevant person
	with current or proposed activities occurring (based on publicly available EPs from NOPSEMA's EP submission website) within the Hydrocarbon EMBA • other State (based on spatial data from DMPE) petroleum titles that intersect with the Hydrocarbon EMBA, and with current or proposed activities occurring (based on publicly available EP summaries from DMPE Resources Online database) within the Hydrocarbon EMBA • potential for temporal and/or spatial interaction between the petroleum activity and the operator of another petroleum title.
Tourism and recreation operators	Tourism and recreation operators: • CAPL's operating experience in the NWS and pre-existing knowledge of local tour and recreational operators • a record of recent active tour operator fishing effort (based on DPIRD FishCube data) occurring within the Hydrocarbon EMBA • where an AMP is present within the Hydrocarbon EMBA, a review of the 'authorisations issued' from Parks Australia (Ref. 161) • potential for temporal and/or spatial interaction between the 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 the Hydrocarbon EMBA, and an Australian World Heritage advisory committee exists. Note: The OA and Hydrocarbon EMBA do not intersect World Heritage areas (Section 5.6).

In accordance with regulation 25(1) of the OPGGS(E)R, and following the direction given by the Full Court of the Federal Court in *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147), and subsequent NOPSEMA guidance (Ref. 17), it is clear that the phrase "functions, interests or activities" stated in regulation 25(1)(d) should be broadly construed[53] 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 25(1)(d) as follows:

- **functions**—a power or duty to do something[54]
- **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"[55]
- **activities**—broadly and is broader than the definition of 'activity' in regulation 5 of the OPGGS(E)R and is likely directed to what the relevant person is already doing[56].

Persons or organisations are considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R if their functions, interests or activities may be affected by the petroleum activity to be carried out under the EP. CAPL's

[53] Paragraph 51 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147).
[54] Paragraph 60 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147).
[55] Paragraphs 63 and 65 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147).
[56] Paragraphs 58 and 59 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147).

approach has been to take a broad interpretation of “function, interest, and activity” and has screened in persons as potentially relevant and contacted them to advise whether that individual or organisation identifies themselves as a relevant person.

Where interests are held communally, CAPL has made a decisional choice to consult with representative bodies (Ref. 147 at paragraphs 96–102) and has sought to do so through meetings (Ref. 147 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. 147 at paragraph 47) and CAPL has also sought to identify those representative body organisations themselves as relevant persons (Ref. 147 at paragraph 48). As documented in the summary of consultation (appendix e), CAPL has asked these representative bodies if there are persons outside of the individuals they represent who may be relevant persons for the purposes of consultation to endeavour to make all necessary efforts to identify relevant persons.

The persons or organisations that were identified as a relevant person under regulation 25(1)(d) for consultation during the preparation of this EP are presented in Table 7-3.

7.5.5 Relevant persons under regulation 25(1)(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 25(1)(d) (using the process as described in Section 7.5.4), 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.

7.5.6 Self-identification

As part of the consultation process (Figure 7-1), CAPL publicly advertises upcoming petroleum activities (see Section 7.5.6), 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 conducts an assessment to validate that they are a relevant person for an EP (aligned with the considerations described in Sections 7.5.1 to 7.5.7); and if they are, an assessment of the merits of objections or claims and a response was progressed (as per the process in Section 7.10).

No new relevant persons self-identified during the consultation period.

7.5.7 Conclusion on relevant persons identified

As a result of application of the methodology and identification, the relevant persons identified for the purposes of regulation 25 of the OPGGS(E)R are listed

in Table 7-3. CAPL is confident that it has used multiple lines of evidence to identify all relevant persons.

Table 7-3: Relevant persons identified for consultation during preparation of the EP

Category of persons or organisations	Considerations for identifying a relevant person
Commonwealth department or agencies—regulation 25(1)(a)	
Australian Border Force (ABF)	The ABF is a federal law enforcement agency, part of the Department of Home Affairs, responsible for offshore and onshore border enforcement, investigations, compliance, detention operations and customs services in Australia. Therefore, the activities under this EP may be relevant to ABF.
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 5.4.7, the Hydrocarbon EMBA overlaps existing submarine cables. Therefore, the activities under the EP may be relevant to ACMA.
AFMA	As identified in NOPSEMA's consultation guideline (Ref. 152), 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 OA and Hydrocarbon EMBA (Section 5.4.1.1). Therefore, the activities under the EP may be relevant to the AFMA.
Australian Hydrographic Office (AHO)	As identified in NOPSEMA's consultation guideline (Ref. 152), 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 4.10.1) and a SNA will be requested around the vessels (Sections 4.1.1). Therefore, the activities under the EP may be relevant to the AHO.
AMSA	As identified in NOPSEMA's consultation guideline (Ref. 152), AMSA is a relevant agency for consultation where a proposed activity may impact on the safe navigation of commercial shipping in Australian waters. The Hydrocarbon EMBA intersects shipping fairways (Section 5.4.4). Therefore, the activities under the EP may be relevant to the AMSA.
Clean Energy Regulator (CER)	As identified in NOPSEMA's consultation guideline (Ref. 152), the CER is a relevant agency for consultation where: • a change to an existing National Greenhouse and Energy Reporting (NGER)-reporting facility or activity that triggers an EP revision • a revision for an existing Safeguard-covered facility or activity. • construction, installation or operation of a new facility or activity that is expected to trigger the Safeguard Mechanism. • a GHG appraisal or storage activity. Therefore, the activities under the EP may be relevant to the CER.
Department of Agriculture, Fisheries and Forestry (DAFF)	As identified in NOPSEMA's consultation guideline (Ref. 152), 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 OA and Hydrocarbon EMBA (Section 5.4.1). Therefore, the activities under the EP may be relevant to DAFF.

Category of persons or organisations	Considerations for identifying a relevant person
Director of National Parks (DNP)	As identified in NOPSEMA's consultation guideline (Ref. 152), 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 Hydrocarbon EMBA intersects AMPs (Section 5.5.1). Therefore, the activities under the EP may be relevant to the DNP.
Department of Climate Change, Environment, Energy and Water (DCCEEW)	As identified in NOPSEMA's consultation guideline (Ref. 152), DCCEEW is a relevant agency for consultation where an activity has the potential to directly or indirectly adversely impact on protected UCH. The Hydrocarbon EMBA overlaps with UCH (Section 5.6). Therefore, the activities under the EP may be relevant to the DCCEEW.
Department of Defence (DoD)	As identified in NOPSEMA's consultation guideline (Ref. 152), 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 intersect the OA and Hydrocarbon EMBA (Section 5.4.7). Therefore, the activities under the EP may be relevant to the DoD.
Department of Industry, Science and Resources (DISR)	The DISR supports the resource sector and develops policy, regulations and interventions to support Australia's oil and gas industry and supply. As such, this EP may be relevant to DISR.
NOPTA	The NOPTA is responsible for day-to-day administration of oil, gas and GHG titles in Commonwealth waters in Australia. As such, this EP may be relevant to NOPTA.
State department or agencies—regulation 25(1)(a)	
Department of Biodiversity, Conservation and Attractions (DBCA)	DBCA promotes biodiversity and conservation through sustainable management of WA's species, ecosystems, lands and the attractions in their care. The Hydrocarbon EMBA intersects State marine protected areas (Section 5.5.2). Therefore, the activities under the EP may be relevant to DBCA.
Department of Planning, Lands and Heritage (DPLH)	DPLH are responsible for the planning and managing land and heritage for all Western Australians. While no sites or artefacts protected under the *Aboriginal Cultural Heritage Act 1972* (WA) were identified within the OA or EMBA (Section 5.6), the activities under the EP may be relevant to DPLH.
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. 159), 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

Category of persons or organisations	Considerations for identifying a relevant person
	fishers who harvest these resources in State or Commonwealth waters. State managed fisheries and recreational fisheries have been identified as overlapping with the Hydrocarbon EMBA (Sections 5.4.1.2 and 5.4.2). Therefore, the activities under the EP may be relevant to DPIRD.
DTMI – Maritime Environmental Emergency Response (MEER) – Marine Pollution	DTMI (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. 160). The unplanned hydrocarbon release scenario predicted some areas of State waters may be exposed (Section 8.15). Therefore, the activities under the EP may be relevant to DTMI.
Department of Energy and Economic Diversification (DEED)	DEED lead Western Australia's energy transition and economic development, facilitate international trade and investment, and promote the international education, science and innovation sectors. Therefore, the activities under this EP may be relevant to DEED.
Department of Water and Environment (DWER)	DWER supports WA's community, economy and environment by managing and regulating the state's environment and water resources on behalf of the Minister for the Environment. Therefore, the activities under this EP may be relevant to DWER.
Pilbara Ports	Pilbara Ports assumes oversight of Barrow Island, Onslow, Port of Ashburton and more and operates as a corporatized entity that reports to the State Government of WA's Minister of Ports. The activity occurs within Commonwealth waters, requires vessels and ports for use. Therefore, the activities under the EP may be relevant to the Pilbara Ports Authority.
Environmental Protection Authority (EPA)	The WA EPA is established under the *Environmental Protection Act 1986* (WA), with the objective to protect the environment and to prevent, control and abate pollution and environmental harm. The EPA provides strategic advice to the Minister of the Environment. Therefore, the activities under this EP may be relevant to the EPA.
State department of the responsible State Minister—regulation 25(1)(b)	
DMPE	DMPE is the department of the responsible State Minister. Therefore, they are considered a relevant person as per regulation 25(1)(c) of the OPGGS(E)R.
Persons or organisations whose functions, interests or activities may be affected by the activities to be carried out under the EP—regulation 25(1)(d)	
First Nations people and/or representative bodies	
BTAC Thalanyji people	The BTAC was registered in 2008 to represent, protect, and support the interests of the Thalanyji people. Thalanyji Country spreads out across the Ashburton River coastal plain south to Tubridji Point, then across to Yannarie River and upstream to Emu Creek, across the range hills of southwest Pilbara to Henry River and Cane River in the north. The Hydrocarbon EMBA intersects this area of coast, and also extends into the offshore waters of the Pilbara. No Native Title determination currently exists within the Hydrocarbon EMBA and this group have not been identified in an AMP Management Plan. However, given that the Hydrocarbon EMBA occurs offshore from the Pilbara coast, and engagement with

Category of persons or organisations	Considerations for identifying a relevant person
	BTAC identified that Sea Country is of recognised value to the Thalanyji people, the activities under the EP may therefore be relevant to this Registered Native Title Body Corporate (RNTBC) and the Thalanyji people. Note: CAPL has also consulted NTGAC who also represents the Thalanyji people for Native Title rights and interests.
MCH (individual representative)	An individual contacted CAPL via phone in August 2023 and identified themselves as a Traditional Custodian for the Mardathoonera people. The Mardathoonera people are a Pilbara language group, and engagement with the individual identified that Barrow Island was culturally significant. Given that the waters off Barrow Island overlap the Hydrocarbon EMBA for this EP, CAPL considers that the individual and the family organisation has functions, interests or activities that may be affected by the petroleum activity to be carried out under the EP. Therefore, they are considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
MCH (family organisation)	
NTGAC	The NTGAC was registered in 2019 to represent, protect and support the interests of the Baiyungu, Thalanyji and Yinggarda people. The RNTBC represents an area that extends approximately from Exmouth Gulf to Lake Macleod. The Hydrocarbon EMBA does not intersect this area of coast, however the Hydrocarbon EMBA is within the offshore waters of the Pilbara and Gascoyne. No Native Title determination extends within the Hydrocarbon EMBA. However, given that the Hydrocarbon EMBA occurs offshore from the Pilbara coast, the activities under the EP may be relevant to this RNTBC and the Baiyungu, Thalanyji and Yinggarda people. Note: Baiyungu Aboriginal Corporation have advised CAPL to undertake EP engagement with them via NTGAC.
Baiyungu people	
Thalanyji people	
Yinggarda people	
Nhuwala Claimant Group (NCG)	The NCG filed a Native Title Determination Application (WC2024/008) on 18 December 2024. The claim area is located in the Pilbara region and extends offshore. No Native Title determination currently exists within the Hydrocarbon EMBA. However, given that the Hydrocarbon EMBA occurs offshore from the Pilbara coast, the activities under the EP may therefore be relevant to the Nhuwala Claimants.
WAC RNTBC	The WAC was registered in 2018 to hold and manage the native title rights and interests for the Mardathoonera and Yaburara people. Mardathoonera and Yaburara Country is in the Pilbara region (approximately between Maitland and Robe rivers). The Hydrocarbon EMBA does not directly intersect with this area of coast, however it does extend into the offshore waters of the Pilbara. Native Title determination (WCD2018/006) does not intersect the Hydrocarbon EMBA. However, given that the Hydrocarbon EMBA occurs offshore from the Pilbara coast, the activities under the EP may be relevant to this RNTBC and the Mardathoonera and Yaburara people.
Mardathoonera people	
Yaburara people	
Commercial fishery licence holders and/or representative bodies	
Australian Council of Prawn Fisheries	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 OA and Hydrocarbon EMBA (Section 5.4.1).

Category of persons or organisations	Considerations for identifying a relevant person
Aquaculture Council of Western Australia	As such, these organisations have functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
Australian Southern Bluefin Tuna Industry Association	
Commonwealth Fisheries Association	
Tuna Australia	
WAFIC	
Tourism and recreation operators	
Recfishwest	This organisation is the peak body representing the State-managed recreational fisheries. Recreational fishing has been identified within nearshore areas of the Hydrocarbon EMBA (Section 5.4.2). As such, this organisation has functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
Marine Tourism Western Australia (MTWA)	MTWA is the recognised charter industry association in WA with peak body status representing the charter sector. Charter vessels may operate within the Hydrocarbon EMBA (Section 5.4.5). 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	Recreational fisheries, tourism and recreational activities have been identified as occurring within or adjacent to the Hydrocarbon EMBA (Section 5.4). As such, these businesses may have functions, interests, or activities, that may be affected by the activities to be carried out under the EP.
Apache Fishing Charters	
Aquatic Adventure Exmouth	
Blue Juice Charters	
Blue Horizon Charters	
Blue Lightning Fishing Charters	
Exmouth Dive and Whalesharks Ningaloo	
Exmouth Game Fishing Club	

Category of persons or organisations	Considerations for identifying a relevant person
Image Dive and Charters	
Innkeeper Sport Fishing Charter	
Lethal Adventures	
Live Ningaloo	
Mackerel Islands and Onslow Beach Resort	
Montebello Island Safaris	
Ningaloo Blue Dive	
Ningaloo Coral Bay Boats	
Ningaloo Discovery	
Ningaloo Fly Fishing	
Ningaloo Glass Bottom Boat	
Ningaloo Marine Interaction	
Ningaloo Reef Dive	
Ningaloo Reef to Range Tours	
Ningaloo Sportfishing Charters	
Ningaloo Whaleshark n Dive	
Ningaloo Whaleshark Swim	
Ocean Eco Adventures	

Category of persons or organisations	Considerations for identifying a relevant person
On Strike Charters	
Peak Sportfishing Adventures	
Sail Ningaloo	
Three Islands Whale Shark Tours	
Top Gun Charters	
View Ningaloo	
Yardi Creek Boat Tours	
Local government departments or agencies	
Shire of Ashburton	The Hydrocarbon EMBA intersects State waters offshore, and some offshore islands, within the Pilbara and Gascoyne regions. Therefore, local governments may be considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Shire of Exmouth	
Other petroleum titleholders	
Carnarvon Energy	Petroleum operations have been identified to occur within the spatial extent of the Hydrocarbon EMBA (Section 5.4.6). Therefore, other petroleum titleholders are considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Eni Australia	
Exxon Mobil	
Jadestone Energy	
Kato Energy / Kato NWS Pty Ltd	
KUFPEC	
Pathfinder Energy	
PGS Australia Pty Ltd	
Santos	
Shell	

Category of persons or organisations	Considerations for identifying a relevant person
Vermilion Oil & Gas	
Woodside	
ENGOs	
Australian Marine Conservation Society	ENGOs are organisations concerned about public welfare, people and the environment. Several environmental receptors intersect with the Hydrocarbon EMBA (Section 5). Therefore, ENGOs may be considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Cape Conservation Group	
Protect Ningaloo	
Other	
Australian Energy Producers (AEP)	AEP is an Australian industry association representing companies which explore and produce oil and gas in Australia. Therefore, AEP may be considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Australian Institute of Marine Science (AIMS)	AIMS undertake research on marine fauna through the North-west Shoals to Shore Research Program (NWSSRP). The NWSSRP monitors Pygmy blue whales and turtles amongst other marine fauna that is present within the Hydrocarbon EMBA. Therefore, AIMS may be considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Exmouth Chamber of Commerce and Industry (ECCI)	The ECCI is a representative organisation that promotes the interests of members and the business community in Exmouth, and Gascoyne region. The Hydrocarbon EMBA for this EP intersects Commonwealth and State waters offshore of the Pilbara and Gascoyne regions. Therefore, ECCI may be considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Karratha and Districts Chamber of Commerce and Industry (KDCCI)	The KDCCI is a representative organisation that promotes the interests of members and the business community in Karratha and Pilbara region. The EMBA for this EP intersects Commonwealth and State waters offshore of the Pilbara and Gascoyne regions. Therefore, KDCCI may be considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Onslow Chamber of Commerce and Industry (OCCI)	The OCCI is a representative organisation that promotes the interests of members and the business community in Onslow and the Pilbara Region. The Hydrocarbon EMBA for this EP intersects Commonwealth and State waters offshore of the Pilbara and Gascoyne regions. Therefore, OCCI may be considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Oil Spill Response Limited (OSRL)	OSRL 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 25(1)(d) of the OPGGS(E)R.
Telstra	Telstra are a person or organisation whose functions, interests or activities may be affected by the activities to be carried out under the EP. Therefore, they are considered relevant persons under regulation 25(1)(d) of the OPGGS(E)R.
Vocus Group	Vocus Group 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 25(1)(d) of the OPGGS(E)R.

Category of persons or organisations	Considerations for identifying a relevant person
Any other person or organisation that the titleholder considers relevant—regulation 25(1)(e)	
Commercial fishery licence holders and/or representative bodies	
Abalone Council Australia	Abalone Council Australia is the peak industry body representing the wild-harvest abalone Industry from the five producing states of Tasmania, Victoria, South Australia, Western Australia and New South Wales. Relevant abalone operations occur outside the boundary of Hydrocarbon EMBA, however under regulation 25(1)(e) CAPL selected to include the council 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 Hydrocarbon EMBA, however under regulation 25(1)(e) CAPL selected to include the council in consultation.
Western Rock Lobster Council	Western Rock Lobster Council is the peak industry body representing the interests of the western rock lobster fishery. The Western Rock Lobster fishery operates outside the boundary of Hydrocarbon EMBA, however under regulation 25(1)(e) CAPL selected to include the Western Rock Lobster Council in consultation.
Tourism and recreation operators	
Tourism Western Australia	The Hydrocarbon EMBA intersects Commonwealth and State waters offshore, and some offshore islands, within the Pilbara and Gascoyne regions, and therefore under regulation 25(1)(e), CAPL selected to include this organization in consultation.
Other	
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 Hydrocarbon EMBA intersects Commonwealth and State waters offshore, and some offshore islands, within the Pilbara and Gascoyne regions, and therefore under regulation 25(1)(e) CAPL selected to include this organization in consultation.
Gascoyne Development Commission (GDC)	The GDC works across government to support economic growth, stimulate job growth and increase industry innovation among other things. The Hydrocarbon EMBA intersects Commonwealth and State waters offshore, and some offshore islands, within the Pilbara and Gascoyne regions, and therefore under regulation 25(1)(e) CAPL selected to include this organization in consultation.
WA Coastal and Marine Community Network	The Hydrocarbon EMBA intersects Commonwealth and State waters offshore, and some offshore islands, within the Pilbara and Gascoyne regions, and therefore under regulation 25(1)(e) CAPL selected to include this organization in consultation.
Western Australian Marine Science Institute (WAMSI)	The 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 Hydrocarbon EMBA intersects Commonwealth and State waters offshore, and some offshore islands, within the Pilbara and Gascoyne regions, and therefore under regulation 25(1)(e) CAPL selected to include this organization in consultation.

Category of persons or organisations	Considerations for identifying a relevant person
Western Australian Museum	The Western Australian Museum is the State's premier cultural organisation, housing WA's scientific and cultural collection. The Hydrocarbon EMBA intersects Commonwealth and State waters offshore, and some offshore islands, within the Pilbara and Gascoyne regions, and therefore under regulation 25(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 Hydrocarbon EMBA intersects Commonwealth and State waters offshore, and some offshore islands, within the Pilbara and Gascoyne regions, and therefore under regulation 25(1)(e) CAPL selected to include this organization in consultation.
Coral Bay Progress Association	ENGOs are organisations concerned about public welfare, people and the environment. The Hydrocarbon EMBA intersects Commonwealth and State waters offshore of the Pilbara and Gascoyne regions, and therefore under regulation 25(1)(e) CAPL selected to include this organization in consultation.
Coral Futures Corporation	
Wilderness Society	
Whale and Dolphin Conservation Society	
International Fund for Animal Welfare	
Greenpeace	
Conservation Council of Western Australia	
Australian Conservation Foundation	

7.6 Sufficient information

Under regulation 25(2) of the OPGGS(E)R and NOPSEMA's guidelines (Ref. 144; Ref. 148), 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 whose functions, interests or activities may be affected by the potential environmental impacts or risks of the petroleum activity includes:

- maps of the proposed petroleum activity location and the associated OA and Hydrocarbon EMBA
- a summary of the petroleum activity, including indicative schedule and duration
- a summary of the potential environmental 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:

- petroleum activity (including spatial and timing information that may intersect with their function, interest, or activity)
- potential impacts and risks of the petroleum activity (including the spatial extent of the Hydrocarbon 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
- control measures to reduce the impacts or risks of the petroleum activity to environmental and socio-cultural values and sensitivities.

Additional information may also 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.

In addition to consultation conducted specifically for this EP, CAPL recognises that previous consultations undertaken (e.g. stakeholder engagement during preparation of the Gorgon Backfill Fields Development OPP) have contributed to building familiarity with relevant persons regarding the nature of petroleum exploration and production activities in the region.

While these previous consultations are not relied upon in place of consultation undertaken for this EP, this prior engagement supports relevant persons to better understand the typical characteristics of such activities and to make an informed assessment of the potential consequences of the proposed petroleum activity on

their functions, interests, or activities. The following is a summary of materials released as part of the consultation for this EP:

- CAPL issued the quarterly publication of the “Bulletin” to Traditional Owner representative bodies which included preliminary information on the proposed petroleum activity. The Bulletin provides an overview of proposed activities, including descriptions, location maps, timing, potential impacts and risks, and the schedule for formal consultation
- CAPL issued an information sheet to identified relevant persons on the 6 May 2026; this information sheet included information about the proposed petroleum activity, potential impacts and risks, control measures, and included maps showing Hydrocarbon EMBA
- CAPL published information regarding the proposed activity to the Online Consultation Hub (upcoming activities | chevron australia — Australia.chevron.com) on 6 May 2026 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, The West Australian, the Pilbara News, Mid-West Times, and Northwest Telegraph on 6 May 2026, in Business News on 15 May 2026, and National Indigenous Times May 2026 edition
- CAPL offered face-to-face meetings with relevant persons (see appendix e).

A copy of the publicly available consultation material is included in appendix f. A summary of the consultation strategy and information provided to each category of relevant persons is included in Table 7-4.

Table 7-4: 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 feedback received to CAPL, and CAPL provides information to respond to commercial fishery licence holders; any feedback received is considered in the development of the EP • where a commercial fishery that is not represented by WAFIC has been determined as relevant, the representative body is provided consultation material and feedback is requested • after a reasonable period has been provided to consider the consultation information (as outlined in Section 7.7), 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.

Category of persons or organisations	Consultation strategy and information provided
First Nations people and/or representative bodies	• initial correspondence with relevant First Nations representative bodies to request a meeting with the board, Elders, or 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 – a key objective of the initial meeting is to co-design the consultation strategy going forward and to determine if there are additional relevant persons not present at the meeting who should be informed and consulted with • 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 Hydrocarbon EMBA; any feedback 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 7.7), 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 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 feedback and an offer to meet face-to-face • where consultation guidance material is available (as outlined in Section 7.6), 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 feedback 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 7.7), CAPL will determine whether further consultation is required • ongoing consultation with follow up correspondence, phone calls and meetings as required.

7.7 Reasonable period

Under regulation 25(3) of the OPGGS(E)R and NOPSEMA's guidelines (Ref. 144; Ref. 148), 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 Court of the Federal Court of Australia in *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147), 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. 144) or up to eight weeks (Ref. 153).

Available guidance regarding consultation with State departments or agencies indicates a reasonable period for standard activities is no less than 20 business days (Ref. 159) and up to six weeks (Ref. 160).

Guidance taken from the repealed and retracted *Aboriginal Cultural Heritage Act 2021* (WA) consultation guidelines (Ref. 162) suggested 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).

Based on consultation undertaken to date feedback from First Nations peoples is that 6–12 weeks is a reasonable period of time depending on the nature and scale of the activity. This is also largely consistent with the 'low impact activities' procedure under the *Native Title Act 1993* (Cth) which allows for between two and four months for notification of a low impact future act and receipt of objections.

Furthermore, CAPL has provided Traditional Owner representative bodies, preliminary information on the activity around six months prior to the formal consultation period to provide sufficient time for Traditional Owners to assess potential consequences on their functions, interests and activities while also enabling a greater understanding of the planned activity.

A six week consultation period was determined to be appropriate by CAPL for this EP, given the nature and scale of the EP and on the basis that select relevant persons had received preliminary information on the activity prior to the consultation period.

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.

7.8 Consultation co-design

Consultation co-design includes design of type of information, method of engagement, frequency of meetings and relationship-building (and may also include a relevant person determining they do not want to participate in consultation). As outlined above in Section 7.1, the purpose of consultation is to enhance EPs through input from relevant persons through enabling a better understanding of the social, economic and cultural features of the environment. Therefore, those relevant persons whose functions, interests, and activities are likely to be affected by planned activities are the focus for consultation as their input is most critical and relevant to enhancing the EP.

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. The consultation method of engagement may change over time as the nature of the relationship evolves, the relevant person's understanding of petroleum activities matures, and the information provided by the relevant person is incorporated into enhanced EPs and is carried forward in subsequent submissions.

Face-to-face consultation is CAPL's preferred methodology, however it may be necessary to undertake consultation in writing where this is the relevant person's preferred methodology or where circumstances dictate.

Where it is agreed that it is appropriate by the parties (CAPL and relevant person), CAPL and relevant person will work together to develop an engagement plan that sets out the arrangements for consultation, reflecting the outcomes of the co-design process that has taken place. The engagement plan provides a structured approach to building a relationship with the relevant person and forming a partnership based on consultations, annual planning meetings, time on Country and work in progress meetings.

Where it is agreed as appropriate by the parties, CAPL enters into consultation agreements with relevant persons. These agreements establish a framework for consultation and engagement, including agreed costs and fees associated with consultation engagements. CAPL considers Traditional Owner relevant persons to be Aboriginal cultural heritage subject matter experts and accordingly reimburses them for their time and, where necessary, third-party assistance on technical matters.

Further detail on consultation agreements, engagement plans, capacity building and relationship building is described in Section 10.3.4.3.

7.9 Sensitive information

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

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

Under regulation 26(8) of the OPGGS(E)R "[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 25 in the course of preparation of the plan, must be contained in the sensitive information part of the plan and not anywhere else in the plan".

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

7.10 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 24(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. 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 (if and where they exist) 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 e. The appendix 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.

7.11 Summary information

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

> *"a report on all consultations under section 25 of any relevant person by the titleholder, that contains:*
>
> *(i) a summary of each response made by a relevant person; and*
>
> *(ii) an assessment of the merits of any objection or claim about the adverse impact of each activity to which the environment plan relates; and*
>
> *(iii) a statement of the titleholder's response, or proposed response, if any, to each objection or claim; and*
>
> *(iv) a copy of the full text of any response by a relevant person".*

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

A summary of each response, CAPL's assessment of the merits of any objection or claim, and CAPL's response to each objection or claim is provided within appendix e. The consultation summary also describes what (if any) changes to the EP, including control measures, were made in response to each objection or claim.

7.12 Conclusion on consultation

The objective of consultation, which is referred to above in Section 7.1, but reiterated below, informs whether consultation has been closed:

> *"Regulation 25, like most statutory consultation provisions, imposes an obligation that must be capable of practicable and reasonable discharge by the person upon whom it is imposed. Consultation is a "real world" activity, with specific purposes. Here, its purpose is to ensure that the titleholder has ascertained, understood and addressed all the environmental impacts and risks that might arise from its proposed activity. Consultation facilitates this outcome because it gives the titleholder an opportunity to receive information that it might not otherwise have received from others affected by its proposed*

activity. Consultation enables the titleholder to better understand how others with an objective stake in the environment in which it proposes to pursue the activity perceive those environmental impacts and risks. As the Regulations expressly contemplate, it enables the titleholder to refine or change the measures it proposes to address those impacts and risks by taking into account the information acquired through the consultations. Objectively, the scheme intends that this is likely to improve the minimisation of environmental impacts and risks from the activity."[57]

As stated above in Section 7.1, 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
- demonstrate to NOPSEMA that consultation has been carried out and to inform NOPSEMA of relevant persons' identities, the nature of the consultation, and that the control measures adopted are both appropriate and comply with legislation[58].

Regulation 25(2) of the OPGGS(E)R requires the titleholder to give the relevant person sufficient information to allow the relevant person to make an informed assessment of the possible consequences of the activity on the functions, interests or activities of the relevant person. Regulation 25(3) of the OPGGS(E)R requires the relevant person to be afforded a reasonable period for the consultation.

Consultation is a process that is not indeterminate and must be reasonably capable of being closed once the process is complete. As Lee J stated in *Santos NA Barossa Pty Ltd v Tipakalippa* "[i]t must be taken to be the regulatory intention that the consultation requirement cannot be one that is incapable of being complied with within a reasonable time."[59]

Regulation 33(1)(a) of the OPGGS(E)R requires that if NOPSEMA is reasonably satisfied that the EP meets the criteria in regulation 34 of the OPGGS(E)R then NOPSEMA must accept the EP. Meeting these requirements is the evaluative judgment to determine reasonable satisfaction of the consultation obligation, and as such, NOPSEMA uses its discretion to determine if these criteria are met. The Full Court of the Federal Court of Australia determined that this is a state of satisfaction that is a prerequisite to an exercise of a statutory power, and that there must be an evident and intelligible justification that must be objectively ascertained by a reviewing Court[60].

CAPL has undertaken the consultation process as described in Section 7, and in doing so has met the objective of consultation as articulated in the relevant case law and met the requirements of regulation 25. This, therefore, provides

[57] Paragraph 89 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147). Note: The regulation number in the above text has been revised to reflect the OPGGS(E)R 2023, from the original *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC* judgement transcript.

[58] Paragraphs 55–57 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147) and paragraph 48 of Cooper v National Offshore Petroleum Safety and Environmental Management Authority [2023] FCA 1112 (Ref. 149).

[59] Paragraph 136 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147).

[60] Paragraphs 31 and 32 of *Santos NA Barossa Pty Ltd v Tipakalippa [2022] FCAFC 193* (Ref. 147).

NOPSEMA with evident and intelligible justification for being reasonably satisfied that the EP acceptance criteria for consultation are met.

CAPL has completed all practicable and reasonable steps to discharge its consultation obligations. As detailed in this EP, CAPL has provided sufficient relevant persons to make an informed assessment of the possible impacts and risks of the petroleum activity on their functions, interests or activities (meeting the requirements of regulation 25). The consultation process has informed CAPL'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 the proposed activities. CAPL has provided sufficient time to relevant persons to provide relevant input for CAPL to assess relevant persons claims and objections, and to action the input from relevant persons. CAPL has:

- updated its description of environment (Section 5) to include values and sensitivities raised by relevant persons
- updated its impact and risk assessment (Section 8) to include assessment of input from relevant persons on their values and sensitivities (particularly in relation to marine fauna and songlines), including revision and/or addition of control measures
- through this EP, informed NOPSEMA of relevant persons identities, the nature of the consultation, and the control measures adopted.

For further detail, see appendix e and the sensitive information report.

CAPL notes it has discharged its obligations under regulation 25 considering:

- CAPL has implemented a thorough process to 'screen in' potential relevant persons and has allowed potential relevant persons opportunities to self-identify
- CAPL provided preliminary information on the proposed activities ahead of formal consultation to Traditional Owner representative bodies, which included an overview of the petroleum activity, location maps, indicative timings of the activities, potential impacts and risks, and the schedule for formal consultation
- consultation on this EP commenced on 6 May 2026, and information on the activity, including information on potential impacts and risks associated with the activity, has been presented on CAPL's website during this time with the option to provide feedback online
- CAPL has maintained a toll-free contact number for persons or organisations to call and participate in consultation
- CAPL published notices in seven newspapers, as outlined in Section 7.6
- CAPL has offered face-to-face meetings with First Nations representative bodies while consulting on this EP (as outlined in appendix e), and provided tailored and bespoke consultation material for consideration
- six weeks was provided for consultation (Section 7.7) for this EP, with consultation closing on 17 June 2026.

CAPL has also provided a reasonable opportunity for relevant persons to engage in genuine two-way dialogue on environmental impacts and concerns, and CAPL will undertake its ongoing consultation obligations (Section 10.3.4).

Based on the above, CAPL has discharged its duty under regulation 25. CAPL considers that consultation under regulation 25 is complete.

It is noted that CAPL is not required to obtain consent from a relevant person to engage in the petroleum activity.

To the extent a relevant person says that it has further information to share or claims that consultation under regulation 25 has not completed, appendix e provides reasons specifically why CAPL considers consultation under regulation 25 has been met in relation to that relevant person. It is noted that further information can be considered during ongoing consultation under regulation 22(15).

8 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 implemented to reduce the risks to ALARP and to an acceptable level, and identifies the associated EPOs, EPSs, and MC, as required under regulations 21(5), 21(6) and 21(7) of the OPGGS(E)R.

8.1 Physical presence–Vessels, infrastructure and equipment

8.1.1 Aspect source

Activities identified as having a physical presence that may interact with other marine users are the:

- long term presence of infrastructure (e.g. pipelines, manifolds, umbilicals, etc.) within the OA
- temporary presence of vessels and ROV/AUV during the petroleum activity.

8.1.2 Environmental impact and risk evaluation

Interactions with other marine users may result in a:

- potential change to the functions, interests, and activities.

8.1.2.1 Consequence evaluation

8.1.2.1.1 Risk: potential change to the functions, interests, and activities

Subsea infrastructure associated with the petroleum activity will be installed wholly within the OA. Potential interactions between other marine users and the infrastructure may occur at the seabed or within the water column. During the petroleum activity the vessels and ROVs/AUVs will also be present within the OA. The estimated duration for pipelay, subsea installation and pre-commissioning activities is ~five months per campaign, while Jansz infield umbilical and IMR campaigns are expected to take ~one–two months per campaign (Table 4-1). The OA occurs in water depths ~1,100 m–1,400 m.

Activities undertaken on the existing FCS infrastructure during the FCS integration, which takes ~60 days, have the potential to result in a change to the functions, interests, and activities to fishing vessels, commercial shipping and/or other petroleum activities. Note that Section 7.1 of the NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations EP*[61] (Ref. 5); provides an evaluation of the potential impacts and risks associated with the existing FCS infrastructure. Consistent with Regulation 56(1) of the OPGGS(E)R, this information is not repeated here as it has previously been provided to NOPSEMA and is publicly available.

Commercial fisheries

The temporal presence of vessels during the petroleum activity has the potential to result in a change to the functions, interests, and activities to fishing vessels.

[61] The NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations EP* is available online at: https://docs.nopsema.gov.au/A1316111. Section 7.1 of this EP provides the consequence evaluation of the potential impacts and risks from the permanent presence of FCS.

Two fisheries, the NWSTF Commonwealth-managed commercial fishery and the Pilbara Line Fishery state-managed commercial fishery were identified as having fishing efforts recorded within the OA (Table 5-19 and Table 5-20). Although these fisheries were identified as present, the level of fishing effort within the OA is typically low. Fishing activity within the Commonwealth NWSTF typically occurs in water depths of 350–600 m (Section 5.4.1.1; Ref. 103). The entire fishery has a small number of active permits and vessels (e.g. seven permits and three vessels were active during the 2023-2024 season [Section 5.4.1.1]). For the State managed commercial fishery, fishing effort activity within the OA was only recorded in 2015 and 2016, limited to three months across those years, with <3 vessels operating (Section 5.4.1.2; Ref. 115). Any deviation required by fishing vessels around the vessels (and its SNA), is not expected to impact on their functions, interests, or activities.

Potential unplanned interactions with commercial fisheries may also occur with the permanent presence of the subsea infrastructure on the seabed and sections of the G&E umbilical in the water column. The potential risks include physical damage (via entanglement) to fishing gear that contacts the infrastructure.

As previously identified, the entire Commonwealth NWSTF has a small number of active permits and vessels, and it does not regularly record fishing effort within the OA (only one year [2015] out of the 10-year period [2015–2024] recorded fishing effort within the 60 nm graticular reporting block that intersected with the OA; Section 5.4.1.1). The OA overlaps with ~0.12% of the total fishery management area. Similarly, low fishing efforts were recorded for the Pilbara Line Fishery within the OA (only three months out of the 10-year period [2015–2024] recorded fishing effort within the 60 nm graticular reporting block that intersected with the OA; Section 5.4.1.2).

Subsea infrastructure associated with the GFP, within the OA, has been in place 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 structures is not expected to result in a significant impact to commercial fishing operations (via loss of catches or damage to fishing equipment). In addition, the temporal physical presence of vessels within the OA during the petroleum activity is also expected to have limited potential impacts on their functions, interests, or activities.

Based on the low fishing effort within the OA, limited spatial overlap, and the temporary nature of vessels presence, any changes to the functions, interests, and activities to commercial fisheries are expected to be limited. As such, CAPL has ranked this risk as Incidental (6).

Commercial shipping

A section of the OA intersects part of the NWS shipping fairway system (Section 5.4.4). Activities identified within or adjacent to this shipping fairway include pipelay and umbilical installation. They are expected to be of limited duration, ranging from hours to days across the overall duration of each campaign. Consequently, the temporary presence of vessels within the OA are not expected to affect commercial shipping operations. Any deviation required by commercial shipping operators is not expected to impact on their functions, interests, or activities. Therefore, CAPL has ranked the potential change to the functions, interests, and activities to commercial shipping activities as Incidental (6).

8.1.2.2 ALARP decision context justification

Offshore installation and vessel-based activities are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential risks associated with the interaction with other marine users from these types of activities are managed through established control measures prescribed by applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

During relevant persons consultation, a claim was raised regarding physical presence and the associated control measures and notification requirements with AMSA and AHO. CAPL responded to the claim (see summary in 'external context' [Section 8.1.3] and within appendix e). Additional control measures have been also identified and evaluated to demonstrate that risks have been reduced to ALARP and can be managed to acceptable levels (Table 8-2).

The potential risks from the interaction with other marine users are considered lower-order impacts in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.1.2.3 Control measures

Table 8-1 and Table 8-2 detail the control measures relevant to this aspect.

Table 8-1: Good practice control measures relevant to Physical presence–Vessels, infrastructure and equipment

CM	Description
CM-01: 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.
CM-02: Control of Work (CoW) process	CAPL's Operations Process: CoW Process (Ref. 170) ensures that workplace safety and health hazards are assessed and managed. The work authorisation system is part of this process and includes SIMOPS and hazard analysis. Where required under the CoW process, a SIMOPS Plan will be developed to identify and manage hazards arising from the petroleum activity and other CAPL planned petroleum activities when occurring within the same area.
CM-03: Ongoing consultation	Regulation 22(15) of the OPGGS(E)R requires that the implementation strategy must provide for appropriate consultation with relevant interested persons or organisations. Section 10.3.4 describes how CAPL will continue to engage with relevant persons. This consultation relates to both ongoing consultation regarding the specific petroleum activity (Section 10.3.4.1 and 10.3.4.2) as well as broader engagement and relationship building (Section 10.3.4.3). Relevant persons that have requested activity commencement and/or cessation notifications will be advised as per Table 10-5.

Table 8-2: Additional control measures relevant to Physical presence–Vessels, infrastructure and equipment

CM	Benefit	Cost
Limit time in the shipping fairway	Activities within or adjacent to the shipping fairway include pipelay and umbilical installation. These activities are limited in duration, typically ranging from hours to days over the overall duration of each campaign. Reducing the time spent within the shipping fairway may further reduce the potential for interactions with passing vessels. However, the activity already incorporates established controls, including vessel navigation procedures, communication protocols and marine management measures to manage this risk, meaning the additional reduction in residual risk would be limited.	Implementing temporal restrictions to further limit time within the shipping fairway would reduce operational flexibility and may constrain the ability to respond to operational requirements, contingencies and emergency situations. Consequently, it may increase operational complexity and safety risks. The petroleum activity has been planned to support efficient mobilisation and execution; minimising time spent within the shipping fairway and reducing repeated crossings where practicable. Additional timing constraints could increase operational complexity and associated costs without providing a commensurate reduction in residual risk. Accordingly, the cost of implementation is considered grossly disproportionate to the limited additional benefit that may be achieved, and therefore, the measure has not been adopted.

8.1.2.4 Likelihood and residual risk level summary

Due to the nature of the vessel activities within the scope of this EP and the limited spatial and temporal area that may interact with other users, the likelihood of interaction is considered low. Interaction with the subsea infrastructure is also expected to be limited based upon infrastructure location and CAPL's operational experience. As such, CAPL has assessed the likelihood and residual risk level as identified in Table 8-3.

Table 8-3: Likelihood and residual risk relevant to Physical presence–Vessels, infrastructure and equipment

Risk/receptor	Consequence	Likelihood	Residual risk
Potential change to the functions, interests, and activities			
Commercial fisheries	Incidental (6)	Unlikely (4)	Very low (9)
Commercial shipping	Incidental (6)	Unlikely (4)	Very low (9)

8.1.3 Demonstration of acceptability

Table 8-4 describes the demonstration of acceptability relevant to this aspect.

Table 8-4: Demonstration of acceptability relevant to Physical presence–Vessels, infrastructure and equipment

Comparison with acceptable level
The acceptable level for this aspect is **AL-18** (refer to Section 6.6). The physical presence associated with vessels, infrastructure and/or equipment has been assessed as having an Incidental (6) consequence (Section 8.1.2.1). Therefore, the predicted level of impact for the relevant receptors is equivalent or better than AL-18.
Principle of ESD
Precautionary Principle

In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required.

Intergenerational Principle

In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required.

Biodiversity Principle

Potential impacts to the functions, interests and activities of other marine users were predicted to be negligible. This is not considered to have the potential to affect biological diversity and ecological integrity, and therefore no further evaluation against the Biodiversity Principle is required.

Relevant environmental legislation and other requirements

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:

Requirement	Demonstration
Navigation Act 2012 (Cth) Notice to Mariners	Requirement to issue a Notice to Mariners has been incorporated into the **maritime safety information** control measure.

Internal context

No management processes or procedures were deemed relevant for this aspect.

External context

Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7).

During relevant persons consultation, the following claims were raised:

- further measures were recommended to be incorporated the EP, including evaluation and implementing adequate control measures. CAPL provided a response that confirmed:
  - consideration of each proposed control measure, including (where relevant) a summary of the equivalent CAPL control measure included within the EP. This has been covered by the control measures listed in Section 8.1.2.3. Additional control measures were also evaluated within the EP (Table 8-2).
- notification requirements to AMSA and AHO. CAPL confirmed that:
  - notification requirements and vessel collision controls are standard in EPs and are already contained within the EP. This has been covered by the control measures **Maritime safety information**, **Ongoing consultation** and notification requirements (refer to Table 10-5).

8.1.4 Environmental performance

Table 8-5 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-5: Environmental performance relevant to Physical presence–Vessels, infrastructure and equipment

EPO	CM	EPS	MC
EPO-33: No interference with other lawful marine users from planned activities	**CM-01:** Maritime safety information	**EPS-01.1:** Vessels operating within the OA will comply with any Notice to Mariners requirements under the *Navigation Act 2012* (Cth).	**MC-01.1:** Records of lodgement of notification to relevant agency.
		EPS-01.2:	**MC-01.2:**

EPO	CM	EPS	MC
associated with the petroleum activity to a greater extent than is necessary for the reasonable exercise of the rights and performance of duties.		CAPL will comply with any Notice to Mariners requirements under the *Navigation Act 2012* (Cth) regarding notifications of installed subsea infrastructure.	Records of lodgement of notification to relevant agency.
	CM-02: CoW process	**EPS-02:** Where required under the CoW process, CAPL will develop and implement SIMOPS Plan(s) to manage the petroleum activity and other planned CAPL petroleum activities that may occur concurrently within the vicinity of the OA.	**MC-02:** 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.
	CM-03: Ongoing consultation	**EPS-03:** Relevant persons that have requested notifications will be advised of the commencement and/or completion of the petroleum activity as per Table 10-5.	**MC-03:** Relevant persons consultation records.

8.2 Physical presence—Seabed disturbance

8.2.1 Aspect source

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

- installation and permanent presence of subsea infrastructure during installation activities
- temporary wet-parking of subsea and support infrastructure, transponders and clump weight (if used) during installation activities
- IMR (contingency)–as required by maintenance and repair activities (e.g. stabilisation / span rectification)
- temporary ROV/AUV wet parking, and vessel anchoring during emergencies within the OA.

8.2.2 Environmental impact and risk evaluation

Seabed disturbance may result in a:

- localised and temporary change in water quality
- localised alteration of BCH
- potential adverse effect to unknown UCH sites and/or artefacts.

8.2.2.1 Consequence evaluation

8.2.2.1.1 Impact: localised and temporary change in water quality

A change in water quality is expected to occur when seabed sediments are disturbed and become suspended in the water column during placement of subsea and/or support infrastructure, initiation anchors, transponders and clump weight (if used) or during vessel anchoring during emergencies (as identified in Section 8.2.1). There are no trenching or dredging activities under the scope of this EP.

These impacts are expected to be localised to around the area of seabed disturbance. Given the hydrodynamics in open ocean areas, the area of decreased water quality is expected to be localised and temporary, as sediments would settle out of the water column relatively quickly (Ref. 192). After the activities are completed, sediments will gradually settle back to the seabed and water quality will return to background levels. As such, CAPL has ranked the consequence as Incidental (6).

8.2.2.1.2 Impact: localised alteration of BCH

BCH may be altered via physical disturbance or indirectly by the temporary increase in suspended sediment near the seabed, resulting from seabed disturbance.

Consistent with the *Gorgon Backfill Fields Development OPP* (Ref. 3), seabed disturbance has been classified as either long-term or short-term for the purpose of environmental impact and risk assessment.

The long-term disturbance area for the G&E infrastructure has been estimated as ~3.62 km^2, based on the following assumption:

- a 30 m corridor around the production flowline, MEG pipeline and umbilical, which accommodates for all other infrastructure or equipment associated with this infrastructure (e.g. mudmat foundations, support structures)
- a 250 m radius around the G&E DC and existing infrastructure tie-in locations, which allows for the installation of subsea infrastructure (Section 4.3), PLETs and PLEMs.

Using the same approach, a 30 m corridor was also applied to the Jansz infield umbilical and associated infrastructure, as such, the disturbance area has been estimated as ~0.52 km^2. Based on these assumptions, the total long-term seabed disturbance associated to this petroleum activity is estimated at ~4.14 km^2.

Short-term disturbance is caused when infrastructure or equipment contacts the seabed and is removed at or before the end of the petroleum activity. Where such equipment contacts the seabed within areas of long-term disturbance, it is considered to be implicitly included within the long-term disturbance area. On this basis, short-term disturbance associated with the petroleum activity is estimated to be ≤1.33 km^2 resulting from activities including:

- pipeline initiation anchors deployment
- temporary wet parking of infrastructure and equipment within the OA
- contingency vessel anchoring within the OA
- temporary ROV/AUV wet parking within the OA.

The OA consists of ~478 km^2, indicating that the total seabed disturbance (including both long- and short-term disturbance) represents <1.2% of the OA.

This estimated approach is considered conservative, as it includes both the actual seabed infrastructure disturbance footprint, and a buffer area that may or may not be disturbed.

Elevated turbidity levels may be generated during the placement of infrastructure; however, monitoring during trenching programs indicated that turbidity plumes are generally highly localised (tens of metres) and result in short-term exposure only

(Ref. 193; Ref. 194; Ref. 195). While trenching is not proposed under this EP, these studies provide a conservative analogue for potential turbidity exposure.

As described in Section 5.3.1.1, habitat mapping (Ref. 32) predicted that BCH within the OA would be characterised by low structural complexity, consisting mainly of smooth and irregular seabed with bare substrate and intermittent mounds with bare substrate. Ground truthing transects along the production flowline and MEG pipeline confirmed the absence of complex BCH (Ref. 32).

Crossing the northern section of the proposed G&E umbilical route (i.e. near the Jansz FCS), habitat mapped identified a continuous scarp with bare substrate. Small patches along the scarp were predicted as areas of low likelihood of biota; however, a ground truthing transect of this area did not identify the presence of epifauna (Ref. 32). The habitats within the G&E DC primarily comprised of smooth seabed with bioturbation and scattered patches of bedforms. Ground truthing confirmed the absence of complex seafloor structures and did not identify any epifaunal communities or benthic infauna (Ref. 32). The BCH within the OA were not considered to be of regional significance (Ref. 32).

Dernie et al. (Ref. 196) reported that full recovery of soft sediment assemblages, characterised by sandy sediments, from anthropogenic physical disturbance could take 64–208 days, depending on the intensity of the disturbance.

Scarps predicted within the northern section of the proposed infrastructure (i.e. near the Jansz FCS) are typically sparse and patchy in distribution and were not considered to be of regional significance (Ref. 32). As such, ecosystem function or habitat connectivity is not expected to be affected. Consequently, potential impacts to BCH from seabed disturbance are expected to be localised and temporary.

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. 197; Ref. 198). A review of ROV video footage recorded between 2015 and 2018 across two separate areas, comprising a total of 37 sites (29 sites on existing infrastructure and eight sites away from Jansz–Io pipelines) in water depths ~700–1,360 m 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. 29). The review also indicated a decrease in richness, abundance, and diversity with depth as found in other studies both in the north-west of WA and elsewhere (Ref. 29). Consequently, the proposed infrastructure may provide a hard substrate for colonisation over time (i.e. a change, albeit not considered a negative change).

In summary, given the nature of the activities and the characteristics of the receiving environment within the OA, seabed disturbance is expected to be localised and is not expected to affect ecosystem function or habitat connectivity.

Alteration to BCH associated with short-term disturbance activities (e.g. wet parking, or contingency vessel anchoring) has been assessed as Incidental (6) as recovery is expected to occur within days to months following completion of the activity.

While the long-term seabed disturbance associated with installation activities is confined to a small proportion of the OA (<1.2%), its presence is long term and will result in a localised long-term alteration to BCH; therefore, it has been assessed as Moderate (4).

8.2.2.1.3 Risk: potential adverse effect to unknown UCH

During the petroleum activity, discovery of, and unintended disturbance to, unknown UCH may occur.

Given known sea level history, areas in water depths of <125 m would have been emergent land during the extended history of First Nations occupation of Australia. The OA occurs in water depths >1,100 m. Consequently, the OA would not have been emergent land during the history of First Nations occupation and the potential for unknown First Nations UCH is not considered credible and no further assessment has been undertaken.

As identified in Section 5.6.1, there are no known UCH within the OA, and the probability of encountering any historic UCH is low. The OA has an area of ~478 km^2 and the seabed disturbance is expected to be <1.2% of the OA (Section 8.2.2.1.2).

Given the localised nature of seabed disturbance and the low probability of encountering historic UCH, the discovery of, and unintended disturbance to, unknown UCH is not expected. However, should such an event occur, any potential disturbance is expected to be limited. Therefore, CAPL has ranked potential adverse effect to unknown UCH as Incidental (6).

8.2.2.2 ALARP decision context justification

Offshore installation and vessel operations are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential impacts associated with seabed disturbance from these types of activities are managed through control measures recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding seabed disturbance from the petroleum activity by relevant persons during consultation in preparing this EP.

The potential impacts and risks from seabed disturbance are considered lower-order impacts in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.2.2.3 Control measures

Table 8-6 details the good practice control measures relevant to this aspect.

Table 8-6: Good practice control measures relevant to Physical presence—Seabed disturbance

CM	Description
CM-04: Visual inspection	Prior to any short-term disturbance (e.g. deployment of installation aids, wet storage of equipment/structures), a visual inspection of the seabed will be undertaken, and if emergent seabed features or obstacles are present, the proposed equipment/structures will be repositioned.
CM-05: Pre-installation survey	A pre-installation survey will be undertaken prior to installation of subsea infrastructure. If emergent seabed features or obstacles are present, the proposed infrastructure will be repositioned if practicable.
CM-06: Seabed disturbance limit	The *Gorgon Backfill Fields Development OPP* (Ref. 3) estimated areas of long-term and short-term disturbance for the Backfill Fields Development; the total estimated area of disturbance was 19.84 km^2.

CM	Description
	G&E infrastructure is part of the Backfill Fields Development, and will have areas of seabed disturbance. With respect to the G&E infrastructure within scope of this EP: • the long-term disturbance area comprises: – a 30 m corridor around the production flowline, MEG pipeline and umbilical, which accommodates other infrastructure or equipment associated with this infrastructure (e.g. mudmat foundations, support infrastructure) – a 250 m radius buffer around the G&E DC and existing infrastructure tie-in locations; these areas allow for the long-term presence of infrastructure (e.g. PLETs, PLEMs) • the short-term disturbance area allows for the temporary placement of equipment (e.g. transponders) that may be required outside the long-term disturbance area • an additional 50% contingency (as per the approach in the OPP) allowance for both the long-term and short-term disturbance area. Note 1: Where temporary equipment contacts the seabed within the long-term disturbance area, it is implicitly accounted for in the long-term disturbance area (i.e. the two areas are discrete, not overlapping). Note 2: The seabed disturbance limits presented above relate only to the G&E infrastructure within the scope of this EP. The Jansz infield infrastructure forms part of the GFP.
CM-07: Subsea inventory	Develop and maintain an inventory of subsea assets.
CM-08: No vessel anchoring within the OA during planned activities	No anchoring of vessels within the OA during planned activities. Anchoring will only be undertaken during unplanned or emergency situations.
CM-09: UCH Procedure	The CAPL's *Inadvertent Underwater Cultural Heritage Discovery Procedure* (Ref. 10) has been developed in alignment with the *Guidelines for Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Water* (Ref. 9). The UCH Procedure (Ref. 10) will be implemented where there are activities interacting with the seabed with the risk of disturbing unlocated UCH. The UCH Procedure (Ref. 10) ensures that inadvertent discoveries of UCH (including First Nations UCH) are responded to with adequate conservation and management actions. The Procedure will identify actions to be taken should potential UCH be identified within the OA.

8.2.2.4 Likelihood and residual risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk level as identified in Table 8-7.

Table 8-7: Likelihood and residual risk relevant to Physical presence—Seabed disturbance

Risk/receptor	Consequence	Likelihood	Residual risk
Potential adverse effect to unknown UCH			
Unknown UCH	Incidental (6)	Rare (6)	Very low (10)

8.2.3 Demonstration of acceptability

Table 8-8 describes the demonstration of acceptability relevant to this aspect.

Table 8-8: Demonstration of acceptability relevant to Physical presence—Seabed disturbance

Comparison with acceptable level

The acceptable levels for this aspect are **AL-01**, **AL-02** and **AL-04** (refer to Section 6.6).

Potential impacts from seabed disturbance were predicted to range from a short-term, direct reduction in water quality within a localised area, to localised impacts to BCHs (Section 8.2.2.1). Therefore, it is not expected to affect biological diversity and ecosystem integrity. Consequently, the predicted level of impact for the relevant receptors is equivalent or better than the acceptable levels **AL-01** and **AL-02**.

No known UCH has been identified within the OA, and the probability of encountering any UCH within either OA is low. Therefore, the predicted level of impact for the relevant receptors can be managed to be equivalent or better than the acceptable level **AL-04**.

Principle of ESD

Precautionary Principle

In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required.

Intergenerational Principle

In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required.

Biodiversity Principle

Seabed disturbance from the petroleum activity is predicted to result in localised and recoverable changes to BCH. This is not considered to have the potential to affect biological diversity and ecological integrity, and therefore no further evaluation against the Biodiversity Principle is required.

Relevant environmental legislation and other requirements

Legislation and other requirements considered relevant for this aspect include:

- UCH Act.

CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below.

Requirement	Demonstration
UCH Act Notifications of the discovery of suspected UCH as per section 40 of the UCH Act.	Notifications requirements consistent with section 40 of the UCH Act have been incorporated into the Inadvertent **UCH Procedure** control measure.

Internal context

This management process or procedure was deemed relevant for this aspect:

- Inadvertent UCH Discovery Procedure (Ref. 10).

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 for this aspect is consistent with company policy, culture, and standards

External context

Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7).

No changes to this impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.

8.2.4 Environmental performance

Table 8-9 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-9: Environmental performance relevant to Physical presence—Seabed disturbance

EPO	CM	EPS	MC
EPO-01: Planned seabed disturbance within the OA will not cause lasting changes to water quality (total suspended solids). Water quality will return to ambient state within seven days following the cessation of the disturbance. **EPO-04:** Long-term direct disturbance from the Gorgon Backfill Fields Development is limited to 18.85 km^2 within the Development Area[62]. **EPO-05:** Short-term direct disturbance from the Gorgon Backfill Fields Development is limited to 0.98 km^2 within the Development Area[62].	**CM-04:** Visual inspection	**EPS-04:** Prior to any short-term disturbance (e.g. deployment of installation aids, wet storage of equipment/structures), a visual inspection of the seabed will be undertaken, and if emergent seabed features or obstacles are present, the proposed equipment/structures will be repositioned.	**MC-04:** Records verify that a visual seabed inspection was undertaken prior to any short-term disturbance.
	CM-05: Pre-installation survey	**EPS-05:** A pre-installation survey will be undertaken prior to installation of subsea infrastructure. If emergent seabed features or obstacles are present, the proposed infrastructure will be repositioned if practicable.	**MC-05:** Records verify that a pre-installation seabed survey was undertaken prior to installation of subsea infrastructure.
	CM-06: Seabed disturbance limit	**EPS-06:** Planned seabed disturbance from the petroleum activity associated with G&E infrastructure will be within the spatial extents of either the 'long-term disturbance area' or the 'short-term disturbance area' as defined in the Gorgon Backfill Fields Development OPP (Ref. 3).	**MC-06:** Records verify that planned seabed disturbance associated with G&E infrastructure was within the spatial extents defined in the OPP.
	CM-07: Subsea inventory	**EPS-07:** Maintain an inventory of subsea assets within CAPL-operated petroleum titles.	**MC-07:** Records verify that new assets have been added to the subsea assets inventory.
	CM-08: No vessel anchoring within the OA during planned activities	**EPS-08:** No anchoring of vessels within the OA during planned activities.	**MC-08:** Records show vessel position maintained through DP or other station-keeping methods during planned activities.
EPO-08: No adverse impacts to declared UCH without a permit[63] from planned activities associated with	**CM-09:** UCH Procedure	**EPS-09.1:** Implement CAPL's *Inadvertent Underwater Cultural Heritage Discovery Procedures* (Ref. 10), including processes for notification and response to suspected discoveries.	**MC-09.1.1:** Induction materials include relevant UCH requirements. **MC-09.1.2:** Records verify that if UCH (or potential UCH) were identified within the OA, conservation and

[62] Where an EPO refers to the 'Development Area', this is Development Area for the Backfill Fields Development as defined within Section 4.1.3 of the OPP (Ref. 3).

[63] Where a permit refers to a permit granted under section 23 of the UCH Act.

EPO	CM	EPS	MC
the petroleum activity.			management actions were implemented.
		EPS-09.2: Discovery of suspected UCH is reported to the Minister within 21 days of discovery as per section 40 of UCH Act.	**MC-09.2** Record of lodgement of the notification to relevant agency.

8.3 Planned emissions—Air

8.3.1 Aspect source

Activities identified as having the potential to generate air emissions are:

- combustion of fuel from planned portable powered equipment, vessels and/or helicopter activities
- release of nitrogen associated with contingency dewatering during pre-commissioning activities.

8.3.2 Environmental impact and risk evaluation

Air emissions may result in:

- a localised and temporary reduction in air quality.

8.3.2.1 Consequence evaluation

Section 8.2.2 of the NOPSEMA-accepted Gorgon Backfill Fields Development OPP provides an evaluation of potential impacts from air emission. As this petroleum activity forms part of the Backfill Fields Development (the offshore project), the planned emissions are of a similar (or smaller) nature and scale, and the relevant receptors are the same as those previously assessed, the consequence evaluation for this EP is considered covered by consequence evaluation within Section 8.2.2 of the OPP. In accordance with regulation 56(1) of the OPGGS(E)R, as this information has been previously supplied and is publicly available[64] it is not repeated here.

The consequence evaluation for a localised and temporary reduction in air quality has been assessed as Incidental (6).

8.3.2.2 ALARP decision context justification

Offshore installation and vessel-based activities are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential impacts associated with air emissions from these types of activities are managed through established control measures prescribed by applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding air emissions from the petroleum activity by relevant persons during consultation in preparing this EP.

[64] The NOPSEMA-accepted Gorgon Backfill Fields Development OPP is available online at: https://docs.nopsema.gov.au/A1265361. Section 8.2.2 of the Gorgon Backfill Fields Development OPP provides the consequence evaluation of the potential impacts from atmospheric emissions.

The potential impacts arising from air emissions are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.3.2.3 Control measures

Table 8-10 details the control measures Planned emissions—Air to this aspect.

Table 8-10: Good practice control measures relevant to Planned emissions—Air

CM	Description
CM-10: Marine Order 97	Marine Order 97— Marine pollution prevention—air pollution (2022) sets out requirements for the prevention of air pollution by vessels. Prior to commencement of the petroleum activity, Chevron's Offshore Vessel Information System (OVIS) requirements within the Chevron Marine Standard (Ref. 171) are used to verify that vessels comply with relevant Marine Order 97— Marine pollution prevention— air pollution (2022) requirements, including: • relevant vessels (as defined in regulation 6 of MARPOL 73/78 Annex VI) will hold a valid International Air Pollution Prevention (IAPP) certificate and/or International Energy Efficiency (IEE) certificate • marine diesel engines with >13 kW power output installed on a vessel will comply with nitrous oxides (NOx) emission levels as per regulation 13 of MARPOL 73/78 Annex VI • marine diesel engines >130 kW power output on relevant Australian vessels will have an Engine International Air Pollution Prevention (EIAPP) certificate as per Division 7 of Marine Order 97 (2022) • relevant vessels (as defined in Chapter 4 of MARPOL 73/78 Annex VI) will have: – an Energy Efficiency Design Index (EEDI) or Energy Efficiency Existing Ship Index (EEXI) and comply with relevant reduction factors – a Ship Energy Efficiency Management Plan (SEEMP) – a Carbon Intensity Indicator (CII) and comply with relevant reduction factors. • sulphur content of fuel is within prescribed limits.

8.3.3 Demonstration of acceptability

Table 8-11 describes the demonstration of acceptability relevant to this aspect.

Table 8-11: Demonstration of acceptability relevant to Planned emissions—Air

Comparison with acceptable level
The acceptable level for this aspect is **AL-01** (refer to Section 6.6). Air emissions from the petroleum activity are predicted to result in a localised and temporary reduction in air quality (Section 8.3.2.1). Therefore, the predicted level of impact can be managed to be equivalent or better than the acceptable level **AL-01**.
Principle of ESD
Precautionary Principle In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required. *Intergenerational Principle* In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required. *Biodiversity Principle* The impact associated with this aspect is a localised and temporary reduction in air quality, which are not considered to have the potential to affect biological diversity and ecological integrity.

Relevant environmental legislation and other requirements	
Legislation and other requirements considered relevant for this aspect include: • Marine Order 97 (2022). CAPL considers that impact management is consistent with these requirements, as demonstrated below:	
Requirement	**Demonstration**
Marine Order 97 (2022) Gives effect to Annex VI of MARPOL 73/78.	IAPP and IEE certificates for vessels, NOx emission levels and EIAPP certificates for marine diesel engines, energy efficiency certificates/plans (EEDI, EEXI, SEEMP, CII), and sulphur content of fuel requirements have been incorporated into the **Marine Order 97** control measure.
Internal context	
This management processes or procedures was deemed relevant for this aspect: • Chevron Marine Standard (Ref. 171) Control measures related to the above management process or procedure have been described for this aspect. As such, CAPL considers that impact management is consistent with company policy, culture, and standards.	
External context	
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). No changes to this impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.	

8.3.4 Environmental performance

Table 8-12 lists the EPOs, CMS, EPSs and MCs relevant to this aspect.

Table 8-12: Environmental performance relevant to Planned emissions—Air

EPO	CM	EPS	MC
EPO-10: Planned air emissions within the OA will not cause lasting changes to air quality. Air quality will return to ambient state within seven days following the cessation of the emission.	**CM-10:** Marine Order 97	**EPS-10:** Prior to commencement of vessel-based activities within the OA, the following will be verified: • relevant vessels (as appropriate to class) will hold a valid IAPP and/or IEE certificate • relevant marine diesel engines on vessels will comply with NOx emission levels and/or have an EIAPP certificate • relevant vessels (as appropriate to class) will have a SEEMP, EEDI/EEXI, and/or CII • sulphur content of fuel is within prescribed limits.	**MC-10** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record confirms vessels hold appropriate certificates and/or plans, marine diesel engines comply with NOx emission levels, and sulphur content of fuel is within prescribed limits.

8.4 Planned emissions—GHG

8.4.1 Aspect source

Activities identified as having the potential to generate GHG emissions are:

- combustion of fuel from planned vessels and/or helicopter activities and use of portable powered equipment.

8.4.2 Emissions inventory

The GHG Protocol identifies 'relevance' as one of the principles of GHG accounting and reporting, of which an integral aspect is defining an appropriate GHG emissions inventory boundary that serves the decision-making needs of the users (Ref. 199).

The purpose of this GHG emissions inventory is to inform the environmental impact assessment within this EP. Therefore, this GHG emissions inventory is bound by the scope of the petroleum activity as described in Section 4. Unplanned events (e.g. major repairs or responding to an emergency event) are considered out of scope of the inventory.

Within this EP, GHG emissions that are a direct consequence of planned works that comprise the petroleum activity (as described in Section 4) from sources within the OA in Commonwealth waters are termed **petroleum activity GHG emissions**.

NOPSEMA has requested titleholders, in having regard of the EPBC *Act Policy Statement—'Indirect consequences' of an action: Section 527E of the EPBC Act* (hereafter referred to as the EPBC Indirect Consequences Policy; Ref. 200), assess GHG emissions that constitute 'direct consequences' as well as GHG emissions that may constitute 'indirect consequences' of the petroleum activity be included in the GHG emissions inventory.

There are no GHG emissions identified as an indirect consequence of the petroleum activity within scope of this EP because:

- there is no recovery of hydrocarbons associated with the pipelay and subsea installation and pre-commissioning activities
- there are other subsequent petroleum activities that must be authorised under the OPGGS(E)R before hydrocarbon recovery could occur.

GHG emissions have been calculated based on the methods described in the National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Cth) for the combustion of liquid fuels. Table 8-13 provides a summary of the assumptions regarding sources (e.g. numbers and/or types of vessels) and durations that were used when developing this GHG emissions inventory.

Based on the described GHG inventory boundary and calculation methods, the estimate of total **petroleum activity GHG emissions** is ~0.05 Mt CO_2-e.

Table 8-13: Data inputs and assumptions for GHG inventory calculations

Inputs and assumptions
Installation of production flowline and MEG pipeline
For calculation purposes the following assumptions for vessel types and durations have been used: • CSV present within the OA for 142 days (Table 4-1) • PLV present within the OA for 62 days (Table 4-1) • two PSVs present within the OA for 60 days (Table 4-1) • general supply vessel within the OA for ~1 day per week (i.e. 21 days over the campaign) • MSV present within the OA for 3 days (Table 4-1). For calculation purposes the following assumptions for helicopter support have been used:

Inputs and assumptions
• flight frequency is estimated to be ~10 round-trip flights per week for the PLV (i.e. 90 flights over the campaign) and ~2 round-trip flights per week for the CSV (i.e. 40 flights over the campaign). Estimated fuel consumption for vessels and helicopters is based on reported data from previous CAPL activities.
Installation of subsea infrastructure
For calculation purposes the following assumptions for vessel types and durations have been used: • MSV present within the OA for 8 days (Table 4-1) • HCV present within the OA for 132 days (Table 4-1) • DPTV present within the OA for 35 days (Table 4-1) • general supply vessel within the OA for ~1 day per week (i.e. 20 days over the campaign). For calculation purposes the following assumptions for helicopter support have been used: • flight frequency is estimated to be ~3 round-trip flights per week for the HCV or LCV (i.e. 57 flights over the campaign). Estimated fuel consumption for vessels and helicopters is based on reported data from previous CAPL activities.
FCS integration
For calculation purposes the following assumptions for helicopter support have been used: • flight frequency is estimated to be ~2 round-trip flights per month (i.e. 4 flights over the campaign). Estimated fuel consumption for helicopters is based on reported data from previous CAPL activities.
Pre-commissioning
For calculation purposes the following assumptions for vessel types and durations have been used: • CSV present within the OA for 12 days (Table 4-1) • HCV present within the OA for 73 days (Table 4-1) • MEG supply vessel present within the OA for 20 days (Table 4-1) • MSV present within the OA for 45 days (Table 4-1) • general supply vessel within the OA for ~1 day per week (i.e. 19 days over campaign). For calculation purposes the following assumptions for helicopter support have been used: • Flight frequency is estimated to be ~2 round-trip flights per week for the CSV (i.e. 4 flights over the campaign) and ~3 round-trip flights per week for the HCV, LCV, or MSV (i.e. 51 flights over the campaign). Estimated fuel consumption for vessels and helicopters is based on reported data from previous CAPL activities. The use of diesel powered equipment onboard the vessels (i.e. equipment not powered by the vessel itself such as generators, pumps, or compressors) has been included for the following activities: • FCG of the MEG pipeline • leak testing and flushing • contingency flooding and dewatering of the production flowline • conditioning of the production flowline. Estimates of diesel consumption rates and durations based on advice from specialist contractors and previous CAPL experience.
Installation of Jansz infield umbilical
For calculation purposes the following assumptions for vessel types and durations have been used: • HCV present within the OA for 46 days (Table 4-1)

Inputs and assumptions
• general supply vessel within the OAs for ~1 day per week (i.e. 7 days over campaign). For calculation purposes the following assumptions for helicopter support have been used: • flight frequency is estimated to be ~3 round-trip flights per week for the HCV (i.e. 21 flights over the campaign). Estimated fuel consumption for vessels and helicopters is based on reported data from previous CAPL activities.
IMR (contingency)
Subsea inspections are a contingency activity; for the purpose of the EP an allowance of ~30 days of subsea inspections and/or maintenance (Sections 4.1.2 and 4.9). For calculation purposes assumed one MSV within the OA. Helicopter support is not generally required for shorter campaign work, however, has been carried as a contingency. Flight frequency is estimated at ~2 round-trip flights per fortnight (i.e. 4 flights over contingency IMR duration). Estimated fuel consumption for vessels and helicopters is based on reported data from previous CAPL activities.

8.4.3 Relevant GHG legislative and policy framework

The following subsections are specifically relevant to the GHG emissions legislative framework and are intended to be read in combination with the information in Section 3.2.

8.4.3.1 Paris Agreement

Australia is party to, and has ratified, the Paris Agreement. The Paris Agreement is an international treaty on climate change that entered into force in November 2016 (Ref. 201). Article 2 of the Paris Agreement states that it “aims to strengthen the global response to the threat of climate change, in the context of sustainable development and the efforts to eradicate poverty, including by … holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change” (Article 2; Ref. 202).

Australia submitted its first NDC to the United Nations Framework Convention on Climate Change (UNFCCC) in 2015 and submitted an update in July 2022. This revised NDC commits Australia to reducing GHG emissions by 43% below 2005 levels by 2030 (Ref. 203). This 2030 commitment is both a single-year ‘point’ target to reduce emissions 43% below 2005 levels by 2030, and a multi-year ‘emissions budget’ from 2021–2030 (based on a 43% reduction by 2030, the indicative emissions budget for this period is 4,353 Mt CO2-e)[65]. In September 2025 Australia submitted its second NDC to the UNFCCC. Australia’s 2035 commitment is a “[r]eduction in net national greenhouse gas emissions of 62–70% below 2005 levels by 2035, implemented as an emissions budget covering the period 2031–35” (Ref. 204).

[65] Note: Following revisions to Australia’s historical GHG emissions estimates, Australia’s implied GHG emissions budget is 4,394 Mt CO2-e (Ref. 205).

8.4.3.2 Climate Change Act 2022

The *Climate Change Act 2022* (Cth) sets out Australia's GHG emissions reduction targets in a manner consistent with the Paris Agreement and Australia's 2030 NDC under that agreement[66].

Australia's GHG emissions reduction targets are:

- reduce net GHG emissions to 43% below 2005 levels by 2030, which is implemented as a point target and an emissions budget covering the period 2021–2030
- reduce Australia's net GHG emissions to zero by 2050.

Australia's national GHG emissions for FY2025 are estimated to be 437.5 Mt CO_2-e (Ref. 205). Emissions for FY2025 were 28.5% below emissions for FY2005[67] (Ref. 205).

8.4.3.3 NGER and Safeguard Mechanism schemes

The NGER scheme is the Australian Government's national framework for reporting facility information about GHG emissions, energy production, and energy consumption. The scheme is administered through the NGER Act and associated regulations.

The Safeguard Mechanism is the Australian Government's scheme that requires relevant industrial facilities to reduce their emissions in line with Australia's GHG emission reduction targets of 43% below 2005 levels by 2030, and net zero by 2050. The Safeguard Mechanism applies to industrial facilities that emit more than 100,000 tonnes of carbon dioxide equivalent (CO_2-e) in a year. The Safeguard Mechanism commenced in 2016 and was reformed in 2023. The Safeguard Mechanism is enacted through the NGER Act, as amended by the Safeguard Mechanism (Crediting) Amendment Bill 2023 (Cth); and with additional scheme details as set out in the Safeguard Rule.

Safeguard Mechanism facilities have an annual net GHG emission limit known as a 'baseline'. As part of the 2023 reforms, a decline rate is now applied to a facilities baseline so that it is reduced over time on a trajectory consistent with achieving Australia's emission reduction targets of 43% below 2005 levels by 2030 and net zero by 2050 (Ref. 206). In general, baselines will decline by 4.9% each financial year from FY2024 through to FY2030. The subsequent decline rate will be set in 5-year blocks consistent with updates to Australia's NDC under the Paris Agreement (Ref. 206).

'Gorgon Operations' is a registered facility with the CER under both the NGER and Safeguard Mechanism schemes. The reporting boundary[68] of the Gorgon Operations Facility includes relevant Scope 1[69] GHG emissions from the GTP and associated facilities on Barrow Island, as well as relevant Scope 1 emissions from activities or facilities in Commonwealth waters. The Gorgon Operations Facility has a 'production-adjusted baseline' established under the reformed Safeguard

[66] In September 2025 the Australian Government submitted its second NDC; refer to Section 8.4.3.1.

[67] Where FY2005 is the baseline year for Australia's 43% reduction by 2030 target under the Paris Agreement and the *Climate Change Act 2022* (Cth).

[68] The reporting boundary (and the relevant activities and associated emissions) are determined in accordance with applicable legislative requirements and regulatory guidance in-force and as amended from time to time.

[69] Note: Scope 2 emissions are also reportable under the NGER scheme. There are currently no Scope 2 emissions associated with the Gorgon Operations Facility.

Mechanism. This production-adjusted baseline for FY2025 was 8.54 Mt CO_2-e, inclusive of the decline rate.

All Safeguard facilities' net emissions must be at or below baselines by the annual deadline. Responsible emitters of facilities that exceed or expect to exceed their baselines must manage their excess emissions. Responsible emitters can:

- surrender Australian carbon credit units (ACCUs) or Safeguard Mechanism credit units (SMCs)
- apply for the use of a flexibility measure under the scheme (e.g. borrowing baseline from the following year, or extending the facility's baseline under a multi-year monitoring period).

Each ACCU or SMC represents one tonne of CO_2-e that has been stored or avoided. These credit units are surrendered to the Australian National Registry of Emissions Units, and are then permanently cancelled, thereby removing them from circulation and preventing their reuse.

8.4.4 Primary environmental approval

The *Gorgon Gas Development: Backfill Fields OPP* (Ref. 3) was accepted by NOPSEMA in October 2025. Section 8.3 of the OPP set out the environmental impact assessment of GHG emissions associated with the Backfill Fields Development. The assessment in the OPP was for the purpose of the whole of the Backfill Fields Development, the petroleum activity within scope of this EP is part of the broader offshore project.

8.4.5 Australian values and sensitivities

The following provides an overview of some of the environmental values and sensitivities within the Australian jurisdiction that may be vulnerable to climate change related effects. It is acknowledged that this is not a comprehensive list as it is not practical to identify and describe all environmental values and sensitivities in Australia that may be impacted by climate change.

This overview is presented for contextual purposes only. The physical effects of climate change to Australian environmental values and sensitivities cannot reasonably be attributed to a single development's GHG emissions. Anthropogenic GHG emissions from the petroleum activity do not individually cause the physical effects of climate change, rather it is their cumulative effect, in combination with GHG emissions from all other anthropogenic and natural sources since the mid-1700's, that contribute to increased global temperature and global weather trends in the aggregate that may cause or contribute to physical effects on Australian environmental values and sensitivities. The petroleum activity's GHG emissions could not be characterised as a *substantial cause* of the physical effects of climate change on environmental values and sensitivities due to their remoteness to the consequence, the inherent uncertainty in the prediction of future environmental risks and impacts, intervening events and impacts, and the fact that the GHG emissions from the petroleum activity constitute a *de minimis* potential reduction to the IPCC's remaining global carbon budget.

The following overview is distinct to that provided in Section 5, which is focused on the values and sensitivities that may be present within the OA and Hydrocarbon EMBA, and is used to inform the environmental impact and risk assessments for other aspects associated with the petroleum activity.

In the Statement of Reasons for the acceptance of the Gorgon Backfill Fields Development OPP (Ref. 207) NOPSEMA expressly accepted that "the physical effects of climate change on Australian environmental values and sensitivities cannot reasonably be attributed to any single development's greenhouse gas emissions, and that the effects of climate change are cumulative from all emissions source"[70].

8.4.5.1 Matters of national environmental significance

Division 1 of Part 3 of the EPBC Act protects MNES—being a declared World Heritage property, National Heritage place, wetland of international importance (declared Ramsar wetland), listed threatened species or ecological communities, listed migratory species, Commonwealth marine area, Great Barrier Reef Marine Park, nuclear actions, and water resources (as related to unconventional gas or large coal mining developments).

Division 2 of Part 3 of the EPBC Act also protects the environment when actions are taken:

- on Commonwealth land or impact upon Commonwealth land
- that impact Commonwealth Heritage places outside Australian jurisdiction
- by an Australian Government agency.

8.4.5.2 Heritage values

The Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention) is the instrument used to establish a list (the World Heritage List) of properties that have outstanding universal value regarding natural or cultural heritage (Ref. 208). The World Heritage List currently includes 1,248 properties—of which 972 are cultural properties, 235 are natural properties and 41 are properties that meet both cultural and natural criteria (Ref. 209). Twenty-one of these listed properties are within Australia (Ref. 209). Australia also has a further eight sites on the Tentative List for possible future World Heritage nomination (Ref. 210).

The National Heritage List comprises places of outstanding natural, historic, and Indigenous heritage values to the Australian nation (Ref. 211). There are currently 126 places on the National Heritage List of which 20 are classed as Indigenous, 70 as historical, and 36 as natural places (Ref. 212). The heritage values of each listed place are described within the Australian Heritage Database (Ref. 212) in relation to each of the National Heritage criteria against with the values of the place were assessed.

8.4.5.3 Wetlands

Wetlands include a variety of habitat types including swamps, marshes, billabongs, lakes, salt marshes, mudflats, mangroves, coral reefs, fens, peat bogs, or bodies of water, and may be natural or artificial, permanent or temporary (Ref. 213). Water within these areas can be static or flowing; fresh, brackish or saline; and can include inland rivers and coastal or marine waters (Ref. 213).

The Convention on Wetlands of International Importance (the Ramsar Convention) encourages the designation of sites containing representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity.

[70] Statement of Reasons [44] (Ref. 207).

Once designated, these sites are added to the List of Wetlands of International Importance and become known as Ramsar sites (Ref. 213). There are currently over 2,500 Ramsar sites around the world; of these Australia currently has 67 Ramsar sites covering a surface area of ~8.4 million ha (Ref. 214; Ref. 215). The ecological character of Australian Ramsar wetlands are described within reports available on the DCCEEW website (Ref. 216).

8.4.5.4 Listed species and ecological communities

Australia has between ~600,000–700,000 species, of which ~84% of plants, 83% of mammals, and 45% of birds are endemic to Australia (Ref. 217). Ecological communities are unique and naturally occurring groups of fauna and flora; these communities can be determined by factors such as soil type, position in the landscape, climate and water availability (Ref. 217).

The EPBC Act protects Australia's native species and ecological communities by providing for the identification and listing of species and ecological communities as threatened, and the development of management plans (e.g. recovery plans, conservation advices, threat abatement plans, etc.) for these listed species and ecological communities.

Australia currently has:

- 694 listed threatened fauna species (67 extinct, one extinct in the wild, 147 critically endangered, 250 endangered, 222 vulnerable, and seven conservation dependent) (Ref. 218)
- 1,514 listed threatened flora species (35 extinct, 306 critically endangered, 610 endangered, and 563 vulnerable) (Ref. 219)
- 111 listed threatened ecological communities (49 critically endangered, 60 endangered, and two vulnerable) (Ref. 220).

Migratory species listed under international agreements to which Australia is a party are protected under the EPBC Act. These international agreements include bilaterial migration bird agreements (e.g. Japan-Australia Migratory Bird Agreement, China-Australia Migratory Bird Agreement, Republic of Korea-Australia Migratory Bird Agreement), Bonn Convention, Ramsar Convention and the Agreement on the Conservation of Albatrosses and Petrels. Australia currently has 154 listed migratory species (Ref. 221).

Descriptions of threatened or migratory fauna and flora, and threatened ecological communities, including listing advice and management plans (where applicable), are available in the Species Profile and Threats Database (Ref. 222).

8.4.5.5 Commonwealth marine areas

Commonwealth marine areas are defined within section 24 of the EPBC Act. In general, these include the waters, seabed and airspace over waters between the EEZ and coastal waters. Australia has one of the largest marine jurisdictions in the world, with Australian waters covering ~14.7 million km^2 (including the waters around external territories) of which ~7.4 million km^2 are Commonwealth waters surrounding Australia (Ref. 21).

Marine bioregional plans (made under section 176 of the EPBC Act) have been developed for the South-west, North-west, North, and Temperate East marine regions (Ref. 21; Ref. 223; Ref. 224; Ref. 225); these plans identify and describe conservation values within each area. Conservation values are defined as:

- KEFs
- species listed under Part 13 of the EPBC Act
- protected places, including marine reserves, heritage places, and underwater cultural heritage.

While no bioregional plan is in place, a bioregional profile has been developed for the south-east marine region and does identify and describe conservation values in the area (Ref. 226).

Australia has currently established 60 AMPs which are located within Commonwealth waters (Ref. 227). These AMPs are managed via a suite of management plans (Ref. 131; Ref. 228; Ref. 229; Ref. 230; Ref. 231; Ref. 232; Ref. 233; Ref. 234), which identify and describe natural, cultural, heritage, and socioeconomic values associated with each of the AMPs.

8.4.5.6 Great Barrier Reef Marine Park

The Great Barrier Reef is a network of almost 3,000 coral reefs and a diverse array of non-reef habitats stretching ~2,300 km along the east coast of Queensland (Ref. 235). The Great Barrier Reef Marine Park extends into both Commonwealth waters and State coastal waters, and is protected under the EPBC Act and the *Great Barrier Reef Marine Park Act 1975* (Cth). The park is jointly managed by the Australian and Queensland Government's.

The Great Barrier Reef is listed as both a World Heritage property and National Heritage place for its outstanding natural values. There are Sea Country values for Aboriginal and Torres Strait Island Peoples associated with the area, as well as ongoing social and socioeconomic values for communities and industries (Ref. 235).

8.4.5.7 Ecosystems and biodiversity

Australia supports a variety of ecosystem types. Ecosystems provide habitat, promote food chains and webs, and control ecological cycles and processes (Ref. 236). Biodiversity (biological diversity) is the variety of all species—it is the different plants, animals and micro-organisms, their genes, and the terrestrial, marine and freshwater ecosystems of which they are a part (Ref. 237; Ref. 238). Biodiversity provides variety of services including ecological, cultural, and socioeconomic.

The Australian Government recognises the importance of biodiversity and is party to the United Nations Convention of Biological Diversity. The Australian Government has developed Australia's Strategy for Nature 2024–2030 (Ref. 239) to meet the requirements of a national biodiversity strategy and action plan. Under this strategy, Australia has established national biodiversity targets which include to protect and conserve 30% of Australia's landmass and 30% of Australia's marine areas by 2030 (Ref. 238; Ref. 239).

For terrestrial ecosystems, the Interim Biogeographic Regionalisation for Australia framework recognises 89 geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information (Ref. 238; Ref. 240). Types of terrestrial and aquatic ecosystems present in Australia include native vegetation (e.g. alpine, woodlands, grasses, etc.), rivers and streams, wetlands, and groundwater dependent systems (Ref. 238; Ref. 241; Ref. 242). Terrestrial protected areas cover ~24.9% (as of November 2025) of Australia's landmass (Ref. 243).

For marine ecosystems, the IMCRA framework recognises 41 provincial bioregions based on a benthic bioregionalisation (biogeography of fish supplemented with a geophysical classification) (Ref. 31). These provincial bioregions are further broken down into meso-scale regions (based on biological and physical characteristics) and geomorphic units (based on common geomorphic features). Types of marine and coastal ecosystems present in Australia include mangroves, saltmarshes, dune systems, seagrasses, coral reefs, rocky reefs and kelp beds, canyons and seamounts (Ref. 244; Ref. 245). Marine protected areas cover ~52% of Australian waters (Ref. 243).

8.4.6 Environmental impact and risk evaluation

GHG emissions may result in:

- a potential[71] reduction to IPCC's estimated 'remaining carbon budget' to limit global warming to 1.5–2.0°C.

8.4.6.1 Consequence evaluation

8.4.6.1.1 Impact: A potential reduction to IPCC's estimated 'remaining carbon budget' to limit global warming to 1.5–2.0°C

Remaining carbon budgets

GHGs are natural and anthropogenic gaseous constituents of the atmosphere that absorb and emit radiant energy within the thermal infrared range, causing the greenhouse effect. This effect traps heat in the atmosphere. Therefore, an increase in GHG concentrations in the atmosphere increases this greenhouse effect.

The Summary for Policymakers from the Working Group I contribution to the Sixth Assessment Report (WGI AR6) of the IPCC states that "[h]istorical cumulative CO_2 emissions determine to a large degree warming to date, while future emissions cause future additional warming" (Ref. 246). Future emissions are relevant to remaining carbon budgets, which vary based on emissions scenarios, and "indicate[] how much CO_2 could still be emitted while keeping warming below a specific temperature level" (Ref. 246).

The IPCC defines the term "carbon budget" as "refer[ring] to the maximum amount of cumulative net global anthropogenic CO_2 emissions that would result in limiting global warming to a given level with a given probability, taking into account the effect of other anthropogenic climate forcers. This is referred to as the total carbon budget when expressed starting from the pre-industrial period, and as the remaining carbon budget when expressed from a recent specified date. Historical cumulative CO_2 emissions determine to a large degree warming to date, while future emissions cause future additional warming. The remaining carbon budget indicates how much CO_2 could still be emitted while keeping warming below a specific temperature level."[72]

[71] Use of 'potential' reflects that: (a) the impact assessment assumes that GHG emissions are entirely additive to global atmospheric GHG emissions and does not take into account any reduction in global atmospheric GHG emissions (Doctors for the Environment (Australia) Incorporated v National Offshore Petroleum Safety and Environmental Management Authority (No 2) [2025] FCA 989, [109]); (b) there is inherent uncertainty in the impact assessment due to lack of causation and remoteness between GHG emissions and environmental impacts in the specific country where the petroleum activity is regulated; and (c) the OPGGS(E)R necessarily accept a level of inherent uncertainty in predicting future environmental risks and impacts (Ibid [108]).

[72] IPCC, AR6, WG1, at SPM-48 footnote 43 (Ref. 246).

WGI AR6 outlined that the remaining carbon budget for a 50% likelihood to limit global warming to 1.5°C, 1.7°C, and 2°C is 500 Gt CO_2-e, 850 Gt CO_2-e, and 1,350 Gt CO_2-e from the beginning of 2020, respectively[73]. The IPCC's scientific assessment reports are published every 5–7 years; the Seventh Assessment Report (AR7) cycle began in July 2023 and is expected to conclude in late-2029. As such revisions to the remaining carbon budget estimates are not expected from IPCC until the AR7 Working Group reports are ready for release. However, interim remaining carbon budgets have been published annually and the interim Global Carbon Budget 2025 (Ref. 247) indicates the remaining carbon budget for a 50% likelihood to limit global warming to 1.5°C, 1.7°C, and 2°C is 170 Gt CO_2-e, 525 Gt CO_2-e and 1,055 Gt CO_2-e from the beginning of 2026. Note: This 2025 remaining carbon budget is not endorsed by the IPCC and may be subject to change.

The estimated petroleum activity GHG emissions (~0.05 Mt CO_2-e) represents a potential <0.00001% reduction in the IPCC's remaining carbon budget (estimated to remain at the beginning of 2020), and a potential <0.00003% reduction in the interim remaining carbon budget (estimated to remain at the beginning of 2026).

In the context of Australian GHG emissions commitments, there is both a point target and an emissions budget over the period 2021–2030 (Sections 8.4.3.1 and 8.4.3.2). To FY2025, the estimated remaining carbon budget to reach the 2030 target is 2,178 Mt CO_2-e (Ref. 205). The estimated petroleum activity GHG emissions (~0.05 Mt CO_2-e) represent a potential ~0.002% reduction in the Australian carbon budget to meet their 2030 NDC.

GHG emissions and global anthropogenic influence on climate systems

IPCC states in the AR6 Synthesis Report: Summary for Policymakers (Ref. 248) that "[o]bserved increases in well-mixed GHG concentrations since around 1750 are unequivocally caused by GHG emissions from human activities over this period"[74]. The Synthesis Report also recognises the "interdependence of climate, ecosystems and biodiversity, and human societies"[75] and WGI AR6 of the IPCC acknowledges that "[c]limate change is a global phenomenon, but manifests differently in different regions" (Ref. 249).

Anthropogenic changes to the global climate system cannot be directly attributed to any one development or emission source or product, as they are the result of the net accumulation of global GHGs (emissions minus sinks) in the atmosphere since the industrial revolution (i.e. it is atmospheric GHG concentrations in the aggregate that contribute to global temperature or climate trends).

Based on ice core records, historical atmospheric CO_2 concentrations through glacial ice age cycles extending 650,000–800,000 years before present, ranged between ~172–300 parts per million (ppm) (Ref. 248). Further, measurements of air extracted from Antarctic ice cores and firn show that all three major GHGs (CO_2, CH_4 and N_2O) were relatively stable for most of the past 2,000 years, before beginning to rise in the late 18th Century; this timing coincided with industrialisation and the expansion of agriculture (Ref. 250). The IPCC AR6 Synthesis Report states that "[i]n 2019, atmospheric CO_2 concentrations reached 410 ppm, CH_4 reached 1866 parts per billion (ppb) and nitrous oxide (N_2O) reached 332 ppb"[76] and that "[s]ince 1750, increases in CO_2 (47%) and CH_4 (156%) concentrations far

[73] IPCC, AR6, WG1, at SPM-29 Table SPM.2 (Ref. 246).

[74] IPCC AR6, Synthesis Report, SPM-4 (Ref. 248).

[75] IPCC AR6, Synthesis Report, SPM-1 (Ref. 248).

[76] IPCC AR6, Synthesis Report, 42 (Ref. 248).

exceed – and increases in N_2O (23%) are similar to – the natural multi-millennial changes between glacial and interglacial periods over at least the past 800,000 years (very high confidence)."[76] This is consistent with Australian Bureau of Meteorology (BoM) and CSIRO reporting that shows the estimated increases in globally averaged atmospheric concentrations of the three major GHGs since the industrial revolution began in the mid-1700's are:

- CO_2 concentration in 2023 was ~419 ppm compared to ~277 ppm in 1750 (~51% increase)
- CH_4 concentration in 2023 was ~1,919 ppb compared to ~731 ppb in 1750 (162% increase)
- N_2O concentration in 2023 was ~337 ppb compared to ~273 ppb in 1750 (23% increase) (Ref. 250).

Anthropogenic sources of GHG emissions are also the results of multiple sectors and land-use practices. The IPCC indicates that in 2019, "approximately 79% of global GHG emissions came from the sectors of energy, industry, transport, and buildings together and 22% from agriculture, forestry and other land use"[77].

With respect to the energy sector, the potential accumulation of GHG emissions in the atmosphere is, in turn, influenced by global energy demand and the composition of the global energy mix. Growing populations, rising incomes, and urbanisation are the principal forces behind energy-demand growth, as they typically lead to greater use of transportation, heating, cooling, lighting, and refrigeration (Ref. 251).

Further, the changing regulatory and international initiatives on climate change (e.g. which may result in changing reduction targets and timeframes), projections in energy supply and demand, and changes in other industrial sectors or land-use practices will also influence the total global GHG emissions into the future – making a future prediction of changes to climate systems, inaccurate.

Anthropogenic GHG emissions from the petroleum activity do not individually cause the physical effects of climate change, rather it is their cumulative effect, in combination with GHG emissions from all other anthropogenic and natural sources since the mid-1700's, that contribute to increased global temperature and global weather trends in the aggregate that may cause or contribute to physical effects on Australian environmental values and sensitivities. The petroleum activity's GHG emissions could not be characterised as a *substantial cause* of the physical effects of climate change on environmental values and sensitivities, because of their remoteness to the consequence, the inherent uncertainty in the prediction of future environmental risks and impacts, intervening events and impacts, and the fact GHG emissions from the petroleum activity constitute a *de minimis* potential reduction in the remaining global carbon budget.

As a contribution to the anthropogenic influence on the global climate system cannot be directly attributed to any one activity, the following sections provides an overview of some of the potential impacts to climate systems and environmental values and sensitivities for contextual purposes only.

Changes to climate systems

WGI AR6 of the IPCC acknowledges "[c]limate change is a global phenomenon, but manifests differently in different regions" (Ref. 249).

[77] IPCC AR6, Synthesis Report, SPM-4–5 (Ref. 248).

According to the IPCC AR6, the physical risks of climate change are varied and widespread. Chevron Corporation acknowledges that the company's operations are subject to disruption from natural or human causes beyond its control, including physical risks from hurricanes, severe storms, floods, heat waves, other forms of severe weather, wildfires, ambient temperature increases, sea level rise, fires, and earthquakes, some of which may be impacted by climate change and any of which could result in suspension of operations or harm to people or the natural environment (Ref. 252).

According to the IPCC, among other things, global changes to the climate system can include the following: increase in global surface temperatures, changes to frequency and intensity of precipitation, sea level rise, retreat of glaciers and arctic sea ice, changes to the intensity and frequency of certain extreme weather events and droughts (Ref. 246). Specifically, the IPCC projections[78] for the Australia include:

- **droughts**: Additional regional changes in Australasia … include a significant decrease in April to October rainfall in south-west of the state of Western Australia, observed from 1910 to 2019 and attributable to human influence (*high confidence*), which is *very likely* to continue in future. Agricultural and ecological droughts and hydrological droughts have increased over Southern Australia (*medium confidence*), and meteorological droughts have decreased over Northern and Central Australia (*medium confidence*). … Agricultural and ecological droughts are projected to increase in Southern and Eastern Australia (medium confidence) for a 2°C GWL."[79]
- **fire weather conditions**: "The number of evident attribution studies on compound events is limited. There is *medium confidence* that weather conditions that promote wildfires have become more probable in southern Europe, northern Eurasia, the USA, and Australia over the last century. In Australia a number of event attribution studies show that there is medium confidence of increase in fire weather conditions due to human influence."[80]. Fire weather is projected to increase throughout Australia (*high confidence*).[81]
- **precipitation**: "In the future, heavy precipitation and pluvial flooding are very likely to increase over northern Australia and central Australia, and they are likely to increase elsewhere in Australasia for global warming levels (GWLs) exceeding 2°C and with *medium confidence* for a 2°C GWL."[82]
- **relative sea level rise**: "Relative sea level has increased over the period 1993–2018 at a rate higher than GMSL around Australasia (*high confidence*). Sandy shorelines have retreated around the region, except in southern Australia, where a shoreline progradation rate of 0.1 myr–1 has been observed."[83] "Relative sea-level rise is virtually certain to continue in the oceans around Australasia, contributing to increased coastal flooding in low-

[78] "The following terms have been used to indicate the assessed likelihood of an outcome or a result: virtually certain 99–100% probability, very likely 90–100%, likely 66–100%, about as likely as not 33–66%, unlikely 0–33%, very unlikely 0–10%, exceptionally unlikely 0–1%. Additional terms (extremely likely 95–100%, more likely than not >50–100%, and extremely unlikely 0–5%) may also be used when appropriate." IPCC AR6, SPM-4.

[79] IPCC AR6, WG1, TS-93.

[80] IPCC AR6, WG1, TS-74.

[81] IPCC AR6, WG1, TS-93.

[82] IPCC AR6, WG1, TS-93.

[83] IPCC AR6, WG1, TS-93.

lying areas (*high confidence*) and shoreline retreat along most sandy coasts (*high confidence*)."[84]

- **snowfall**: "Snowfall is expected to decrease throughout the region at high altitudes in [] Australia (high confidence)."[85] "Observations in Australia show that the snow season length has decreased by 5% in the last five decades. Furthermore, the date of peak snowfall in Australia has advanced by 11 days over the last 5 decades."[86]
- **tropical cyclones (TC)**: "In Australia, the number of [TC] has generally declined since 1982, and the frequency of intense TCs that make landfall in north eastern Australia has declined significantly since the 19th century (medium confidence). There is high confidence that cyclones making landfall along north eastern and north Australian coastlines will decrease in number and low confidence of an increase in their intensities for a 2°C global warming level as well as for the mid-century period with scenarios RCP4.5 and above, with the amplitude of changes increasing from RCP4.5 to RCP8.5. Decreases in frequency are projected for 'east coast lows.'"[87]

The *2024 State of the Climate report* by BoM and CSIRO (Ref. 250) indicates trends similar to the IPCC projections including:

- "In the south-west of Australia there has been a decrease of around 16% in April to October rainfall since 1970. Across the same region, May to July rainfall has seen the largest reduction, by around 20% since 1970. …In the south-east of Australia, there has been a decrease of around 9% in April to October rainfall since 1994."[88]
- "There has been an increase in rainfall and streamflow across parts of northern Australia since the 1970s."[88]
- "There has been an increase in extreme fire weather, and a longer fire season, across large parts of the country since the 1950s."[88]
- "Sea levels are rising around Australia, including more frequent extreme high levels that increase the risk of inundation and damage to coastal infrastructure and communities." [88]
- "Snow depth, snow cover and number of snow days have decreased in alpine regions since the late 1950s." [88]
- "There has been a decrease in the number of tropical cyclones observed in the Australian region since at least 1982." [88]

The analyses indicated that "Australia's climate has warmed by an average of 1.51±0.23°C since national records began in 1910" and "[s]ea surface temperatures have increased by an average of 1.08°C since 1900" (Ref. 250).

Australian values and sensitivities vulnerable to climate change

The Working Group II contributions to the IPCC's Sixth Assessment Report (WGII AR6) provides a summary of the observed impacts, vulnerability and exposure, and adaptive responses observed to date (Ref. 253). The WGII AR6 report notes

[84]IPCC AR6, WG1, 12-57.
[85]IPCC AR6, WG1, TS-93.
[86]IPCC AR6, WG1, TS-93-94.
[87]IPCC AR6, WG1, 12-54, 55.
[88] BoM and CSIRO, Key Points, 2 (Ref. 250).

that "[c]limate trends and extreme events have combined with exposure and vulnerabilities to cause major impacts for many natural systems, with some experiencing or at risk of irreversible change in Australia (*very high confidence*)"[89] and that "[c]limate trends and extreme events have combined with exposure and vulnerabilities to cause major impacts for some human systems (high confidence)"[89]. The WGII AR6 report identifies nine key climate risks for the Australasian region:

- "Loss and degradation of coral reefs and associated biodiversity and ecosystem service values in Australia due to ocean warming and marine heatwaves (*very high confidence*)
- Loss of alpine biodiversity in Australia due to less snow (*high confidence*)
- Transition or collapse of alpine ash, snowgum woodland, pencil pine and northern jarrah forests in southern Australia due to hotter and drier conditions with more fires (*high confidence*)
- Loss of kelp forests in southern Australia and southeast New Zealand due to ocean warming, marine heatwaves and overgrazing by climate-driven range extensions of herbivore fish and urchins (*high confidence*)
- Loss of natural and human systems in low-lying coastal areas due to sea-level rise (*high confidence*)
- Disruption and decline in agricultural production and increased stress in rural communities in south-western, southern and eastern mainland Australia due to hotter and drier conditions (*high confidence*)
- Increase in heat-related mortality and morbidity for people and wildlife in Australia due to heatwaves (*high confidence*)
- Cascading, compounding and aggregate impacts on cities, settlements, infrastructure, supply-chains and services due to wildfires, floods, droughts, heatwaves, storms and sea-level rise (*high confidence*)
- Inability of institutions and governance systems to manage climate risks (*high confidence*)."[89]

A previous (2009) report by Australia's Biodiversity and Climate Change Advisory Group (Ref. 255) indicates that "[b]iodiversity is one of the most vulnerable sectors to climate change". The report also notes that "Australia's biodiversity is not distributed evenly over the continent but is clustered in a small number of hotspots with exceptionally rich biodiversity", and that these "include the Great Barrier Reef, south-west Western Australia, the Australian Alps, the Queensland Wet Tropics and the Kakadu wetlands" (Ref. 255). The report identifies "a few examples of recently observed changes in Australia's biota that are consistent with the emerging climate change 'signal'", as genetic constitution, geographic ranges, life cycles, populations, ecotonal boundaries, ecosystems, and disturbance regimes (Table 1 within Ref. 255). Further, it is noted that "many of the most important impacts of climate change on biodiversity will be the indirect ones at the community and ecosystem levels, together with the interactive effects with existing stressors" (Ref. 255).

[89] IPCC AR6, WGII, Australasia FS (Ref. 254).

Climate change is identified as a pressure within the *Australian State of the Environment 2021*[90] (Ref. 236; Ref. 256). Observed and/or predicted impacts on terrestrial ecosystems and biodiversity include (Ref. 238):

- "Data from the Australian Long Term Ecological Research Network have been used to examine ecosystem responses to changes in climate and disturbance regimes from plots in tropical savanna, alpine systems, temperate heathlands and temperate woodlands. A range of biodiversity responses to climate were recorded, including decreases in some species and increases in others."
- "Alpine ecosystems and biodiversity in Australia are particularly vulnerable to climate change that affects snow depth and the spatial and temporal extent of snow … Long-term monitoring of alpine vegetation in Australia has shown shifts in plant species composition and diversity, changes in the timing of flowering, and declines in endangered fauna such as the mountain pygmy possum."
- "The ranges of the majority of Australia's eucalypt species are predicted to shrink in size over the next 60 years … Approximately 90% of the current areas with concentrations of palaeo-endemism (i.e. places with eucalypt species that were once widespread and are now restricted to small ranges) are predicted to disappear or shift their location, and this is likely to have significant flow-on effects for ecosystem structure and function".

Observed and/or predicted impacts on aquatic ecosystems and biodiversity include (Ref. 238):

- "Aquatic ecosystems and biodiversity are recognised as being among the most vulnerable to climate change. They experience both local changes and the cumulative effects of changes in the surrounding landscape, as well as exposure to a wide range of extreme climatic events such as floods and droughts."
  - e.g. between late-2015 and early-2016 mangroves in the Gulf of Carpentaria "suffered significant mortality. This happened during an underwater heatwave (which was also responsible for bleaching on the Great Barrier Reef) in combination with a severe drought and a temporary drop in sea level due to a strong El Niño event."
- "Aquatic ecosystems in coastal areas are also affected by sea level rise and storm surge associated with intense storms. Along with structural changes and damage, these will bring changes in water salinity that can have long-term effects on wetland flora and fauna"
- "Altered water quality, as well as quantity, will be a major trigger for climate change effects on freshwater biodiversity. For example, the combination of hot conditions, low flows and significant algal blooms during the recent major drought (2018–20) resulted in mass fish kills in the Murray–Darling Basin."
- "Much of Australia has limited water resources, and there is limited scope for freshwater species to move to more favourable conditions as the climate changes. Species losses under future climates are likely to be high, particularly for inland regions of Australia."

Predicted impacts on coastal and marine ecosystems and biodiversity include (Ref. 244; Ref. 245):

[90] The EPBC Act legislates a review of the state of the Australian environment every five years.

- ocean warming “is associated with poleward range shifts as species move towards cooler waters” which can “cause changes in marine communities” and “can also affect the lifecycle and populations of marine species”
- “Marine heatwaves can significantly impact the supply of nutrients to the upper ocean, and change phytoplankton biomass and primary production, which can have both beneficial and detrimental effects on ecosystems.”
- “Prolonged, extremely warm waters cause acute widespread ecosystem damage, with species mortality and community structure shifts, and threaten marine biodiversity and ecosystem services. Such events can have persistent impacts, with kelp forests collapsing, coral recovery taking years and important fishery species recovering slowly.”
- “Climate change is affecting ocean salinity, with the effects varying across regions. … However, extreme salinity events through flooding are suggested to be a pressure to more Australian marine environments than climate change trends in salinity”
- “Ocean acidification is predicted to lead to shifts in ecosystems and biodiversity, and increase the risk to regional economies that rely on healthy and sustainable marine ecosystems, such as tourism and aquaculture.”
- “One of the most significant impacts of sea level rise on Australia’s coast is erosion and movement of beaches, and permanent inundation of low-lying areas.”
- “Extreme rainfall events can generate local coastal flooding, either directly or via run-off from slopes or river transports. These floodwaters may carry pollution from agriculture such as soils, pesticides and fertilisers, and can cause turbid coastal plumes. This impacts marine and coastal ecosystems such as coral reefs, seagrass and kelp environments, and the species these habitats support” and conversely that “[e]xtreme dry periods can raise coastal salinity levels through evaporation, affecting marine and coastal habitats and species.”
- “Extreme wind and cyclones can generate high to extreme waves, sea level and storm-surge conditions, which can cause coastal erosion and damage to coastal structures within and around coastlines and embayments.”

It was also noted that Australian boundary currents (e.g. East Australian Current, Indonesian Throughflow, and Leeuwin Current) have a major influence on the marine ecosystem. While it is known that El Niño-Southern Oscillation cycles influence these boundary currents, there is a knowledge gap in predicting future state of boundary currents and an ability to assess impacts on the marine ecosystem (Ref. 245).

The National Climate Risk Assessment (delivered by the Australian Climate Service) provides an analysis of the potential risks and impacts from a changing climate. The national assessment focusses on physical climate risks, is domestically focussed (i.e. within Australian jurisdictional borders), and was completed in two stages. The first pass assessment (released in 2024; Ref. 257) identified 56 nationally significant climate risks within seven key systems. The second pass assessment (released in September 2025; Ref. 257) identified an additional seven nationally significant climate risks (i.e. 63 in total for the full National Climate Risk Assessment).

Nationally significant climate risks were identified for the natural environment (where the natural environment system refers to Australia's ecosystems and biodiversity) (Ref. 257; Ref. 258):

- **risks to aquatic and terrestrial ecosystem condition and function or landscape** function and collapse including species loss and extinction
- **risks to vulnerable environments and interconnected ecosystems**, such as mangroves, reefs and green spaces, that buffer against other disturbances and provide critical ecosystem services
- **risks to natural resources, including water security**, that increase scarcity and may result in competition and potential conflict
- **risks to species**, through loss and extinction that affect ecosystems, ecological and human communities, and intrinsic, cultural and economic values
- **risks to access, use and management of natural places** from fire season and hot days, as well as damage to roads, built infrastructure and coastal developments
- **risks to rural and Aboriginal and Torres Strait Island peoples' livelihoods** and community resilience from long-term climate-related changes and hazards
- **risks to human health, wellbeing and livelihood** from landscape change that results in disruption, migration and increased pressure on resources, especially in rural and remote communities
- **risks to iconic and unique natural places** and associated cultural, social and Aboriginal and Torres Strait Island peoples' values from a loss of natural environments, amenity value and land and marine use.

The Australian Climate Service has rated risks[91] to Australia's key systems, both now and in the future (Ref. 257). The current risk to the natural environment system has been classified as between High and Very High; and the prediction for 2050 is for this risk to be Severe (Ref. 257).

Key findings from the second pass assessment also talk to nature of changing hazards:

- "Australia's climate is changing and will continue to change into the future. The country is likely to experience more intense and extreme climate hazards, and in some cases in areas where people and places haven't experienced these hazards before.
- Climate science indicates that our future extreme weather is likely to differ significantly from the past. Changes in the timing, duration, intensity and spatial patterns of hazards are likely, with many events occurring more frequently, in combination or affecting new locations.
- The change in distribution, timing and severity of extreme weather events means that historical observations on their own are not likely to be a good indicator of future risk.

[91] The risk ratings categorise impacts into five levels (Low, Moderate, High, Very High and Severe) based on specific criteria. These ratings consider the percentage of the population affected, the extent of geographical impact, and the severity of consequences for vulnerable communities, public health, natural systems and national security (Ref. 257).

- Australia currently experiences compounding and cascading hazards, and this is going to increase. Concurrent events, and reduced time between severe events will become more common" (Ref. 257).

The IUCN World Heritage Outlook for the Ningaloo Coast (Ref. 259) has downgraded the status of the Ningaloo Coast World Heritage Area from "good with some concerns" to "significant concern." The downgrade has been influenced by escalating marine heatwaves and associated coral bleaching. Over the past ~15 years Ningaloo has been exposed to four significant marine heat stress events, and may currently be undergoing its most significant heat stress event to date (Ref. 259). Coral bleaching has been observed along the length of reef system; however, the full extent and severity of this current event are not yet known (Ref. 259).

The 'loss of climatic habitat caused by anthropogenic emissions of greenhouse gases' has been listed as a key threatening process under the EPBC Act (Ref. 260; Ref. 261). The threatening process consists of reductions in the bioclimatic range within which a given species or ecological community exists due to emissions induced by human activities of GHGs (Ref. 261). The process is considered to have a continental distribution, including both terrestrial and marine areas. Ecosystems in which the process occurs include: alpine habitats, coral reefs, wetlands and coastal ecosystems, polar communities, tropical forests, temperate forests, and arid and semi-arid environments (Ref. 261). Further, DCCEEW have identified climate change as a threat to threatened species, specifically that "[t]he changing climate is affecting Australia's biodiversity currently and will continue to threaten our species and ecological communities. Individual species may see altered distribution, phenology and behaviour, in turn resulting in changes to the composition and function of ecosystems and ecological communities. Climatic shifts can exacerbate the impacts of existing pressures, such as habitat fragmentation and invasive species, on threatened species and places" (Ref. 262). Actions identified within this Threatened Species Action Plan include updating conservation plans to mitigate climate change risk for susceptible species (Ref. 262). Of the 20 priority places identified within the Threatened Species Action (including the Australian Alps, Eastern Forests of Far North Queensland, and Giant Kelp Ecological Community) all identified climate change as either a major or moderate threat (Ref. 262; Ref. 263).

Climate change has been identified as a threat to some protected species, including marine turtles, whales, seabird and shorebirds:

- the *Conservation Management Plan for the Blue Whale* (Ref. 42) states "[c]limate change is expected to cause changes in migratory timing and destinations, population range, breeding schedule, reproductive success and survival of baleen whales, including blue whale species and subspecies"
- the *Recovery Plan for Marine Turtles in Australia* (Ref. 264) states that "[c]limate change is of particular concern to marine turtles because it is likely to have impacts across their entire range and at all life stages. Climate change is expected to cause changes in dispersal patterns, food webs, species range, primary sex ratios, habitat availability, reproductive success and survivorship"
- the *Wildlife Conservation Plan for Seabirds* (Ref. 74) states that "[c]onsequences to seabirds could include negative impacts from an increase in extreme weather events, reduced or changed prey abundance and distribution, and decrease in nesting habitat"

- the *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 265) states that '[s]uch changes have the potential to affect migratory shorebirds and their habitats by reducing the extent of coastal and inland wetlands or through a poleward shift in the range of many species"

The management plans for the AMPs identify climate change as a pressure that may impact marine park values (Ref. 131; Ref. 228; Ref. 229; Ref. 230; Ref. 231; Ref. 232; Ref. 233; Ref. 234). The *North-west Marine Parks Network Management Plan 2018* (Ref. 131) states that "[t]he impacts of climate change on the marine environment are complex and may include changes in sea temperature, sea level, ocean acidification, sea currents, increased storm frequency and intensity, species range extensions or local extinctions, all of which have the potential to impact on marine park values".

Within the *Marine Bioregional Plan for the NWMR* (Ref. 21), pressures related to climate change are assessed as 'of potential concern' for species of marine turtle, inshore dolphins, sawfish, sea snakes, whale shark, dugong, and seabird and shorebird, as well as the KEFs and shipwrecks known to occur in the NWMR. Similarly within the other marine bioregional plans, pressures related to climate change were assessed as 'of concern' or 'of potential concern' to values within each bioregion (Ref. 223; Ref. 224; Ref. 225).

Evaluation summary

In summary, given that:

- atmospheric GHG concentrations are the aggregate consequence of GHG emissions from all sectors and land-uses, and have been increasing since the mid-1700s
- climate change is a global and cumulative phenomenon, the physical effects of climate change to Australian environmental values and sensitivities cannot reasonably be attributed to a single petroleum activities' GHG emissions
- Australia has GHG emission reduction targets that align with intent of the Paris Agreement
- Gorgon Operations is a registered facility under the Commonwealth NGER and Safeguard Mechanism schemes

the potential impact of the contribution of **petroleum activity GHG emissions** to the potential reduction of IPCC's estimated remaining carbon budget for a 50% likelihood to limit global warming to 1.5–2.0°C has been evaluated as having the potential to result in an **Incidental (6)** consequence.

8.4.6.2 ALARP decision context justification

Vessel and helicopter operations are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential impacts associated with GHG emissions from these types of activities are managed through established control measures prescribed by applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

The Gorgon Gas Development is subject to requirements established under the Commonwealth NGER and Safeguard Mechanism schemes, and these regulatory requirements are incorporated into the good practice control measures below.

No material information or concerns were raised regarding GHG emissions from the petroleum activity by relevant persons during consultation in preparing this EP.

Given the petroleum activity GHG emissions constitute a *de minimis* potential reduction to IPCC's estimated remaining carbon budget for a 50% likelihood to limit global warming to 1.5–2.0°C, CAPL considers the potential impacts from GHG emissions are considered lower-order impact in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.4.6.3 Control measures

Table 8-14 details the CMs relevant to this aspect.

Table 8-14: Good practice control measures for Planned emissions—GHG

CM	Description
CM-11: NGER and Safeguard Mechanism	As described in Section 8.4.3.3, Gorgon Operations is registered with the CER as a facility under both the NGER and Safeguard Mechanism schemes. The Gorgon Operations Facility is managed via a production-adjusted baseline. All Safeguard Mechanism facilities' net emissions must be at or below baselines by the annual deadline. Responsible emitters of facilities that exceed or expect to exceed their baselines must manage their excess emissions (e.g. by surrendering credit units). CAPL will comply with all NGER and Safeguard Mechanism requirements for the Gorgon Operations Facility.
CM-10: Marine Order 97	Marine Order 97 (Marine pollution prevention—air pollution) 2022 sets out requirements for the prevention of air pollution by vessels. Prior to commencement of the petroleum activity, the OVIS requirements within the Chevron Marine Standard (Ref. 171) are used to verify that vessels comply with relevant Marine Order 97 requirements, including: • Relevant vessels (as defined in regulation 6 of MARPOL 73/78 Annex VI) will hold a valid IAPP certificate and/or IEE certificate. • Marine diesel engines with >13 kW power output installed on a vessel will comply with NOx emission levels as per regulation 13 of MARPOL 73/78 Annex VI. • Marine diesel engines >130 kW power output on relevant Australian vessels will have an EIAPP certificate as per Division 7 of Marine Order 97. • Relevant vessels (as defined in Chapter 4 of MARPOL 73/78 Annex VI) will have: – An EEDI or EEXI and comply with relevant reduction factors – A SEEMP – A CII and comply with relevant reduction factors. • Sulphur content of fuel is within prescribed limits.
CM-12: Fuel consumption	Vessel fuel usage will be recorded during the petroleum activity.

8.4.7 Demonstration of acceptability

Table 8-15 describes the demonstration of acceptability relevant to this aspect.

Table 8-15: Demonstration of acceptability for Planned emissions—GHG

Comparison with acceptable level
The acceptable level for this aspect is **AL-08** (see Section 6.6 for definitions).

The petroleum activity GHG emissions have been estimated at ~0.05 Mt CO_2-e. This represents a *de minimis* potential reduction to IPCC's remaining carbon budget for a 50% likelihood to limit global warming to 1.5–2.0°C.

The Gorgon Operations Facility must comply with legislative requirements under the Commonwealth NGER and Safeguard Mechanism schemes, and therefore petroleum activity GHG emissions will be managed to be equivalent or better than the acceptable level.

Principles of ESD

CAPL refers to the recent Federal Court decision for Doctors for the Environment (Australia) Incorporated v National Offshore Petroleum Safety and Environmental Management Authority (No. 2) [2025] FCA 989 that found:

- the OPGGS(E)R do not require a level of certainty, prescription or exactness in cases where that is not possible or reasonable. The inherent uncertainties in the relationship between the activity, climate change trends and predicted consequential environmental impacts do not prevent NOPSEMA from being satisfied an EP meets acceptance criteria [157].
- the OPGGS(E)R do not require that acceptable levels or an EPO be quantified or be a metric, they may be qualitative in nature especially where a risk or impact is uncertain [158].

The impact identified for GHG emissions was the potential reduction to IPCC's remaining carbon budget for a 50% likelihood to limit global warming to 1.5–2.0°C. The consequence associated with this aspect was evaluated as Incidental (6).

Precautionary Principle

In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required. Notwithstanding, CAPL acknowledges the residual uncertainty associated with evaluation of environmental impacts from GHG emissions, and presents the following consideration of the Precautionary Principle in relation to this aspect.

- Uncertainty arises from limitations in climate science (including climate modelling), revised projections for domestic and global energy trends, and changes in regulatory and policy requirements. These areas are expected to evolve, and new information to become available over time.
- The petroleum activity GHG emissions have been estimated at ~0.05 Mt CO_2-e. This represents a *de minimis* potential reduction to IPCC's remaining carbon budget for a 50% likelihood to limit global warming to 1.5–2.0°C.
- Gorgon Operations is a registered facility under the Commonwealth NGER and Safeguard Mechanism schemes, and must comply with the legislative requirements associated with these schemes. As such, CAPL's activities are not inconsistent with Australia's national efforts to reach net zero by 2050 (as per targets within *Climate Change Act 2022* [Cth]).

Intergenerational Principle

In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required. Notwithstanding, CAPL presents the following consideration of the Precautionary Principle in relation to this aspect

- GHG emissions associated with the petroleum activity constitute a de minimis potential reduction to IPCC's estimated remaining global carbon budget for a 50% likelihood to limit global warming to 1.5–2.0°C, and through complying with Commonwealth NGER and Safeguard Mechanism schemes, the risks of adverse impacts to the health, diversity, or productivity of the environment is expected to be negligible. The principle of inter-generational equity is considered to be met for the petroleum activity.

Biodiversity Principle

Anthropogenic GHG emissions from the petroleum activity do not individually cause the physical effects of climate change, rather it is their cumulative effect, in combination with GHG emissions from all other anthropogenic and natural sources since the mid-1700's, that contribute to increased global temperature and global weather trends in the aggregate that may cause or contribute to physical effects on Australian environmental values and sensitivities, including biological diversity and ecological integrity.

Any contributions of GHG emissions from the petroleum activity to the cumulative anthropogenic impacts to climate systems could not be characterised as a *substantial cause* of the physical effects of climate change on environmental values and sensitivities, because of their remoteness to the consequence, intervening impacts and the fact GHG emissions from the petroleum activity

constitute a *de minimis* potential reduction in IPCC's remaining global carbon budgets for a 50% likelihood to limit global warming to 1.5–2.0°C.

Relevant environmental legislation and other requirements

Legislation and other requirements considered relevant for this aspect include:

- *National Greenhouse and Energy Reporting Act 2007* (Cth)
- National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015 (Cth)
- Marine Order 97 (2022)
- *National Recovery Plan for the Southern Right Whale* (Ref. 37)
- *Conservation Management Plan for the Blue Whale 2015–2025* (Ref. 42)
- *Conservation Advice fin whale* (Ref. 268)
- *Conservation Advice sei whale* (Ref. 269)
- *Conservation Advice for Australian humpback dolphin* (Ref. 270)
- *Conservation Advice for Australian snubfin dolphin* (Ref. 271)
- *Recovery Plan for Marine Turtles in Australia* (Ref. 264)
- *Recovery Plan for the grey nurse shark* (Ref. 69)
- *Recovery Plan for the white shark* (Ref. 70)
- *Conservation Advice for largetooth sawfish* (Ref. 272)
- *Conservation advice for the whale shark* (Ref. 273)
- *Wildlife Conservation Plan for Seabirds* (Ref. 74)
- *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 265)
- *National Recovery Plan for Australian fairy tern* (Ref. 73)
- *National Recovery Plan for albatrosses and petrels* (Ref. 266)
- *National Recovery Plan for the Australian painted snipe* (Ref. 267)
- *Conservation Advice for abbott's booby* (Ref. 274)
- *Conservation Advice for Australian painted snipe* (Ref. 275)
- *Conservation Advice for curlew sandpiper* (Ref. 276)
- *Conservation Advice for far eastern curlew* (Ref. 277)
- *Conservation Advice for golden bosun* (Ref. 278)
- *Conservation Advice for little tern* (Ref. 279)
- *Conservation Advice for Northern Siberian bar-tailed godwit* (Ref. 280)
- *Conservation Advice for red knot (*Ref. 281)
- *Conservation Advice for red-tailed tropicbird (Indian Ocean)* (Ref. 282)
- *Conservation Advice for sharp-tailed sandpiper* (Ref. 283)
- *North-west Marine Parks Network Management Plan (*Ref. 131)
- *Marine bioregional plan for the North-west Marine Region* (Ref. 21).

CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
NGER Act and Safeguard Rule Gorgon Operations is registered with the CER as a facility under both the NGER and Safeguard Mechanism schemes.	The requirements relating to GHG emissions management and reporting have been incorporated into the **NGER and Safeguard Mechanisms** control measure.
Marine Order 97 Gives effect to Annex VI of MARPOL 73/78.	IAPP and IEE certificates for vessels, NOx emission levels and EIAPP certificates for marine diesel engines, energy efficiency certificates/plans (EEDI, EEXI, SEEMP, CII), and sulphur content of fuel requirements have been incorporated into the **Marine Order 97** control measure.
National Recovery Plan for the Southern Right Whale	As described in the above impact evaluation, the estimated GHG emissions associated with the

Action A3.1: Continue to meet Australia's international commitments to address causes of climate change, including greenhouse gas emissions.	petroleum activity are considered *de minimis* (~0.05 Mt CO_2-e) and are not considered to be inconsistent with Australia meeting its international agreements (i.e. NDCs under the Paris Agreement). The petroleum activity is not considered to be inconsistent with these recovery plans or conservation advices.
Conservation Management Plan for the Blue Whale 2015–2025 Action A.3.1: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica.	
Conservation Advice fin whale Conservation action: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica.	
Conservation Advice sei whale Conservation action: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica.	
Conservation Advice for Australian humpback dolphin No specific conservation action identified.	N/A.
Conservation Advice for Australian snubfin dolphin No specific conservation action identified.	N/A.
Recovery Plan for Marine Turtles in Australia Action A2.1: Continue to meet Australia's international commitments to address the causes of climate change.	As described in the above impact evaluation, the estimated GHG emissions associated with the petroleum activity are considered *de minimis* (~0.05 Mt CO_2-e) and are not considered to be inconsistent with Australia meeting its international agreements (i.e. NDCs under the Paris Agreement). The petroleum activity is not considered to be inconsistent with these recovery plans or conservation advices
Recovery Plan for the grey nurse shark No specific management action identified.	N/A.
Recovery Plan for the white shark No specific management action identified.	N/A.
Conservation Advice for largetooth sawfish No specific conservation action identified.	N/A.
Conservation advice for the whale shark No specific conservation action identified.	N/A.
Wildlife Conservation Plan for Seabirds No specific conservation action identified.	N/A.
Wildlife Conservation Plan for Migratory Shorebirds No specific conservation action identified.	N/A.
National Recovery Plan for Australian fairy tern	N/A.

No specific management action identified.	
National Recovery Plan for albatrosses and petrels No specific management action identified.	N/A.
National Recovery Plan for the Australian painted snipe No specific management action identified.	N/A.
Conservation Advice for abbott's booby No specific conservation action identified.	N/A.
Conservation Advice for Australian painted snipe No specific conservation action identified.	N/A.
Conservation Advice for curlew sandpiper No specific conservation action identified.	N/A.
Conservation Advice for far eastern curlew No specific conservation action identified.	N/A.
Conservation Advice for golden bosun No specific conservation action identified.	N/A.
Conservation Advice for little tern No specific conservation action identified.	N/A.
Conservation Advice for Northern Siberian bar-tailed godwit No specific conservation action identified.	N/A.
Conservation Advice for red knot No specific conservation action identified.	N/A.
Conservation Advice for red-tailed tropicbird (Indian Ocean) No specific conservation action identified.	N/A.
Conservation Advice for sharp-tailed sandpiper No specific conservation action identified.	N/A.
North-west Marine Parks Network Management Plan No specific management action identified.	N/A.
Marine Bioregional Plan for the NWMR No specific management action identified.	N/A.
Internal context	
These management processes or procedures were deemed relevant for this aspect: • Chevron Marine Standard (Ref. 171) Control measures related to the above management process or procedure have been described for this aspect. As such, CAPL considers that impact management is consistent with company policy, culture, and standards.	

External context
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). No changes to this impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.

8.4.8 Environmental performance

Table 8-16 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-16: Environmental performance relevant to Planned emissions—GHG

EPO	CM	EPS	MC
EPO-11: GHG emissions are managed in accordance with requirements under the Commonwealth NGER and Safeguard Mechanism Schemes.	**CM-11:** NGER and Safeguard Mechanism	**EPS-11:** CAPL will implement GHG emissions management, reductions, and reporting aligned with requirements under the Commonwealth Safeguard Mechanism, to the extent such requirements remain in-force and as amended from time to time.	**MC-11** Records confirm GHG emissions management, reductions, and reporting are aligned with applicable requirements under the Commonwealth Safeguard Mechanism.
	CM-10: Marine Order 97	**EPS-10:** Prior to commencement of vessel-based activities within the OA, the following will be verified: • relevant vessels (as appropriate to class) will hold a valid IAPP and/or IEE certificate • relevant marine diesel engines on vessels will comply with NOx emission levels and/or have an EIAPP certificate • relevant vessels (as appropriate to class) will have a SEEMP, EEDI/EEXI, and/or CII • sulphur content of fuel is within prescribed limits.	**MC-10** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record confirms vessels hold appropriate certificates and/or plans, marine diesel engines comply with NOx emission levels, and sulphur content of fuel is within prescribed limits.
	CM-12: Fuel consumption	**EPS-12:** Vessels fuel usage will be recorded during the petroleum activity.	**MC-12** Records confirm vessel fuel usage during the petroleum activity.

8.5 Planned emissions—Artificial light

8.5.1 Aspect source

Activities identified as having the potential to generate artificial light emissions are:

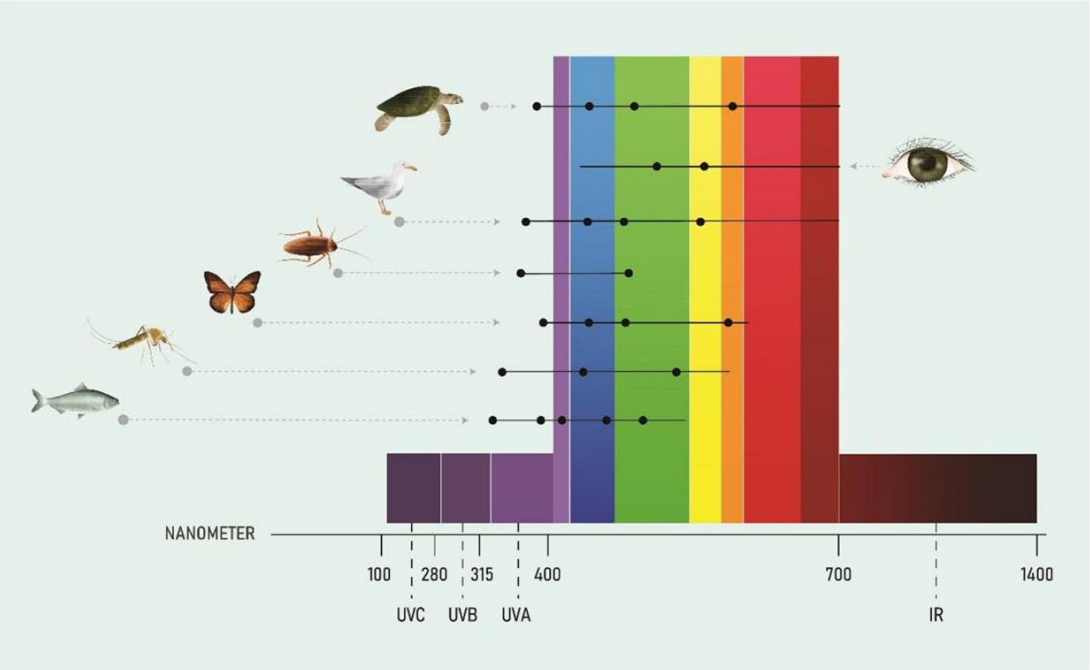
- navigational and operational lighting on vessels.

8.5.2 Artificial light modelling

Light is a form of energy that is emitted over a particular band of frequencies and wavelengths of the electromagnetic spectrum. Fauna perceive light differently to humans. Depending on the species, the visible spectrum for fauna can vary between the ultraviolet and infrared spectra (i.e. wavelengths between ~300 and >700 nanometres) (Ref. 15). For fauna, being sensitive to light within a specific range of wavelengths means that they can perceive light at that wavelength, and it is likely they will respond to that light source (Ref. 15).

Factors affecting how wildlife perceive light include the type of cells used to detect light (photopic versus scotopic vision); whether the light is viewed directly from the source or as reflected light; how the light interacts with the environment; and the distance from the light source (Ref. 15).

Figure 8-1 shows the sensitivity of different species to different wavelengths, with most species sensitive to short wavelength light (i.e. in the UV, violet, blue spectra).



(Source: Ref. 15)

Figure 8-1: Ability to perceive light and peal sensitivities to light for humans and wildlife

Artificial light emissions are generated by navigation and operational lighting on the vessels. Typically, one to three vessels would be operating during the petroleum activity; however, up to five vessels may be present within the OA at any given time (i.e. during pipelay activities, Section 4.10.1). IMR is not planned under this EP but has been included as a contingency; during which a vessel may be present within the OA (Section 4.1.2).

Nocterra undertook artificial light modelling to inform the impact and risk assessment associated with artificial light emissions associated from the petroleum activity (Ref. 287).

The Nocterra modelling software integrates with the publicly available ILLUMINA model originally developed by Aubè et at. (Ref. 288) to predict the visibility and

intensity of a particular light source at specific viewpoints. The ILLUMINA model is designed to simulate the effect of various atmospheric factors on night-time light emissions from a precise inventory of lighting fixtures (Ref. 288cited in Ref. 287). Lighting inventories were developed by Nocterra for the vessels and input into the model. Model outputs can be split into direct, reflected, and scattered (glow) light components; for completeness all three were considered together in this modelling Ref. 287).

The methodology used for this artificial light modelling (Ref. 287) is consistent with the *National Light Pollution Guidelines for Wildlife* (Ref. 15).

Scenarios

Three scenarios were modelled— a single PLV, a single HCV and a combination of vessels (Table 8-17). The multi-vessel scenario was included to represent a conservative concurrent-activity scenario based on the vessel activities identified as potentially occurring within or adjacent to the OA (Section 8.5.3). Together these three scenarios are considered representative of the range of activities identified under this EP.

An individual vessel undertaking IMR was not modelled as it is likely to be substantially smaller than the PLV or HCV and its light emissions would occur within a smaller spatial area.

Table 8-17: Artificial light modelling scenarios

Scenario	Details
A	Single PLV under offshore working conditions.
B	Single HCV under offshore working conditions.
C	A MODU with two platform supply vessels in addition to five vessels (i.e. a PLV, construction vessel, supply vessel and two PSVs).

Exposure criteria

In the absence of any published or generally accepted effect criteria for measuring the impact of artificial light on marine fauna, moonlight was selected as a proxy. Modelling results were converted from the native unit of measurement (radiance) into orientation field-of-view full moon equivalents (OFOV FME) (Table 8-18; Ref. 287).

Table 8-18: OFOV FME categories and descriptions

OFOV FME	Description	Potential relevance to marine fauna
<0.01	Brightness visible within 180° x 30° field-of-view is less than 1% of a full moon.	Light or light glow is considered ambient and no impact expected. Equivalent to the light output from a new moon.
0.01–0.1	Brightness visible within 180° x 30° field-of-view is between 1 % and 10 % of a full moon.	Light or light glow visible but behavioural impact unlikely (i.e. not biologically relevant). Equivalent to the light output from the first quarter moon to new moon.
0.1–1	Brightness visible within 180° x 30° field-of-view is between 10 % and 100 % of a full moon.	Light or light glow visible and behavioural impact possible, depending on ambient moon phase at the time of exposure, which will influence the visibility of the artificial light sources, equivalent to the light output. Artificial lights will be more visible under a first quarter moon than under a full moon.

OFOV FME	Description	Potential relevance to marine fauna
>1.0	Brightness visible within 180° x 30° field-of-view is greater than 100 % of a full moon.	Light or light glow visible and impact likely. Represents a bright light, equivalent to greater than one full moon. This light radiance will override the moderating influence of the ambient full moon at the time of exposure.

Modelling results

Table 8-19 presents the distances at which specific OFOV FME values were predicted to be reached. The results indicate that radiance reduced to ambient conditions at distances >16.48 km from the PLV, >15.64 km from the HCV or >28.28 from the multi vessel. However, biologically relevant light levels may extend to distances of up to ~6.30–11.58 km from the artificial light emission source. Therefore, a conservative exposure distance of ~11.6 km, based on the maximum extent of biologically relevant light predicted across the modelled scenarios, has been used to define the predicted artificial light exposure area for the impact and risk assessment.

The artificial light emissions from the vessel and multi vessel scenarios do not intersect with land (offshore islands or mainland) and are restricted to offshore regions (Ref. 287).

Table 8-19: OFOV FME contour modelling results

OFOV FME	Distance from source to Impact Category (km)		
	Scenario A (PLV)	Scenario B (HCV)	Scenario C (Multi vessel)
<0.01	>16.48	>15.64	>28.28
0.1	16.48	15.64	28.28
1.0	6.86	6.30	11.58
>1.0	<2.95	<2.80	<4.78

8.5.3 Concurrent activities

Section 5.4.6 identifies other petroleum activities that may occur within the vicinity (≤20 km) of the OA during the indicative schedule for this petroleum activity.

Other CAPL or third-party petroleum activities that may result in artificial light emissions include:

- GS3 drilling (CAPL)
- IMR activities of the Wheatstone subsea hydrocarbon system (CAPL)
- J-IC installation and/or pre-commissioning/commissioning (CAPL)
- Backfill fields site investigation surveys within C&D and Chandon gas fields (CAPL)
- legacy exploration wellheads (CAPL)
- Scarborough offshore facility and trunkline operations (Woodside)
- Julimar-Brunello P&A (Woodside)
- Pluto 4D MSS (Woodside).

The third-party petroleum activities are all spatially separated (~20 m to ~18.5 km) from the OA. While the Pluto OA is only ~20 m from the OA, the active source and

acquisition areas (i.e. where most vessel-based activity will occur) are >11 km from the OA. As light intensity is inversely proportional to distance, any additive effect of overlapping light emissions substantially reduces the distance between vessels increases. Consequently, if these activities were undertaken concurrently with the petroleum activity, they are generally not close enough to result in overlapping light emissions. Furthermore, any additional artificial light emissions from other petroleum activities within the broader NWS area would be intermittent and temporary (e.g. weeks to months depending on the campaign). Given the spatial separation of other operator petroleum activities from the OA, any associated artificial light emissions would make a negligible contribution to the ambient light conditions around the OA and as such are not considered further within this impact and risk assessment.

Other CAPL petroleum activities may occur within, or adjacent to, the OA. G&E drilling and completions activities, which form part of the GS3 project, occur within the southern portion of the OA. Up to two vessels, in addition to the MODU, may be present within the G&E Drilling OA (Ref. 286). Other identified CAPL activities are typically limited to vessel-based IMR or similar operations and would be intermittent and temporary in nature.

Given that the G&E Drilling OA is located within the OA and involves a greater number and range of vessels (e.g. MODU and vessels), it is considered representative of a conservative (worst-case) scenario for the assessment of concurrent activities.

Consequently, the multi-vessel modelling scenario and associated results presented in Section 8.5.2 are considered appropriate for defining the maximum extent of artificial light exposure for this impact and risk assessment.

8.5.4 Environmental impact and risk evaluation

Artificial light emission may result in a:

- localised and temporary change in ambient light.

A localised and temporary change in ambient light may result in a:

- potential change in behaviour of marine fauna.

8.5.4.1 Consequence evaluation

8.5.4.1.1 Impact: localised and temporary change in ambient light

Artificial light emissions from vessel operations are temporary sources of light. The estimated duration for pipelay, subsea installation and pre-commissioning activities is ~five months per campaign, while Jansz infield umbilical and IMR campaigns are expected to take ~one–two months per campaign (Table 4-1). As activities under this EP can be undertaken 24 hours a day, lighting is required at night for navigation and to ensure safe operations on the vessels.

As identified in Section 8.5.2, artificial light exposure areas are estimated to be radial distances of ~11.6 km from the vessels. Light would return to ambient levels following the cessation of the petroleum activity.

Given the temporary nature of the artificial light (i.e. no permanent above-surface facilities are within scope of this EP), the distance from the OA to the nearest land (~75 km to Montebello Island), and the predicted artificial light exposure distances, CAPL has assessed the localised and temporary change in ambient light as Incidental (6).

8.5.4.1.2 Risk: potential change in behaviour of marine fauna

As identified in Section 8.5.2, artificial light exposure areas are estimated to be radial distances of ~11.6 km from the vessels. Light-sensitive fauna (including birds, reptiles and fish) are the species most at risk from this aspect.

The *National Light Pollution Guidelines for Wildlife* (Ref. 15) indicate a precautionary buffer of 20 km around nesting habitats; however, given the distance from the OA to the nearest land (~75 km to Montebello Island) and the estimated radial exposure areas of artificial light, the precautionary buffer has not been applied during the following risk assessment.

Seabirds and shorebirds

As identified in Section 5.3.3.4, several seabirds and shorebirds species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the OA. The wedge-tailed shearwater breeding BIA is the only BIA identified within the artificial light exposure area.

Activities that result in a change in ambient light conditions, may lead to potential changes in the behaviour of seabirds and shorebirds such as disruption to foraging, breeding or migration behaviours. 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. 289).

Anthropogenic disturbance (including artificial lighting) is identified as a threat within the *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 265) and the *National Recovery Plan for albatrosses and petrels* (Ref. 266), and light pollution is identified as a threat within the *Wildlife Conservation Plan for Seabirds* (Ref. 74). Fledglings are considered more vulnerable due to underdeveloped eye ganglions, disturbance to sea-finding cues, and potential connection between light and food (Ref. 74).

At its closest, the OA is located ~75 km from the nearest coast (Montebello Island), with no emergent land suitable for roosting or nesting identified within the OA. Given that artificial light exposure area is expected to extend ~11.6 km from the vessels, exposure of nesting adult birds or fledglings to artificial light emissions from the activity will not occur at breeding colonies, and therefore have not been evaluated further.

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. 290; Ref. 291). This attraction may be stronger outside of bright moonlit nights, when artificial light temporarily enhances foraging conditions (Ref. 292).

In all seabirds, their photopic vision (light-adapted) is most sensitive in the long wavelength range (590–740 nm, orange to red) while their scotopic (dark-adapted) vision is more sensitive to short wavelengths (380–485 nm, violet to blue) (Ref. 15). Peak spectral emissions from vessel artificial lights are not expected to occur within these lower and more sensitive wavelength bands of blue, violet and UV light (i.e. not within the sensitive ranges for scotopic vision). However, the intensity of light may be a more important cue than colour for seabirds; very bright light will attract them, regardless of colour (Ref. 15).

As previously mentioned, a breeding BIA for wedge-tailed shearwater overlaps the artificial light exposure area. These BIAs are buffers around islands that the

species is known to nest on as they forage in surrounding waters during nesting seasons. Their presence in the Pilbara is seasonal, typically occurring between August to April/May (Section 5.3.3.4.1). The departure and arrival typically occur in April/May and August, respectively (Ref. 79; Ref. 80), with breeding colonies on islands off Barrow Island (Double and Boodie islands), and the Lowendal and Montebello Islands.

Shearwaters typically forage relatively close to breeding islands or over a large area, depending on prey availability (Ref. 78). Given the offshore location of the petroleum activity, any potential changes in behaviour due to artificial light are expected to be limited to transient individuals during nocturnal foraging.

Birds are also known to use ships as stopovers during migration, especially when they encounter unfavourable conditions, such as wind, rain or fog (Ref. 293, Ref. 294). These stopovers may alter their migratory routes (Ref. 295) increasing energy costs to migratory travel. While the mechanism of light attraction is not fully proven, it is hypothesised that artificial lighting may interfere with the internal magnetic compass of migratory shorebirds and nocturnal seabirds (Ref. 296).

Marquenie (Ref. 289) estimated that a change in migratory behaviour of birds was limited to <5 km from the source. Therefore, potential changes in behaviour due to artificial light are expected to be spatially restricted affecting only individual seabirds crossing the OA during their migratory season.

Because light emissions have the potential to cause localised, short-term impact to transient migratory seabirds or nocturnal foraging individuals, and given the temporary nature of artificial light exposure (i.e. no permanent above-surface facilities), the consequence associated with potential changes in behaviour due to artificial light has been assessed as Minor (5).

Marine reptiles

As identified in Section 5.3.3.2, several marine reptile species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the OA. No BIAs or HCTS of marine turtles were identified within the predicted artificial light exposure areas.

Artificial light emissions have the potential to change behaviour of marine turtles, such as inhibiting nesting by adult females and disrupting the orientation and sea finding behaviour of hatchlings (Ref. 15; Ref. 264).

The *Recovery Plan for Marine Turtles in Australia* (Ref. 264) identifies light pollution as a key threat because it can disrupt critical behaviours, such as nesting, hatchling orientation, sea finding, and hatchling dispersal behaviour. Light pollution is classified as “of less concern” to turtles during offshore-based activities in open waters (Ref. 297).

According to the Recovery Plan (Ref. 264), nesting HCTS of each species is defined at a stock level. The closest nesting HCTS 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. 264). Upon entering to the water, hatchlings primarily use wave direction to orient toward deeper waters (Ref. 264). In the absence of wave cues, swimming hatchlings may orient towards light (Ref. 298, Ref. 299) and in some cases, light cues may override or interfere with wave or other dispersal cues over short distances in nearshore waters (Ref. 299; Ref. 300).

The OA is located ~75 km from the nearest coast (Montebello Island). Given that artificial light exposure areas are estimated to be radial distances of ~11.6 km

from the vessels, light spill onto coastal or nearshore areas will not occur. Therefore, adult nesting turtles and hatchlings will not be exposed to artificial light emissions from the petroleum activity at nesting locations and have not been evaluated further.

The *Recovery Plan for Marine Turtles in Australia* (Ref. 264) also defines internesting HCTS of a species as a distance seaward from nesting HCTS of a species of 60 km for flatbacks and 20 km for green and hawksbill turtles. Studies (Ref. 301; Ref. 302) have indicated that internesting behaviour of flatback turtles on the NWS appears more spatially restricted than that suggested by the Recovery Plan (Ref. 264). Whittock et al. (Ref. 301) 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. 301). 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. 303). No BIAs or HCTS for marine turtles overlap with the predicted artificial light exposure areas. No light spill into internesting HCTS or preferred internesting habitat is predicted; therefore, internesting adult turtles are not expected to be exposed to artificial light emissions from the petroleum activity and have not been evaluated further.

Consequently, based on observed behaviours, habitat preferences, predicted artificial light exposure areas and the offshore location of the petroleum activity, only adult transient marine turtles may be expected to occur within the predicted artificial light exposure areas. As such, the consequence associated with this risk has been evaluated as Incidental (6).

Fishes, including sharks and rays

Artificial light may result in varied ecological changes to fish, including changes to predatory behaviour and abundance (Ref. 304, Ref. 305), altering hatching success (Ref. 306), acting as an attractant for plankton (Ref. 307), or altering circadian behavioural rhythms (Ref. 305).

As identified in Section 5.3.3.3, several fish (including sharks and ray) species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the OA. No BIAs or HCTS for fishes and sharks overlap with the predicted artificial light exposure areas. In addition, light has not been identified as a threat within the recovery plans for the sawfish and river sharks (Ref. 68), grey nurse shark (Ref. 69), white shark (Ref. 70), or the conservation advices for the largetooth sawfish (Ref. 272), whale shark (Ref. 273), dwarf sawfish (Ref. 308), green sawfish (Ref. 309).

Observations during fish assemblage surveys were predominantly of pelagic fishes (Ref. 32); these types of species are generally considered mobile and/or transient in nature (Ref. 71). Demersal fishes were also observed throughout soft sediment habitats (Ref. 32), however are also generally mobile taxa without any site attachment (Ref. 71). As such, only transient species are expected to occur within the predicted artificial light exposure areas.

Given the transient nature of the fishes, including sharks and rays, the temporary nature of artificial light exposure (i.e. no permanent above-surface facilities) and no known aggregation areas identified, CAPL has ranked the potential change in behaviour of fishes, including sharks and rays as Incidental (6).

8.5.4.2 ALARP decision context justification

Vessel operations are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential impacts and risks associated with artificial light emissions from these types of activities are managed through control measures aligned with applicable guidelines and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding artificial light emissions from the petroleum activity by relevant persons during consultation in preparing this EP.

The potential impacts and risks from artificial light emissions are considered lower-order impacts in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.5.4.3 Control measures

Table 8-20 details the control measures relevant to this aspect.

Table 8-20: Good practice control measures relevant to Planned emissions—Artificial light

CM	Description
CM-13: Light management for night operations	The petroleum activity is indicatively scheduled to commence from 2027 and will occur over multiple campaigns. The petroleum activity may overlap with the bird breeding, foraging or migratory periods and the nest season for marine turtles. Biologically relevant light emissions have been predicted at distances of up to ~6.30 and 11.58 km from the HCV and multivessel scenarios, respectively. The OA is ~75 km from Montebello Island and in water depths of >1,100 m. Therefore, all artificial light emissions are occurring in open ocean away from offshore islands or mainland coast. As a conservative management measure, vessels undertaking the petroleum activity 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. Table 5, Table 8, and Table 11 of the *National Light Pollution Guidelines for Wildlife* (Ref. 15) provide a toolbox of light mitigation options for marine turtles, seabirds, and migratory shorebirds respectively. This control measure is consistent with the following light mitigation options as identified within the *National Light Pollution Guidelines for Wildlife* (Ref. 15) for seabirds and migratory shorebirds: • aim lights downwards • reduce unnecessary lighting at sea – reduce vessel deck lights to the minimum required for human safety and navigation – shield internal lights (e.g. use block-out blinds on windows).
CM-14: Seabird management procedure	CAPL's *Seabird Management Procedure* (Ref. 310; see also Section 10.6) will be implemented for vessel-based petroleum activities. The procedure includes: • an overview of key species • management procedures for any seabird interaction • records and reporting requirements. This control measure is consistent with a light mitigation option from Table 8 (toolbox for seabirds) from the *National Light Pollution Guidelines*

CM	Description
	for Wildlife (Ref. 15) regarding the management of seabirds landing on vessels.

8.5.4.4 Likelihood and residual risk level summary

Due to the nature and scale of the petroleum activity within scope of this EP, the deep offshore location of the OA, the overlap between predicted artificial light exposure areas with BIAs for some fauna (wedge-tailed shearwater), the mobile and transitory nature of marine fauna within the vicinity of the OA, and the application of the above control measure, CAPL has assessed the likelihood and residual risk level as identified in Table 8-21.

Table 8-21: Likelihood and residual risk relevant to Planned emissions—Artificial light

Risk/receptor	Consequence	Likelihood	Residual risk
Potential change in behaviour of marine fauna			
Seabirds and shorebirds	Minor (5)	Remote (5)	Very low (9)
Marine turtles	Incidental (6)	Rare (6)	Very low (10)
Fishes, including sharks and rays	Incidental (6)	Rare (6)	Very low (10)

8.5.5 Demonstration of acceptability

Table 8-22 describes the demonstration of acceptability relevant to this aspect.

Table 8-22: Demonstration of acceptability relevant to Planned emissions—Artificial light

Comparison with acceptable level
The acceptable levels for this aspect are **AL-12**, **AL-13**, **AL-14** and **AL-15** (see Section 6.6). Artificial light emissions from the petroleum activity are predicted to result in temporary and spatially limited change in ambient light (Section 8.5.4.1). Subsequent potential changes to marine fauna were predicted to be localised and short-term disturbance to a small number of transient fauna (marine reptiles, fishes, birds). The predicted impacts would not decrease the availability or quality of important habitat, result in impacts at population level that would prevent long-term recovery or survival or have lasting effects on ecosystem integrity. As such, the predicted level of impact will be managed to be equivalent or better than the acceptable levels **AL-12**, **AL-13**, **AL-14** and **AL-15.**
Principle of ESD
Precautionary Principle In accordance with Table 6-5, a consequence level between Minor (5) to Incidental (6) do not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required. *Intergenerational Principle* In accordance with Table 6-5, a consequence level between Minor (5) to Incidental (6) do not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required. *Biodiversity Principle* The impacts and risks associated with this aspect include localised and short-term behavioural responses of transient species, 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.
Relevant environmental legislation and other requirements
Legislation and other requirements considered relevant for this aspect include:

- *National Light Pollution Guidelines for Wildlife* (Ref. 15)
- *Recovery Plan for Marine Turtles in Australia* (Ref. 264)
- *Wildlife Conservation Plan for Seabirds* (Ref. 74)
- *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 265)
- *National Recovery Plan for albatrosses and petrels* (Ref. 266)
- *Conservation Advice for whale shark* (Ref. 273)
- *Marine Bioregional Plan for the* NWMR (Ref. 21).

CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
National Light Pollution Guidelines for Wildlife Undertake an environmental impact assessment for effects of artificial light on listed species for which artificial light has been demonstrated to affect behaviour, survivorship, or reproduction.	Section 8.5.3 provides an impact and risk assessment for artificial light emissions from the petroleum activity (including where concurrent activities may result in cumulative effects) and consideration of control measures as identified within the mitigation toolboxes for marine turtles, seabirds, and migratory shorebirds. The petroleum activity is not considered to be inconsistent with the *National Light Pollution Guidelines for Wildlife.*
Recovery Plan for Marine Turtles in Australia Management action A8.1: Artificial light within or adjacent to HCTS of marine turtles will be managed such that marine turtles are not displaced from these habitats (as per section 3.3 Table 6 of Ref. 264). Note: This is also a specific action identified for the G-NWS individual stock. Management action A8.3: Identify the cumulative impact on turtles from multiple sources of onshore and offshore light pollution. In addition to the above actions, the following specific actions have been identified for individual turtle stocks: • flatback turtle Pilbara (F-Pil): Manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and emerging / dispersing hatchlings can continue • hawksbill turtle WA (H-WA): Manage artificial light from onshore and offshore sources to ensure biologically important behaviours of nesting adults and dispersing hatchlings can continue.	Exposure areas from artificial light emissions from the petroleum activity (including any potential cumulative effects from concurrent activities), and any associated impacts or risks, have been described in the above consequence evaluation. Given the unsuitability of the OA as internesting habitat, no marine turtle BIAs or HCTS overlap the predicted artificial light exposure areas, and no light spill into internesting or nesting habitat is expected, potential impacts at internesting or nesting locations are not predicted. As such, the activity is not considered to be inconsistent with the *Recovery Plan for Marine Turtles in Australia*.
Wildlife Conservation Plan for Seabirds No specific action identified.	N/A.
Wildlife Conservation Plan for Migratory Shorebirds No specific action identified.	N/A.
National Recovery Plan for albatrosses and petrels No specific action identified.	N/A.

Conservation Advice for 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.	Section 8.5.3 provides a risk assessment and consideration of control measures for vessel-based activities. Therefore, this activity is not considered to be inconsistent with the Conservation Advice for whale shark.
Marine Bioregional Plan for the NWMR No specific action identified.	N/A.
Internal context	
These management processes were deemed relevant for this aspect: • *Seabird Management Procedure* (Ref. 310). 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	
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). No changes to this impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.	

8.5.6 Environmental performance

Table 8-23 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-23: Environmental performance relevant to Planned emissions—Artificial light

EPO	CM	EPS	MC
EPO-13: Artificial light emissions from planned petroleum activities do not prevent light sensitive marine fauna[92] from undertaking biological important behaviours[93].	**CM-13:** Light management for night operations	**EPS-13:** Vessels undertaking the petroleum activity 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 the working deck area to avoid light spill to water • use window coverings to shield internal lights from view (unless windows are required to be uncovered for safe operations).	**MC-13** Inspection records (or equivalent) verify that during night operations only the minimum lighting for safe operations and navigation is used, and where practicable, operational lighting is directed downwards to working deck area, and internal window coverings are used (unless required for safe operations).
	CM-14: Seabird management procedure	**EPS-14:** CAPL's *Seabird Management Procedure* (Ref. 310) will be implemented to manage interactions with seabirds on vessels.	**MC-14** Inspection records (or equivalent) confirm the seabird management procedure was implemented as required.

[92] Where light sensitive marine fauna includes marine turtles, seabirds and migratory shorebirds.

[93] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 311).

8.6 Planned emissions—Underwater sound (non-impulsive)

8.6.1 Aspect source

Activities identified as having the potential to generate non-impulsive[94] underwater sound emissions are:

- vessel operations (e.g. cavitation at propellers and thrusters), ROV/AUV operations (e.g. from propulsion system), and helicopter operations
- acoustic survey equipment (SSS and MBES) during installation and contingency IMR activities.

8.6.2 Underwater sound modelling

8.6.2.1 Vessel operations

JASCO Applied Sciences (JASCO) undertook acoustic and animat modelling studies (Ref. 314; Ref. 315) to inform the impact and risk assessment associated with non-impulsive underwater sound emissions from the petroleum activity.

Scenarios

Four scenarios were modelled (Table 8-24), representing the maximum number of vessels anticipated for each campaign.

Underwater sound that radiates from vessels is produced mainly by propeller and thruster cavitation, with a smaller proportion produced by sound transmitted through the hull, such as by engines, gearing, and other mechanical systems (Ref. 314; Ref. 315). A vessel produces broadband acoustic energy with most of the energy emitted below a few kilohertz; sound from onboard machinery, particularly sound below 200 Hz, dominates the sound spectrum before cavitation begins (Ref. 314).

Table 8-24: Description of modelled scenarios and sound source levels

Scenario	Description	Model water depth	Broadband source levels[95]
1 (Pipelay installation campaign)	A PLV, CSV and two pipe supply vessels under DP with a supply vessel alongside for 8 hours	1,285 m	PLV: 188.0 dB re 1 μPa^2m^2 CSV: 181.4 dB re 1 μPa^2m^2 Pipe supply vessel: 182.7 dB re 1 μPa^2m^2 Supply vessel: 182.7 dB re 1 μPa^2m^2
2 (Subsea installation campaign) [96]	An HCV, HTV and LCV under DP with two supply vessels alongside for 8 hours	1,285 m	HCV: 179.5 dB re 1 μPa^2m^2 HTV: 181.0 dB re 1 μPa^2m^2 LCV: 180.9 dB re 1 μPa^2m^2 Supply vessel: 182.7 dB re 1 μPa^2m^2

[94] Non-impulsive sounds can be broadband, narrowband or tonal, brief or prolonged, continuous or intermittent, and typically do not have a high peak sound pressure with rapid rise or decay times (Ref. 312; Ref. 313).

[95] Broadband source levels for the vessels are given over a 10 Hz to 31 kHz range (Ref. 314).

[96] As per Section 4.10.1, up to four vessels may be present within the OA during this campaign. A conservative approach was applied by modelling two supply vessels rather than one, providing a conservative modelling scenario.

Scenario	Description	Model water depth	Broadband source levels[95]
3 (Pre-commissioning campaign)	MSV under DP with a supply vessel alongside for 8 hours	1,283 m	MSV: 182.5 dB re 1 μPa^2m^2 Supply vessel: 182.7 dB re 1 μPa^2m^2
4 (Contingency IMR)	IMR vessel under DP	1,285 m	IMR vessel: 182.5 dB re 1 μPa^2s

Effect criteria

Different species groups perceive and respond to sound differently, and so different effect criteria have been established. The modelling study used the following effect criteria (Table 8-25) which are based on the most applicable science available at the time of the modelling:

- frequency-weighted accumulated sound exposure level[97] (SEL_{24h}) from the United States (US) Navy (Ref. 316) for the onset of auditory injury (AINJ)[98] and temporary threshold shift (TTS)[99] in marine mammals and marine turtles
- un-weighted sound pressure level (SPL)[100] from the US National Oceanic and Atmospheric Administration (NOAA) for marine mammal behavioural disruption (Ref. 318)
- sound exposure guidelines for fish, fish eggs and fish larvae, and marine turtles from shipping and continuous sounds in Popper et al. (Ref. 317)[101].

Note: For the purpose of interpreting and applying Action Area A.2 of the Conservation Management Plan for the Blue Whale (Ref. 42), published guidance from the Australian Government has defined ‘injury to blue whales’ as “both permanent and temporary hearing impairment … and any other form of physical harm arising from anthropogenic sources of underwater noise” (Ref. 319).

Acoustic modelling results

Distances relevant to the sound source can be presented in two formats:

- R_{max}—This is the maximum range to the given effect criteria sound level
- $R_{95\%}$—This is the range to given effect criteria sound level after the 5% of farthest points were excluded.

In cases where a sound level contour is irregular in shape (e.g. small protrusions or anomalous fringes) or there is separated contours (e.g. isolated smaller ensonified area/s separate to the main area) use of the R_{max} parameter may not

[97] Where sound exposure level (SEL) is the level of the sound exposure in a stated frequency band and time window (Ref. 314). To apply an SEL metric a specified accumulation period is needed. The effect criteria have been established using a 24-hour period (SEL_{24h}).

[98] AINJ refers to damage to the inner ear that can result in destruction of tissue, such as the loss of cochlear neuron synapses or auditory neuropathy (Ref. 312). AINJ may or may not result in permanent threshold shift (PTS). PTS is a permanent, irreversible increase in the threshold of audibility at a specified frequency or portion of an individual’s hearing range about a previously established reference level (Ref. 312).

[99] TTS is a temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual’s hearing range above a previously established reference level (Ref. 312). TTS may or may not reduce fitness (Ref. 317).

[100] Where SPL is the time-mean-square sound pressure in a stated frequency band and time window; typically expressed in terms of root-mean-square (rms) (Ref. 314).

[101] Only quantitative effect criteria were modelled; qualitative effect criteria were applied directly in the risk assessment.

be the most appropriate representation of a distance to inform impact and risk evaluation.

Table 8-26 summarises the horizontal distances to the quantitative non-impulsive sound effect criteria for marine mammals, turtles, and fishes with swim bladders involved in hearing.

Note: The SEL_{24h} is a cumulative metric that reflects the dosimetric impact of sound levels integrated over 24 hours. The predicted radius for SEL_{24h} effect criteria does not mean that an animal travelling within this radius of the source will be impacted, but rather that an animal could be experience auditory impairment or injury if the total accumulated sound energy it receives within the ensonified area exceeds the relevant TTS or AINJ criteria within a 24 hour period.

Generally, it is predicted that most receivers (animals) will minimise the amount of time they remain in the closest ranges to a sound source/activity (Ref. 312). Accumulation time is driven primarily by the characteristics of the receiver (e.g. swim speed) (Ref. 312). Exposures closer to the source are also likely to be the primary exposures contributing to a receiver's accumulated level (Ref. 312).

Animat modelling for pygmy blue whales

In addition to the acoustic propagation modelling, JASCO also undertook animal movement modelling (animat modelling) for pygmy blue whales (Ref. 314; Ref. 315). 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.

The JASCO Animal Simulation Model Including Noise Exposure (JASMINE) was used to predict the exposure of northward migrating pygmy blue whales to sound from the petroleum activity. JASMINE integrates the predicted sound field with biologically meaningful movement rules that results in an exposure history for each animat in the model (Ref. 314; Ref. 315). The parameters used for forecasting realistic behaviours (e.g. dive depth and length, swim speeds) are determined and interpreted from marine mammal studies (e.g. tagging studies) where available, or reasonably extrapolated from related or comparable species (Ref. 314; Ref. 315). To generate statistically reliable probability density functions, model simulations by JASCO were run with animat sampling densities of 4 animats/km^2 (Ref. 314; Ref. 315). This sampling density is not related to real-world density estimates for pygmy blue whales which are likely to be much lower (e.g. see Thums et al. [Ref. 50]). For cumulative metrics, an individual animat's SELs are summed over a 24 hour duration to determine its total received energy and then compared to the relevant effect criteria. For single-exposure metrics, the maximum exposure is evaluated against effect criteria for each 24-hour period.

The modelled 95th percentile exposure ranges ($ER_{95\%}$) to the relevant effect criteria for VLF cetaceans are shown in Table 8-27. Within the $ER_{95\%}$, there is generally some proportion of animats that do not exceed the effect criteria. This occurs for several reasons, including the spatial and temporal characteristics of the sound field and the way in which the animats sample the sound field over time, both vertically and horizontally (Ref. 314; Ref. 315). The probability (P_{exp}) that an animat within the $ER_{95\%}$ was exposed above effect criteria was also computed and is shown in Table 8-27. Note: To facilitate comparison, the R_{max} and $R_{95\%}$ predicted from acoustic propagation modelling for the same scenarios is also shown in Table 8-27.

Under animat modelling, the effect criteria for AINJ onset was not reached for either of the modelled scenarios except the Scenario 1; however, the AINJ onset

was predicted <0.01 km. The predicted $ER_{95\%}$ from animat modelling for TTS onset were substantially reduced compared to predicted $R_{max}/R_{95\%}$ from acoustic propagation modelling (Table 8-27). Similarly, the predicted $ER_{95\%}$ to behavioural effect criteria was substantially reduced compared to the $R_{max}/R_{95\%}$ from acoustic propagation modelling (Table 8-27). Exposure ranges predicted using animat modelling are considered more realistic than acoustic modelling, due to the incorporation of species-specific behaviour and movements based on available scientific literature (Ref. 314; Ref. 315).

Note: The JASMINE model does not incorporate potential avoidance behaviour, in which case the animat moving through the ensonified area would potentially dive to water depths or increase swim speed to move to where it is quieter (i.e. outside of the ensonified area). Accordingly, the results of the animat modelling are still conservative by design, as potential avoidance behaviour would result in less sound accumulation over the accumulation period (24 hours) and exposure ranges to effect criteria would be further reduced. Furthermore, the scenarios and source levels applied within the modelling do not consider that non-impulsive acoustic sources such as DP thrusters are highly dynamic over time in response to changing metocean conditions; therefore, in most cases actual source levels will be significantly lower than the source levels adopted within the model for the purposes of this risk evaluation.

Table 8-25: Effect criteria for non-impulsive sound for different types of impacts and species groups

Receptor	Mortality[102] and potential mortal injury[103]	Recoverable injury[104,103]	AINJ onset	TTS onset[103]	Masking[105,103]	Behaviour[106,103]
VLF cetaceans	N/A	N/A	SEL_{24h}: 197 dB re 1 μPa^2s	SEL_{24h}: 177 dB re 1 μPa^2s	N/A	SPL: 120 dB re 1 µPa
LF cetaceans						
HF cetaceans			SEL_{24h}: 201 dB re 1 μPa^2s	SEL_{24h}: 181 dB re 1 μPa^2s		
VHF cetaceans			SEL_{24h}: 181 dB re 1 μPa^2s	SEL_{24h}: 161 dB re 1 μPa^2s		
Marine turtles	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low	SEL_{24h}: 198 dB re 1 μPa^2s	SEL_{24h}: 178 dB re 1 μPa^2s	(N) High (I) High (F) Moderate	(N) High (I) Moderate (F) Low
Fish—no swim bladder (particle motion detection)[107]	(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 (particle motion detection)	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low		(N) Moderate (I) Low (F) Low	(N) High (I) High (F) Moderate	(N) Moderate (I) Moderate (F) Low
Fish—swim bladder involved in hearing (primarily pressure detection)	(N) Low (I) Low	170 dB SPL for 48 hours		158 dB SPL for 12 hours	(N) High (I) High	(N) High (I) Moderate

[102] Mortality and mortal injury refer to immediate or delayed death (Ref. 317).

[103] Relative risk (high, moderate, low) is given for fauna at three distances from the source (near [N], intermediate [I] and far [F]). Where 'near' is considered to be in the order of tens of meters from the source, 'intermediate' is hundreds of meters, and 'far' in the thousands of meters (Ref. 317).

[104] Recoverable injury includes injuries unlikely to result in mortality, such as hair cell damage and minor haematoma (Ref. 317).

[105] Masking refers to an impairment of hearing sensitivity in the presence of noise (Ref. 317).

[106] For fish and turtles: behavioural effects refer to a substantial change (i.e. does not include small changes such as startle responses) in behaviour (Ref. 317). Numerous studies on marine mammal behavioural responses to sound exposure have not resulted in consensus in the scientific community regarding the appropriate metric for assessing behavioural reactions (Ref. 314). Behavioural effects in marine mammals can range in severity from no observable response to more substantial changes (Ref. 318).

[107] Also appropriate for sharks (Ref. 314).

Receptor	Mortality[102] and potential mortal injury[103]	Recoverable injury[104,103]	AINJ onset	TTS onset[103]	Masking[105,103]	Behaviour[106,103]
	(F) Low				(F) High	(F) Low
Fish eggs and fish larvae	(N) Low (I) Low (F) Low	(N) Low (I) Low (F) Low		(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low	(N) Moderate (I) Moderate (F) Low

Table 8-26: Predicted horizontal distances (R_{max}, $R_{95\%}$) to non-impulsive effect criteria for marine fauna

Receptor	Recoverable injury		AINJ onset		TTS onset		Behaviour	
	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$
Scenario 1 Pipelay installation campaign								
VLF cetaceans	N/A		SEL_{24h}: 0.15 km	SEL_{24h}: 0.14 km	SEL_{24h}: 1.65 km	SEL_{24h}: 1.52 km	SPL: 7.05 km	SPL: 6.71 km
LF cetaceans			SEL_{24h}: 0.12 km	SEL_{24h}: 0.11 km	SEL_{24h}: 1.42 km	SEL_{24h}: 1.28 km		
HF cetaceans			SEL_{24h}: 0.05 km	SEL_{24h}: 0.05 km	SEL_{24h}: 0.48 km	SEL_{24h}: 0.43 km		
VHF cetaceans			SEL_{24h}: 0.07 km	SEL_{24h}: 0.07 km	SEL_{24h}: 1.10 km	SEL_{24h}: 0.96 km		
Marine turtles			SEL_{24h}: 0.10 km	SEL_{24h}: 0.10 km	SEL_{24h}: 1.24 km	SEL_{24h}: 1.14 km	N/A	
Fish—swim bladder involved in hearing	SPL for 48 hours: 0.05 km		N/A		SPL for 12 hours: 0.06 km			
Scenario 2 Subsea installation campaign								
VLF cetaceans	N/A		SEL_{24h}: 0.10 km	SEL_{24h}: 0.09 km	SEL_{24h}: 1.06 km	SEL_{24h}: 0.99 km	SPL: 5.29 km	SPL: 5.10 km
LF cetaceans			SEL_{24h}: 0.08 km	SEL_{24h}: 0.07 km	SEL_{24h}: 0.84 km	SEL_{24h}: 0.77 km		
HF cetaceans			SEL_{24h}: 0.03 km	SEL_{24h}: 0.03 km	SEL_{24h}: 0.13 km	SEL_{24h}: 0.12 km		
VHF cetaceans			SEL_{24h}: 0.05 km	SEL_{24h}: 0.05 km	SEL_{24h}: 0.61 km	SEL_{24h}: 0.56 km		
Marine turtles			SEL_{24h}: 0.09 km	SEL_{24h}: 0.09 km	SEL_{24h}: 0.86 km	SEL_{24h}: 0.80 km	N/A	
Fish—swim bladder involved in hearing	SPL for 48 hours: 0.03 km		N/A		SPL for 12 hours: 0.07 km	SPL for 12 hours: 0.06 km		

Receptor	Recoverable injury		AINJ onset		TTS onset		Behaviour	
	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$	R_{max}	$R_{95\%}$
Scenario 3 pre-commissioning campaign								
VLF cetaceans	N/A		SEL_{24h}: 0.08 km	SEL_{24h}: 0.07 km	SEL_{24h}: 0.68 km	SEL_{24h}: 0.65 km	SPL: 3.89 km	SPL: 3.73 km
LF cetaceans			SEL_{24h}: 0.05 km	SEL_{24h}: 0.05 km	SEL_{24h}: 0.48 km	SEL_{24h}: 0.47 km		
HF cetaceans			SEL_{24h}: 0.03 km	SEL_{24h}: 0.03 km	SEL_{24h}: 0.10 km	SEL_{24h}: 0.09 km		
VHF cetaceans			SEL_{24h}: 0.03 km	SEL_{24h}: 0.03 km	SEL_{24h}: 0.28 km	SEL_{24h}: 0.27 km		
Marine turtles			SEL_{24h}: 0.06 km	SEL_{24h}: 0.06 km	SEL_{24h}: 0.56 km	SEL_{24h}: 0.54 km	N/A	
Fish—swim bladder involved in hearing	SPL for 48 hours: 0.02 km		N/A		SPL for 12 hours: 0.04 km			
Scenario 4 IMR								
VLF/LF cetaceans[108]	N/A		SEL_{24h}: 0.06 km	SEL_{24h}: 0.06 km	SEL_{24h}: 0.59 km	SEL_{24h}: 0.58 km	SPL: 2.20 km	SPL: 2.11 km
HF cetaceans			SEL_{24h}: –	SEL_{24h}: –	SEL_{24h}: 0.06 km	SEL_{24h}: 0.06 km		
VHF cetaceans			SEL_{24h}: –	SEL_{24h}: –	SEL_{24h}: 0.19 km	SEL_{24h}: 0.16 km		
Marine turtles			SEL_{24h}: 0.05 km	SEL_{24h}: 0.05 km	SEL_{24h}: 0.51 km	SEL_{24h}: 0.50 km	N/A	
Fish—swim bladder involved in hearing	SPL for 48 hours: –		N/A		SPL for 12 hours: 0.03 km			

Table 8-27: Animat modelling exposure range ($ER_{95\%}$)[109] to non-impulsive effect criteria for VLF cetaceans

Receptor	Parameter	AINJ onset	TTS onset	Behaviour
Scenario 1				
Acoustic modelling	R_{max}	SEL_{24h}: 0.15 km	SEL_{24h}: 1.65 km	SPL: 7.05 km

[108] VLF and LF results are combined, as the modelling in this scenario was undertaken before the National Marine Fisheries Service updated the thresholds and separated these receptor groups.

[109] A dash (–) indicates the no animats were exposed above the effect criteria.

Receptor	Parameter	AINJ onset	TTS onset	Behaviour
	$R_{95\%}$	SEL_{24h}: 0.14 km	SEL_{24h}: 1.52 km	SPL: 6.71 km
Animat modelling	$ER_{95\%}$ (P_{exp})	SEL_{24h}: <0.01 km (4%)	SEL_{24h}: 0.02 km (77%)	SPL: 1.21 km (97%)
Scenario 2				
Acoustic modelling	R_{max}	SEL_{24h}: 0.10 km	SEL_{24h}: 1.06 km	SPL: 5.29 km
	$R_{95\%}$	SEL_{24h}: 0.09 km	SEL_{24h}: 0.99 km	SPL: 5.10 km
Animat modelling	$ER_{95\%}$ (P_{exp})	SEL_{24h}: –	SEL_{24h}: 0.02 km (65%)	SPL: 0.62 km (83%)
Scenario 3				
Acoustic modelling	R_{max}	SEL_{24h}: 0.08 km	SEL_{24h}: 0.68 km	SPL: 3.89 km
	$R_{95\%}$	SEL_{24h}: 0.07 km	SEL_{24h}: 0.65 km	SPL: 3.73 km
Animat modelling	$ER_{95\%}$ (P_{exp})	SEL_{24h}: –	SEL_{24h}: 0.02 km (63%)	SPL: 0.62 km (88%)
Scenario 4				
Acoustic modelling	R_{max}	SEL_{24h}: 0.06 km	SEL_{24h}: 0.59 km	SPL: 2.20 km
	$R_{95\%}$	SEL_{24h}: 0.06 km	SEL_{24h}: 0.58 km	SPL: 2.11 km
Animat modelling	$ER_{95\%}$ (P_{exp})	SEL_{24h}: –	SEL_{24h}: –	SPL: 0.54 km (92%)

8.6.2.2 Helicopter operations

Helicopter operations may generate underwater sound emissions during take-off and landing on the survey vessel—when the helicopter ascends/descends to the helideck, the air borne engine sound emissions may ensonify the top of the water column.

Sound emitted from helicopter operations is typically below 500 Hz (Ref. 320). 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. 320; Ref. 321). Richardson et al. (Ref. 320) report that helicopter sound was audible in air for four minutes before it passed over underwater hydrophones, but detectable underwater for only 38 seconds at 3 m depth, and 11 seconds at 18 m depth.

Given the nature of helicopter operations (e.g. crew transfers) within the scope of this EP, and based on available literature that the penetration of air-borne sounds into the water column is expected to be negligible, helicopter operations are not evaluated further within this impact and risk assessment.

8.6.2.3 ROV/AUV operations

The sound emissions from the propulsion systems of work class ROVs are not widely quantified in literature; however, similar to vessels they likely consist of machinery and propulsion sounds which depends upon the size, number, and speed of the propeller blades (Ref. 322). AUVs typically have few moving parts and use low propulsion power, and as such have a very low underwater sound signature (Ref. 323). Measurements of an AUV indicated a broadband (100–5,000 Hz) source level of 124 dB re 1 µPa @ 1 m (Ref. 323).

Advice from JASCO indicates that since ROVs are likely to be operated close to large vessels (due to the tether), the propulsion sounds are likely to be a comparatively minor contributor to the sound field and not increase effect ranges from the vessel itself except in very close proximity to the ROV (Ref. 322). Similarly, even if the ROV is operated in deep water, and could be considered as a separate source at close range, the overall horizontal ranges to effect criteria due to the vessel are likely to remain unchanged (Ref. 322). The underwater sound radiated by the propulsion system of an AUV is typically low compared to the sounds generated by its payload device (Ref. 322).

As such, ROV and AUV operations are not evaluated further within this impact and risk assessment.

8.6.2.4 Acoustic survey equipment (SSS and MBES)

Acoustic survey techniques such as SSS and MBES generate non-impulsive sound emissions; however, these are high frequency sound emissions which attenuate rapidly in water. To estimate the distances at which effect criteria may be exceeded by SSS and MBES systems, JASCO utilised a simple spreading loss model to calculate estimates of sound propagation (Ref. 322). A spreading loss model was considered an appropriate modelling approach given the high frequency (and corresponding small wavelength) of the source sound.

A SSS system at two different operating frequencies and two different MBES systems were modelled (Table 8-28). Both the SSS (operating frequencies of 100 kHz and 400 kHz) and MBES (operating frequencies of 100 kHz and 300 kHz) equipment modelled would not be heard by VLF and LF cetaceans, fish,

and turtles; and therefore, no effects were predicted. The spreading loss modelling indicated the following for HF and VHF cetaceans:

- SSS
  - maximum horizontal distance of ~340–705 m to the behavioural effect criteria
  - maximum distance to reach SEL_{24h} effect criteria for AINJ onset was up to ~4 m for VHF cetaceans; the effect criteria for HF cetaceans was not reached
  - maximum distance to reach SEL_{24h} effect criteria for TTS onset was up to ~1 m and ~109 m for HF and VHF cetaceans respectively (Ref. 322).
- MBES
  - maximum horizontal distance of ~565–1,212 m to the behavioural effect criteria
  - maximum distance to reach SEL_{24h} effect criteria for AINJ onset was up to ~1 m and ~118 m for HF and VHF cetaceans respectively
  - maximum distance to reach SEL_{24h} effect criteria for TTS onset was up to ~63 m and ~469 m for HF and VHF cetaceans respectively (Ref. 322).

Table 8-28: SSS and MBES equipment source levels

Equipment type	Operational frequency (kHz)	Source level (dB re 1 µPa m)
SSS	100	201
	400	205
MBES	100	224
	300	218

8.6.3 Concurrent petroleum activities

Other CAPL petroleum activities

As identified in Sections 4.11 and 5.4.6, there may be other CAPL petroleum activities occurring during the installation and pre-commissioning activities. Based on deterministic and probabilistic schedules, combinations of the following vessel-based activities may also occur concurrently:

- GS3 drilling
- J-IC installation and/or pre-commissioning/commissioning
- Backfill fields site investigation surveys for the C&D or Chandon fields.

JASCO has undertaken acoustic modelling studies (Ref. 314; Ref. 315; Ref. 324; Ref. 325) that have been used to inform the risk assessment associated with non-impulsive underwater sound emissions from concurrent petroleum activities.

Table 8-29 presents a range of scenarios that have been used to investigate the risks associated with potential concurrent CAPL petroleum activities. The predicted ensonified areas above the marine mammal behavioural effect criteria associated with each set of potential concurrent activities has also been presented as an approximate proportion of the width of the pygmy blue migration BIA. Depending on the combination and location of activities, these may ensonify ~20–43% or ~16–49% (based on the narrower and broader sections) of the width of the

pygmy blue whale migration BIA at any one time. Note: As per the description in Section 5.3.3.1.1, pygmy blues whales have been observed to migrate through areas broader than just the BIA, particularly during their southern migration.

Based on a similar approach, an approximate worst-case length of the pygmy blue whale BIA ensonified at the SEL_{24h} TTS onset criteria has been also presented in Table 8-29 to investigate the potential risks associated with concurrent activities and potential accumulated exposure. Given the northeast to southwest orientation of the BIA (and therefore of the migrating whales) versus the general northwest to southeast spread of activities, individual whales would not typically swim through multiple ensonified areas. Travel speed for pygmy blue whales during migration was estimated by Thums et al. (Ref. 50), as ~2.4 km/h during northern migration, and ~4.0–5.0 km/h during southern migration. Using these travel speeds, the estimated duration of exposure within SEL_{24h} TTS ensonified areas was estimated at up to ~1.6 hours during northern migration or up to ~1.0 hours during southern migration (i.e. substantially less than the duration that would be required for TTS onset to occur within the SEL_{24h} ensonified area).

Once installed and operational, CAPL's J-IC SCSt will be a long-term subsea source of low frequency non-impulsive sound. Given the location of the SCSt in deep water (~1,345 m), the deep ocean sound channel (centre estimated at ~800–1,000 m water depth at J-IC location) has the most significant effect on propagation of subsea sound emissions from the SCSt. Upward travelling energy away from the SCSt is refracted downward, and energy reflected from the seabed is also refracted back downward, which results in most of the acoustic energy occurring in the lower water column and less acoustic energy propagating into the upper water column (Ref. 4). Acoustic modelling of the predicted ensonified area above the behavioural effect criteria for marine mammals indicates a maximum horizontal distance from the subsea compression station of ~1.1 km, extending vertically ~950 m from the seabed to ~400 m from the sea surface (Ref. 5). Interaction between the J-IC SCSt ensonified area and any ensonified area from installation and pre-commissioning vessel activities is not expected; as such, J-IC operations are not evaluated further within this risk assessment.

Other operator petroleum activities

Section 5.4.6 also identifies other operator petroleum activities that may be occurring within the vicinity of the OA during the indicative schedule for the G&E installation and pre-commissioning activities. Third-party activities that may result in non-impulsive underwater sound emissions include:

- Scarborough offshore facility and trunkline operations (Woodside)
- Julimar-Brunello P&A (Woodside)
- Pluto 4D MSS (Woodside).

These activities are all spatially separate (~20 m to ~18.5 km) from the OA. However, if the activities were to occur at the same as the G&E installation and pre-commissioning activities, they are generally not close enough to result in overlapping ensonified areas, except potentially for the proposed seismic survey. The Pluto OA is only ~20 m from the OA; however, the active source and acquisition areas (i.e. where most vessel-based activity will occur) are >11 km from the OA. Any additional ensonified areas within the broader NWS area from these activities would be intermittent and temporary (e.g. weeks to months depending on the Woodside campaign).

Given the spatial separation of the non-impulsive sound sources from other operator petroleum activities to G&E, these are considered a minor contribution to the sound field around G&E and as such are not considered further within this impact and risk assessment.

Table 8-29: Potential concurrent CAPL petroleum activity scenarios and estimated width of the pygmy blue whale migration BIA exposed to sound above the behavioural effect criteria for marine mammals

Scenario	Potential concurrent activities	Indicative vessel fleet	Indicative duration of concurrent activities	Estimated width of ensonified area(s) within the pygmy blue whale BIA above behavioural effect criteria for marine mammals	Potential duration of exposure of a pygmy blue whale above the behavioural effect criteria for marine mammals	Potential duration of exposure of a pygmy blue whale above the TTS onset effect criteria for VLF cetaceans
Notes for interpreting values presented in this table. • the 'indicative duration of concurrent activities' refers to a schedule duration (i.e. not a duration that an individual pygmy blue whale would be exposed to these activities given that their presence is seasonal and transitory). • the proportion of the width of the pygmy blue whale migration BIA[110] ensonified above the behavioural effect criteria is presented; however, as described in Section 5.3.3.1.1 migration occurs over a broader area than just the BIA. • the estimate of exposure duration based on migrating swim speeds[111] is presented to give a more realistic 'duration' of concurrent activities applicable to a migrating pygmy blue whale compared to the 'schedule duration'; noting that the behavioural effect criteria is not a cumulative exposure criteria, whereas the TTS onset effect criteria is a cumulative exposure criteria.						
SIM-3A	J-IC pre-commissioning/ commissioning	1 x MSV under DP, with a supply vessel alongside for 8 hours.	Estimated ~2 months for duration of GS3 PIC pre-lay activities.	Estimated R_{max} for the concurrent scopes are 3.89 km, 6.34 km, and 3.89 km respectively. Therefore, potential total width of ensonified areas is up to ~28.2 km, which represents ~26% (21–30%) of the width of the migration BIA. Note: These activities could result in up to three discrete ensonified areas.	The estimated longest length of ensonified area above the behavioural effect criteria is ~12.6 km; this is based on both GS3 drilling and PIC pre-lay activities occurring in vicinity of G&E DC. During northern and southern migrations this may result in ~5.2 hours and ~2.5–3.1 hours respectively of exposure to sound above the behavioural effect criteria (assuming no avoidance behaviours).	The estimated longest length of ensonified area above the TTS onset effect criteria is ~2.6 km; this is based on both GS3 drilling and PIC pre-lay activities occurring in vicinity of G&E DC. During northern and southern migrations an animal may be within this ensonified area for ~1.1 hours and ~0.5–0.7 hours respectively (i.e. substantially less than the 24-hr duration
	GS3 drilling	Drillship under DP and drilling, 1 x MSV under DP, and one PSV on standby.				
	GS3 PIC (pre-lay)	1 x CSV under DP, with a supply vessel alongside for 8 hours.				

[110] Note: The width of the pygmy blue whale migration BIA varies; as such these proportions are presented based on the distance through the centre of the Backfill Fields Development Area, and then the narrow width to the north and broader width to the south (these BIA widths are consistent with those used within the Gorgon Backfill Fields Development OPP; Ref. 3).

[111] Assumed northern migration swim speed is ~2.4 km/hr, and southern migration is ~4-5 km/hr (see Section 5.3.3.1.1).

Scenario	Potential concurrent activities	Indicative vessel fleet	Indicative duration of concurrent activities	Estimated width of ensonified area(s) within the pygmy blue whale BIA above behavioural effect criteria for marine mammals	Potential duration of exposure of a pygmy blue whale above the behavioural effect criteria for marine mammals	Potential duration of exposure of a pygmy blue whale above the TTS onset effect criteria for VLF cetaceans
						associated with the TTS effect criteria).
SIM-3B	J-IC installation and pre-commissioning/ commissioning	1 x heavy lift vessel (HLV) and 2 x HTVs, all under DP.	Estimated ~2 months for duration of GS3 PIC pre-lay activities.	Estimated R_{max} for the concurrent scopes are 6.72 km, 6.34 km, 3.89 km and 3.44 km respectively. Therefore, potential total width of ensonified areas is up to ~40.8 km, which represents ~37% (30–43%) of the width of the migration BIA. Note: These activities could result in up to four discrete ensonified areas.	The estimated longest length of ensonified area above the behavioural effect criteria is ~13.4 km; this is based on J-IC activities. During northern and southern migrations this may result in ~5.6 hours and ~2.7–3.4 hours respectively of exposure to sound above the behavioural effect criteria (assuming no avoidance behaviours).	The estimated longest length of ensonified area above the TTS onset effect criteria is ~3.1 km; this is based on J-IC activities. During northern and southern migrations an animal may be within this ensonified area for ~1.3 hours and ~0.6–0.8 hours respectively (i.e. substantially less than the 24-hr duration associated with the TTS effect criteria).
		1 x MSV under DP, with a supply vessel alongside for 8 hours.				
	GS3 drilling	Drillship under DP and drilling, 1 x MSV under DP, and one PSV on standby.				
	GS3 PIC (pre-lay)	1 x CSV under DP, with a supply vessel alongside for 8 hours.				
	Chandon site survey	1 x survey vessel under DP, with a resupply vessel alongside for 8 hours.				
SIM-4A	GS3 drilling	Drillship under DP and drilling, 1 x MSV under DP away, and one PSV on standby.	Estimated ~2 months for duration of GS3 PIC pipelay activities.	Estimated R_{max} for the concurrent scopes are 6.34 km and 7.05 km respectively. Therefore, potential total width of ensonified areas is up to ~26.8 km, which represents ~25% (20–28%) of the width of the migration BIA.	The estimated longest length of ensonified area above the behavioural effect criteria is ~24.0 km; this is based on both GS3 drilling and PIC pipelay activities occurring in vicinity of G&E DC. During northern and southern	The estimated longest length of ensonified area above the TTS onset effect criteria is ~3.9 km; this is based on both GS3 drilling and PIC pipelay activities occurring in vicinity of G&E DC. During northern and
	GS3 PIC (pipelay)	As per Scenario 1 in Table 8-24.				

Scenario	Potential concurrent activities	Indicative vessel fleet	Indicative duration of concurrent activities	Estimated width of ensonified area(s) within the pygmy blue whale BIA above behavioural effect criteria for marine mammals	Potential duration of exposure of a pygmy blue whale above the behavioural effect criteria for marine mammals	Potential duration of exposure of a pygmy blue whale above the TTS onset effect criteria for VLF cetaceans
				Note: These activities could result in up to two discrete ensonified areas.	migrations this may result in ~10.0 hours and ~4.8–6.0 hours respectively of exposure to sound above the behavioural effect criteria (assuming no avoidance behaviours).	southern migrations an animal may be within this ensonified area for ~1.6 hours and ~0.8–1.0 hours respectively (i.e. substantially less than the 24-hr duration associated with the TTS effect criteria).
SIM-4B	J-IC installation and pre-commissioning/ commissioning	1 x MSV under DP, with a supply vessel alongside for 8 hours.	Estimated ~2 months for duration of GS3 PIC pipelay activities.	Estimated R_{max} for the concurrent scopes are 6.72 km, 6.34 km, 7.05 km and 3.44 km respectively. Therefore, potential total width of ensonified areas is up to ~47.1 km, which represents ~43% (35–49%) of the width of the migration BIA. Note: These activities could result in up to four discrete ensonified areas.	As above for SIM-4A.	As above for SIM-4A.
		1 x HLV and 2 x HTVs, all under DP				
	GS3 drilling	Drillship under DP and drilling, 1 x MSV under DP, and one PSV on standby.				
	GS3 pipelay	As per Scenario 1 in Table 8-24.				
	Chandon site survey	1 x survey vessel under DP, with a resupply vessel alongside for 8 hours				
SIM-6B	GS3 drilling	Drillship under DP and drilling, 1 x MSV under DP, and one PSV on standby.	Estimated ~4 month for duration of	Estimated R_{max} for the concurrent scopes are 6.34 km and 4.46 km respectively. Therefore,	The estimated longest length of ensonified area above the behavioural effect criteria is ~12.9 km;	The estimated longest length of ensonified area above the TTS onset effect criteria is ~2.9 km;

Scenario	Potential concurrent activities	Indicative vessel fleet	Indicative duration of concurrent activities	Estimated width of ensonified area(s) within the pygmy blue whale BIA above behavioural effect criteria for marine mammals	Potential duration of exposure of a pygmy blue whale above the behavioural effect criteria for marine mammals	Potential duration of exposure of a pygmy blue whale above the TTS onset effect criteria for VLF cetaceans
	GS3 subsea installation	1 x HCV and 1 x DPTV under DP, with a supply vessel alongside for 8 hours.	subsea installation.	potential total width of ensonified areas is up to ~21.6 km, which represents ~20% (16–23%) of the width of the migration BIA. Note: These activities could result in up to two discrete ensonified areas.	this is based on both GS3 drilling and subsea installation occurring in vicinity of G&E DC. During northern and southern migrations this may result in ~5.4 hours and ~2.6–3.2 hours respectively of exposure to sound above the behavioural effect criteria (assuming no avoidance behaviours).	this is based on both GS3 drilling and subsea installation activities occurring in vicinity of G&E DC. During northern and southern migrations an animal may be within this ensonified area for ~1.2 hours and ~0.6–0.7 hours respectively (i.e. substantially less than the 24-hr duration associated with the TTS effect criteria).

8.6.4 Environmental impact and risk evaluation

Non-impulsive underwater sound emissions may result in a:

- localised and temporary change in ambient underwater sound
- potential change in behaviour of marine fauna
- potential auditory impairment or injury to marine fauna.

8.6.4.1 Consequence evaluation

8.6.4.1.1 Impact: Localised and temporary change in ambient underwater sound

Non-impulsive underwater sound emissions from the petroleum activity will locally increase underwater sound levels from ambient levels.

Underwater acoustic recordings between 2006 and 2017 from the NWS found natural physical processes (e.g. wind), anthropogenic (e.g. ships) and biological noise (e.g. whale song) contributed to the soundscape for the region (Ref. 326).

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 vocalise near simultaneously in reasonably close proximity to each other (Ref. 327). Low-frequency ambient sound levels (20–500 Hz) are frequently dominated by distant shipping plus some great whale species. Above the 300–400 Hz range weather-related sounds exceed shipping sounds, and wind wave conditions and nearby rainfall dominate the 500–50,000 Hz range (Ref. 327). Soundscape monitoring in the Jansz area undertaken during 2021–2023 (Ref. 40) identified that the dominant sources of sound at low frequencies (<100 Hz) were shipping and baleen whales, and in the mid-frequencies (0.1–1 kHz) was wind.

Non-impulsive underwater sound can be generated from multiple sources (Sections 8.6.1 and 8.6.2) associated with the petroleum activity. All sources are temporary, with durations varying in the order of days or weeks (e.g. acoustic surveys) and up to five to six months for general vessel operations during installation and pre-commissioning activities.

Acoustic modelling of underwater sound levels associated with vessel-based activities for the petroleum activity found the largest radii to effect criteria (marine mammal behavioural effect) was ~7.05 km (Table 8-26). Potential concurrent CAPL petroleum activities may result in multiple discrete ensonified areas (Section 8.6.3; Table 8-29).

The worst-case consequence of causing a localised and temporary change in ambient underwater sound from non-impulsive sound sources has been assessed as Incidental (6) and the soundscape will return to ambient levels upon completion of the petroleum activity.

8.6.4.1.2 Risk: Potential change in behaviour of marine fauna

Marine mammals

Acoustic modelling indicated that the R_{max} from the source to SPL behavioural effect criteria for marine mammals was ~7.05 km, ~5.29 km, ~3.89 km and ~2.20 km for pipelay and subsea infrastructure installation, pre-commissioning and IMR activities, respectively (Table 8-26).

As identified in Section 5.3.3.1, several marine mammal species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the OA. The threatened and/or migratory cetaceans that may be present within the OA are predominantly VLF, LF, or HF cetaceans. VHF cetaceans were also identified within the PMST report as species or species habitat that may occur within the OA; however, these species are not listed as threatened and/or migratory under the EPBC Act.

The predicted ensonified area above the behavioural effect criteria for marine mammals also intersect with a migration BIA for pygmy blue whales.

The presence of pygmy blue whales within the Jansz region has been recorded from late-March to mid-September (peak late-May to June) during northern migration, and during early-October to late-January (peak late-November and early-December) for the southern migration (Section 5.3.3.1.1; Table 5-16). No other known BIAs, HCTS of marine mammal species, or aggregation areas intersect with the OA; as such, it is expected that any presence of cetacean species would be of a transitory nature.

Behavioural changes to marine mammals from underwater sound may include alterations of dive patterns, swim speeds, swim orientation, group cohesiveness, and changes in acoustic behaviour (Ref. 328). However, given the largest predicted R_{max} of ~7.05 km, the energetic cost of avoiding the sound source is small in the context of the greater migratory and/or transitory movements (e.g. several thousands of kilometres) of the cetacean species that may be present within the vicinity of the OA.

Pygmy blue whales

A more realistic prediction of non-impulsive underwater water sound exposures for migrating pygmy blue whales was undertaken using animat modelling (Section 8.6.2.1). For the modelled scenarios, the maximum exposure range ($ER_{95\%}$) to reach the behavioural effect criteria for marine mammals was ~1.21 km for pipelay installation and ≤0.62 km for subsea infrastructure installation, pre-commissioning and IMR activities (Table 8-27); these are reductions of ~75–88% in predicted ensonified area for pygmy blue whales.

For pipelay installation this represents ~2.2% (1.8–2.5%)[112] of the width the pygmy blue whale BIA. For subsea infrastructure installation, pre-commissioning and IMR activities this represents ~1.1% (0.9–1.3%) of the width the pygmy blue whale BIA. The energetic cost of avoiding the non-impulsive sound emissions from the petroleum activity (e.g. a few kilometres) is small in the context of the greater migratory movements (e.g. several thousands of kilometres) of pygmy blue whales migrating between Southern Ocean and Indonesian waters (Section 5.3.3.1.1). Therefore, the spatial extent of areas ensonified above the behavioural effect criteria and the potential degree of disturbance (e.g. deviation in path, avoidance, etc.) within the pygmy blue whale migration BIA is highly unlikely to alter the overall energy budget of migrating whales.

As described in the *Conservation Management Plan for the Blue Whale* (Ref. 42), Foraging Areas for blue whales are generally associated with areas of high primary productivity that can support sufficient densities of krill, such as oceanographic upwelling or frontal systems. There are no defined ‘Foraging

[112] Note: The width of the pygmy blue whale migration BIA varies; as such these proportions are presented based on the distance through the centre of the Backfill Fields Development Area, and then the narrow width to the north and broader width to the south (these BIA widths are consistent with those used within the Gorgon Backfill Fields Development OPP; Ref. 3).

Areas' or 'Known Foraging Areas' within north-west WA. The closest of these types of areas to the OA are described as 'Possible Foraging Areas' (Ref. 42) and are >210 km south-west (around Ningaloo/North West Cape) and >880 km north-east (around Scott Reef) of the OA. Thums et al. (Ref. 50) identified 'most important areas' for foraging for the pygmy blue whale based on proxy indicators. The use of these 'most important areas' is not expected to be continual throughout the year but associated with pygmy blue whale presence during migration periods. The OA does not intersect with these most important areas for foraging (Figure 5-5); the predicted ensonifed areas above the behavioural effect criteria also do not extend into these most important foraging areas.

Pygmy blue whales have been observed to exhibit traits of a mixed capital-income breeding strategy, utilising both known foraging areas and intermittent/opportunistic foraging (Ref. 54). Habitat suitability analyses describe the north-west of WA (extending offshore from the continental shelf) as suitable foraging habitat; however, notes that the suitability of habitat is related to dynamic and localised oceanic processes that may occur at different temporal scales (Ref. 52; Section 5.3.3.1.1). Opportunistic foraging areas are also known to be dynamic given their dependence on presence of prey (Ref. 50; Ref. 55). Tagging studies suggest a reliance on more ephemeral prey in north-west Australia compared to south-west Australia where whales have high residency (Ref. 54).

A review by Pattiaratchi (Ref. 58) demonstrated that there were no oceanographic features (including bathymetry, currents and eddies, chlorophyll concentrations) within the Jansz area that may lead to higher primary productivity and/or an increased likelihood of pygmy blue whale foraging in the area. Sonar surveys to determine the presence of sufficient biomass of prey to support foraging pygmy blue whales were undertaken by McCauley and Erbe (Ref. 59). This study indicated that the Jansz area may be able to support opportunistic feeding in surface waters (<100 m water depth) for short durations (hours); however, in comparison to known prey aggregations observed at Perth Canyon, the biomass observed at the Jansz area is unlikely to represent a consistent and reliable feeding area (Ref. 59). Therefore, the Jansz field and surrounding areas (including the OA), are not considered to represent a Foraging Area, but may provide opportunistic foraging if the environmental conditions provide for the aggregation of prey at sufficient quantities at the time a pygmy blue migrates through the area. This is consistent with studies of tagged pygmy blue whales that demonstrated more opportunistic foraging in north-west Australia, compared to southern areas (e.g. Perth Canyon, Ningaloo) (Ref. 54).

Therefore, while a small proportion of the pygmy blue whale migration BIA may be ensonified above behavioural effect criteria by the petroleum activity, for this to interrupt opportunistic foraging also requires the presence of prey to coincide with the transit of a migrating whale. The energetic cost of disturbing an opportunistic feeding event for a pygmy blue whale within or adjacent to the OA is likely to be small in the context of the greater migratory movements (e.g. several thousands of kilometres) and therefore the scale of potential opportunistic foraging between Southern Ocean and Indonesian waters.

Summary

The worst-case consequence of non-impulsive sound resulting in a change in the behaviour of up to a small proportion of the migrating pygmy blue whales and this subsequently causing a reduction in fitness due to deviations in migratory path or disturbance of an opportunistic foraging event, has been assessed as Minor (5) as

the individuals are expected to recover in the short-term and with no long-term effect on population viability.

As there are no other known BIAs, HCTS of marine mammal species, or aggregation areas that intersect with the OA, the consequence of a change in the behaviour of a small number of transitory or migratory individuals of other marine mammal species is considered to be lower than that determined for pygmy blue whales.

Concurrent activities

Acoustic modelling was used to consider the aggregate contribution of non-impulsive sound emissions from potential concurrent CAPL petroleum activity scenarios (Section 8.6.3). The concurrent scenarios may result in several discrete ensonified areas at the same time; some of these may overlap for periods (e.g. due to the moving vessels during survey, pipelay, or umbilical installation scopes).

These concurrent CAPL petroleum activities will ensonify a greater area of the pygmy blue whale BIA compared to the activities covered in this EP in isolation, and as such this forms the basis of the following evaluation.

Based on the range of potential concurrent activity scenarios that are described in Section 8.6.3, the cumulative ensonified area above the marine mammal behavioural effect criteria may represent ~20–43% or ~16–49% (based on the narrower and broader sections) of the width of the migration BIA for the pygmy blue whale (Table 8-29). However, as described in Section 5.3.3.1.1, the actual migration corridor utilised by pygmy blue whales is broader that the designated BIA (during both northern and southern migrations) and as such the proportion of migratory corridor exposed to sound above the behavioural effect criteria would be lower than what is predicted above. For the same range of potential concurrent activity scenarios, the estimated duration a pygmy blue whale may be exposed to sounds above the behavioural effect criteria ranged ~5.2–10.0 hours during northern migration or ~2.5–6.0 hours during southern migration (Table 8-29).

Therefore, underwater sound associated with the potential concurrent CAPL petroleum activities may result in individual migrating pygmy blue whales making spatial deviations within the migration BIA; however, the energetic cost of these deviations (e.g. tens of kilometres) is small in the context of the greater migratory movements (e.g. thousands of kilometres). Further, there is no evidence to indicate that sound levels below the behavioural effect criteria would elicit a behavioural response from marine mammals. As such, for the case of multiple discrete ensonified areas, it would be expected that a marine mammal would be able to travel between these areas without disturbance.

The predicted ensonifed areas above the behavioural effect criteria do not intersect with areas identified as ‘most important’ for foraging. Foraging in the vicinity of the Jansz area is opportunistic and dependent on the presence of prey in sufficient quantities. There are no geomorphic or oceanographic features present in the Jansz area that would provide for a consistent and reliable food source. Therefore, the energetic cost of disturbing an opportunistic feeding event for a pygmy blue whale within the area of CAPL activities is small in the context of the greater migratory movements (e.g. several thousands of kilometres) and therefore the scale of potential opportunistic foraging events between Southern Ocean and Indonesian waters.

The occurrence of multiple short-term discrete ensonified areas from concurrent CAPL petroleum activities is not expected to change the predicted consequence as evaluated for the individual petroleum activity.

Marine reptiles

Quantitative effect criteria for behavioural responses of marine turtles from non-impulsive sound do not currently exist (Ref. 317). Based on qualitative guidelines from Popper et al. (Ref. 317;Table 8-25) there is a high risk of a behavioural effect in marine turtles within the tens to hundreds of metres from the source; this risk reduces to moderate at hundreds of metres, and low at thousands of metres from the source.

As identified in Section 5.3.3.2, several marine reptiles species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the OA; however, the OA does not overlap with any BIAs or HCTS of the species. Given the OA is in deep (>1,100 m) offshore waters (~75 km to the nearest island), any marine turtle presence is expected to be transient individuals.

The *Recovery Plan for Marine Turtles in Australia* (Ref. 264) states that marine turtles do not have external ears, but potentially use sound for navigation, locating prey and avoiding predators. Previous reports suggest there is no evidence that marine turtles have the anatomical structures needed for echolocation (Ref. 329); whereas their use geomagnetic, water movement (including wave direction), or light cues to navigate has been observed (e.g. Ref. 329; Ref. 330; Ref. 331). The *Recovery Plan for Marine Turtles in Australia* (Ref. 264) identifies noise interference as a threat; however, it also acknowledges that it is not known how marine turtles are affected by sound. Some field evidence has suggested that marine turtles avoid impulsive sound; however, the source of agitation could not be identified, and the avoidance could have been to the vessel and towed equipment themselves (Ref. 317).

The EPBC Act listed marine sea snake species may occur in broader habitats within the NWMR, including some pelagic species such as the yellow-bellied sea snake. Very little is known about the role and sensitivity of hearing in sea snakes (Ref. 332). A study on a *Hydrophis* species indicated that sea snakes are sensitive to low frequency sounds but have relatively low sensitivity compared with bony fishes and marine turtles (Ref. 332).

Therefore, the worst-case consequence of non-impulsive sound resulting in a change in the behaviour of a small number of transitory marine turtles and then subsequently causing a reduction in fitness due to deviations in transitory path, has been assessed as Incidental (6).

Concurrent activities

Potential concurrent CAPL petroleum activities may result in multiple discrete ensonified areas (Section 8.6.3). However, given the predicted distances for behavioural responses in marine turtles to occur (i.e. tens to hundreds of metres from a source), and the transient nature of marine turtle presence (if present) within the OA, the existence of multiple discrete ensonified areas at any one time is not expected to change the predicted consequence as evaluated for the individual petroleum activity.

Fishes, including sharks and rays

Quantitative effect criteria for behavioural responses of fishes from non-impulsive sound do not currently exist (Ref. 317). Based on qualitative guidelines from Popper et al. (Ref. 317;Table 8-25) there is a moderate to high risk of a

behavioural effect in fish (with and without swim bladders), and fish eggs and larvae within the tens to hundreds of metres from the source; this risk reduces to low at thousands of metres from the source.

As identified in Section 5.3.3.3, fishes listed as threatened and/or migratory under the EPBC Act have the potential to occur within the OA; however, the OA does not overlap with any BIAs or HCTS of species.

The fish assemblages observed during surveys (Ref. 32) were predominantly pelagic fishes. Pelagic fishes are generally considered mobile and/or transient in nature (Ref. 71). The demersal fishes observed throughout soft sediment habitats (Ref. 32) are also generally mobile taxa without any site attachment (Ref. 71). Based on the types of species observed, fishes with and without swim bladders may be present within the OA.

The worst-case consequence of non-impulsive sound resulting in a change in the behaviour of a small number of transitory fishes and then subsequently causing a reduction in fitness due to deviations in transitory path, has been assessed as Incidental (6).

Concurrent activities

Potential concurrent CAPL petroleum activities may result in multiple discrete ensonified areas (Section 8.6.3). However, given the predicted distances for behavioural responses in transient fishes to occur (i.e. tens to hundreds of metres from a source), the existence of multiple discrete ensonified areas at any one time is not expected to change the predicted consequence as evaluated for the individual petroleum activity.

8.6.4.1.3 Risk: Potential auditory impairment or injury to marine fauna

Marine mammals

Non-impulsive underwater sound may cause auditory impairment (e.g. TTS, masking) or AINJ to marine mammals. TTS is considered to be a recoverable impairment (Ref. 312) and may or may not reduce fitness (Ref. 317). However, with respect to pygmy blue whales, guidance from the Australian Government has defined both TTS and permanent threshold shift as an auditory injury (Ref. 319).

Acoustic modelling predicted the R_{max} to the AINJ onset effect criteria for all cetacean hearing groups was ≤150 m (Table 8-26). In addition, the animat modelling indicated that no pygmy blue whales were exposed above the AINJ effect criteria except during pipelay activities; however, the AINJ onset was predicted <10 m (Table 8-27). Note: The AINJ effect criteria is an accumulated exposure metric. The predicted radius for SEL_{24h} effect criteria does not mean that an animal travelling within this radius of the source will be impacted, but rather that an animal could experience auditory injury if the total accumulated sound energy it receives within the ensonified area exceeds the relevant AINJ onset criteria within a 24-hour period. Theoretically the onset of AINJ effects may also be reached by shorter durations of exposure at higher sound levels. However, given that cetaceans (if present) are expected to be transitory within the vicinity of the OA, the risk of accumulated sound exposure at these close distances for AINJ onset to occur is not considered credible and has not been evaluated further.

Acoustic modelling predicted the R_{max} to the TTS onset effect criteria for VLF cetaceans was ≤1.65 km (Table 8-26). The animat modelling for pygmy blue whales predicted $ER_{95\%}$ distances of just 20 m from the source for TTS onset (Table 8-27). The risk of accumulated sound exposure at these close distances for

TTS onset to occur in VLF cetaceans is not considered credible and has not been evaluated further.

Acoustic modelling predicted the R_{max} to the TTS onset effect criteria for LF, HF, and VHF cetaceans was ≤1.42 km, ≤0.48 km, and ≤1.10 km respectively (Table 8-26). While animat modelling is not available for LF, HF, or VHF cetaceans, similar results to the modelling for pygmy blue whales is expected in that the $ER_{95\%}$ would be substantially reduced from the R_{max} predicted from acoustic propagation modelling. Further, similar to AINJ above, the TTS onset effect criteria is an accumulated exposure metric. As all cetaceans are expected to be transient within the vicinity of the OA, and that behavioural responses are predicted at distances much larger than those for TTS onset, the risk of accumulated sound exposure for TTS onset to occur in cetaceans is not considered credible and has not been evaluated further.

Acoustic masking occurs when the ability to detect, recognise, and/or interpret a sound of interest is degraded by the presence of another sound (Ref. 333; Ref. 334). Quantitatively, masking refers to the number of decibels by which an auditory detection threshold is raised in the presence of another (masking) sound (Ref. 333). There are multiple factors that can affect acoustic communication, such as: the spectral characteristics of the source, the way this sound propagates through the environment (including loss, scattering, absorption), the subsequent characteristics of the received sound, and the auditory features of the receiver (Ref. 333). As such, masking is a complex and masking levels are difficult to predict for any particular combination of sender, environment, and receiver characteristics (Ref. 333). Masking has the greatest potential to occur when the masking sound (or noise) is at frequencies similar to those of biologically important signals of the animal (Ref. 334). Some marine mammal species respond to masking by stopping vocalisations, some raise the intensity of their vocalisations (Lombard Effect) to be above the noise, and some change the frequency of their vocalisation (Ref. 334). Masking may also result in changes in behaviour or re-locating to quieter environments (Ref. 335; Ref. 336). Given that the source spectra of the vessels within the OA would overlap with the hearing frequency ranges of the marine mammals that may be transiting through the OA, it is possible that some temporary masking of calls may occur.

Therefore, the worst-case consequence of non-impulsive sound resulting in localised and temporary masking effects on up to a small proportion of the migrating pygmy blue whale populations has been assessed as Minor (5) as the individuals are expected to recover in the short-term and with no long-term effect on population viability.

As there are no other known BIAs, HCTS of marine mammal species, or aggregation areas that intersect with the OA, the consequence of localised masking effects in a small number of transitory or migratory individuals of other marine mammal species is considered to be lower than that determined for pygmy blue whales.

Concurrent activities

Acoustic modelling was used to consider the aggregate contribution of non-impulsive sound emissions from potential concurrent CAPL petroleum activity scenarios (Section 8.6.3). The concurrent scenarios may result in several discrete ensonified areas at the same time; some of these may overlap for periods (e.g. due to the moving vessels during survey, drilling, or installation scopes).

These concurrent CAPL petroleum activities will ensonify a greater area of the pygmy blue whale BIA compared to installation and pre-commissioning activities in isolation, and as such this forms the basis of the following evaluation.

For potential concurrent CAPL petroleum activities, estimates of the duration a pygmy blue whale may be within a SEL_{24h} TTS ensonified area were estimated as ~0.5–1.6 hours (Table 8-29); i.e. all substantially less than the 24-hour duration associated with the TTS onset criteria. Like pygmy blue whales, other VLF, LF, HF, or VHF cetaceans are expected to be transient within the vicinity of the OA, and therefore the accumulated exposure for all hearing groups above the TTS onset effect criteria is not considered credible.

Given the mobile and transient nature of cetaceans within the vicinity of the OA, the occurrence of multiple discrete ensonified areas at any one time is not expected to change the predicted consequence as evaluated for the individual petroleum activity.

Marine reptiles

Non-impulsive underwater sound may cause mortality/mortal injury, auditory impairment (e.g. TTS, masking) or auditory injury (e.g. recoverable injury, AINJ) to marine turtles. Data on hearing by sea turtles is very limited (Ref. 317). The qualitative effect criteria from Popper et al. (Ref. 317) are based on fish studies. The quantitative effect criteria for AINJ and TTS onset have been developed using marine turtle composite audiograms which were derived from existing hearing data from freshwater turtles (Ref. 316).

Based on the qualitative guidelines from Popper et al. (Ref. 317; Table 8-25) there is a low risk of mortality and potential mortal injury or recoverable injury to marine turtles at all relative distances from the source. Further, it is noted in Popper et al. (Ref. 317) that there is no direct evidence of mortality or potential mortal injury to marine turtles from ship sound emissions. As such mortality, potential mortal injury, and recoverable injury to marine turtles is not considered credible and has not been evaluated further.

Based on the qualitative guidelines, there is a high risk of masking within tens to hundreds of metres from the sound source (Ref. 317; Table 8-25). Non-impulsive sound of any level that is detectable by a marine turtle can mask signal detection, and thus may have a pervasive effect on behaviour; however, the consequences of this masking and any attendant behavioural changes for the survival of marine turtles are unknown (Ref. 317).

Results from acoustic modelling against the quantitative AINJ onset effect criteria predicted an R_{max} of ~50–100 m (Table 8-26). Given that marine turtles (if present) are expected to be transitory within the vicinity of the OA, the risk of accumulated sound exposure at these close distances for AINJ onset to occur is not considered credible and has not been evaluated further.

Results from acoustic modelling against the quantitative TTS onset effect criteria predicted an R_{max} of ≤1.24 km (Table 8-26). As described above, the TTS onset effect criteria is an accumulated exposure metric. The predicted radius for the SEL_{24h} effect criteria does not mean that a marine turtle travelling within this radius of the source will be impacted, but rather that an animal could experience auditory impairment if the total accumulated sound energy it receives within the ensonified area exceeds the relevant TTS effect criteria within a 24-hour period. Theoretically the onset of TTS effects may also be reached by shorter durations of exposure at higher sound levels. Studies on freshwater turtles showed that most TTS recovered within approximately one hour; with some longer recovery times

associated with a larger magnitude initial shift (Ref. 337 and Ref. 338 as cited in Ref. 316). However, given the OA is in deep (>1,100 m) offshore waters (~75 km to the nearest island), any marine turtle presence is expected to be only transient individuals, which would therefore reduce the risk of auditory effects from accumulative sound exposures at small distances from the sound source from occurring. As such TTS and AINJ to turtles is not considered credible and has not been considered further.

Therefore, the worst-case consequence of non-impulsive sound resulting in localised masking effects to a small number of transitory marine turtles has been assessed as Incidental (6).

Concurrent activities

Potential concurrent CAPL petroleum activities may result in multiple discrete ensonified areas (Section 8.6.3). However, given the predicted distances for masking in marine turtles to occur (i.e. tens to hundreds of metres from a source), and the transient nature of marine turtle presence (if present) within the OA, the existence of multiple discrete ensonified areas at any one time is not expected to change the predicted consequence from that evaluated for the individual petroleum activity.

Fishes, including sharks and rays

Non-impulsive underwater sound may cause mortality/mortal injury, auditory impairment (e.g. TTS, masking) or auditory injury (e.g. recoverable injury) of fishes. permanent threshold shift is generally associated with damage and loss of hair cells in the inner ear; however, fishes can regenerate these sensory hair cells and as such permanent threshold shift is not expected to occur (Ref. 317; Ref. 339). Quantitative effect criteria for mortality or auditory impairment to most fishes do not currently exist (Ref. 317).

Based on the qualitative guidelines from Popper et al. (Ref. 317; Table 8-25) there is a low risk of mortality or potential mortal injury in fish (with and without swim bladders), fish eggs and fish larvae, at all relative distances from the source. Further, it is noted in Popper et al. (Ref. 317) that there is no direct evidence of mortality or potential mortal injury to sea turtles from ship sound emissions. As such, mortality or potential mortal injury to fishes (including sharks) is not considered credible and has not been evaluated further.

Based on qualitative guidelines from Popper et al. (Ref. 317; Table 8-25) there is a low risk of recoverable injury to fish with no swim bladder, fish with a swim bladder not involved in hearing, fish eggs and fish larvae at all relative distances from the source. Any presence of fish within the OA is expected to be of a transient nature (Section 5.3.3.3). As such, recoverable injury to fish with no swim bladder (including sharks), fish with a swim bladder not involved in hearing, and fish eggs and fish larvae is not considered credible and has not been evaluated further.

Based on the qualitative guidelines from Popper et al. (Ref. 317; Table 8-25) there is a moderate risk of TTS onset in fish with no swim bladder (including sharks) and fish with a swim bladder not involved in hearing within tens of metres from the source; this risk reduces to low within hundreds of metres of the source. The risk of TTS onset in fish eggs and fish larvae is low at all relative distances from the source (Ref. 317; Table 8-25). Popper and Hawkins (Ref. 340) reported that fishes recovered from a TTS with a return to normal hearing levels within hours to several days. Any presence of fish within the OA is expected to be of a transient nature (Section 5.3.3.3). As such, TTS to fish with no swim bladder (including

sharks), fish with a swim bladder not involved in hearing, and fish eggs and fish larvae is not considered credible and has not been evaluated further.

For fish with a swim bladder involved in hearing, acoustic modelling against the quantitative effect criteria indicated that fish within ~30–70 m from the activities for a 12 hour period may be at risk of the onset of TTS, and within ~20–50 m from the installation and pre-commissioning activities for an extended 48 hours period may be at risk of a recoverable injury (Table 8-26). Note that the AINJ effect criteria was not reached for IMR activities (Table 8-26). The modelled non-impulsive vessel sound sources assume the radiating sound is emanating from a single point source; whereas in reality the sound will be emanating from each individual thruster, some of which have significant spatial separation (reflective of the length of the vessels) beyond the predicted ranges of recoverable injury or TTS onset. Accordingly in real world conditions it is not considered credible that the quantitative effect criteria for fishes with swim bladders involved in hearing would be reached.

Based on the qualitative guidelines from Popper et al. (Ref. 317; Table 8-25) there is a moderate to high risk of masking to fish (with and without swim bladders) at all relative distances from the source; this differs to fish eggs and fish larvae which are considered at high risk within tens of metres, but the risk reduces to low at thousands of metres (Ref. 317; Table 8-25). Non-impulsive sound of any level that is detectable by fishes can mask signal detection, and thus may have a pervasive effect on fish behaviour; however, the consequences of this masking and any attendant behavioural changes for the survival of fishes are unknown (Ref. 317).

Therefore, the worst-case consequence of non-impulsive sound resulting in localised masking effects to a small number of transitory fishes has been assessed as Incidental (6).

Concurrent activities

Potential concurrent CAPL petroleum activities may result in multiple discrete ensonified areas (Section 8.6.3). However, given the predicted distances for masking in fishes to occur (i.e. tens to thousands of metres from a source), and the transient nature of fish presence (if present) within the OA, the existence of multiple discrete ensonified areas at any one time is not expected to change the predicted consequence from that evaluated for the individual petroleum activity.

8.6.4.2 ALARP decision context justification

Vessel and helicopter operations are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential impacts and risks associated with underwater sound emissions from these types of activities are managed through control measures aligned with applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding underwater sound emissions from the petroleum activity by relevant persons during consultation in preparing this EP.

The potential impacts and risks from underwater sound emissions are considered lower-order impacts in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect. However, aligned with the adaptive management framework for pygmy blue whales within the Backfill Fields Development OPP (Ref. 3) additional control measures have also been identified

and evaluated to demonstrate that risks have been reduced to ALARP and can be managed to acceptable levels.

8.6.4.3 Control measures

Table 8-30 and Table 8-31 detail the control measures relevant to this aspect.

Table 8-30: Good practice control measures relevant to Planned emissions—Underwater sound (non-impulsive)

CM	Description
CM-15: Vessels under transit or on standby within the OA	For vessels under transit or on standby within the OA, the following cetacean interaction mitigation will be implemented: • caution and no approach zones for cetaceans as described in EPBC Regulations 2025 – Part 8 Division 8.1 – Interacting with cetaceans • vessels must operate at ≤6 knots within caution zones or when moving away to maintain a no-approach zone distance. Note: For Extended Caution Zones applicable to managing potential risks to pygmy blue whales associated with underwater sound emissions, refer to **CM-17**.
CM-16: Helicopters under transit within the OA	For helicopters under transit within the OA, the following cetacean interaction mitigation will be implemented: • height and distance from cetaceans as described in EPBC Regulations 2025 – Part 8 Division 8.1 – Interacting with cetaceans.

Table 8-31: Additional control measures for Planned emissions—Underwater sound (non-impulsive)

CM	Benefit	Cost
Schedule campaigns outside seasonal presence of EPBC listed threatened and/or migratory species.	As shown in Table 5-16, activities during any month of the year will result in an overlap with the presence of EPBC Act protected marine fauna. Therefore, avoidance of seasonal sensitivities is not possible, and this control measure has not been evaluated further.	N/A.
CM-17: Vessels under transit or on standby during within the OA—extended caution zone for pygmy blue whales.	Action A.2.3 of the Conservation Management Plan for the Blue Whale (Ref. 42) refers to managing underwater sound such that pygmy blue whales are not displaced from a foraging area. As described in Section 5.3.3.1.1, the OA is not considered to represent a Foraging Area, but may support opportunistic foraging if the environmental conditions provide for the aggregation of prey at sufficient quantities at the time a pygmy blue migrates through the area. Increasing the caution zone for vessels under transit or on standby (i.e. beyond the 300 m for whales under EPBC Regulations 2025) may reduce the likelihood of exposure of a migration pygmy blue whale to underwater sound at	The detection of pygmy blue whales within the vicinity of transiting/standby vessels may lead to increased activity duration and overall costs due to deviations and/or delays. However, the environmental benefit of reducing potential impacts to opportunistically foraging pygmy blue whales is considered to outweigh the operational and financial costs from not implementing this control. Therefore, this control measure has been adopted for use.

CM	Benefit	Cost
	levels that may elicit a behavioural response which may subsequently interrupt an opportunistic foraging event (if one was occurring at the time). However, it is also noted that the energetic cost of disturbing an opportunistic feeding event for a pygmy blue whale within or adjacent to the OA is likely to be small (see Section 8.6.4.1.2). Animat modelling for vessels operating under DP predicted an $ER_{95\%}$ radial distance of ~1.21 km during pipelay activities (Scenario 1; Table 8-27) and ≤0.62 km during subsea installation, pre-commissioning and/or IMR activities (Scenarios 2 to 4; Table 8-27). Vessels operating under DP will generate louder underwater sound than those transiting or on standby, and as such the adoption of these distances from animat modelling provides a highly conservative approach to defining a caution zone for vessels transiting or on standby within the OA. See also Section 10.4 for Extended Caution Zone definitions for the vessel types and activities. Note: The visible distance to the horizon varies based on observer height and weather conditions. If the defined Caution Zone distances are not visible, then observations are to extend to the field-of-view of the bridge-watch. The requirements relating to no approach zones and vessel speed remain consistent with those for whales under the EPBC Regulations in **CM-15**.	
Vessels under transit or on standby within the OA—extended caution zone for other whale species	While the PMST report and CAPL soundscape monitoring do indicate the potential presence of other threatened and/or migratory whale species within the vicinity of the OA, there are no known BIAs, HCTS, or aggregation areas for other whale species that intersect with the OA. The closest BIA is a migration BIA for the humpback whale, ~50 km from the OA. Further, where a conservation advice has been developed for these species (i.e. fin and sei whales), no management actions relating to underwater sound have been identified. All three of these species (humpback, fin, and sei) are also capital breeders, and are	N/A.

CM	Benefit	Cost
	not expected to feed while migrating. The presence of other whale species is expected to be of a transitory nature, and at lower abundance levels (compared to pygmy blue whales given the location of the OA within a migration BIA). While increasing the caution zone for other whale species (i.e. beyond the 300 m under EPBC Regulations 2025) may reduce the likelihood of exposure of a transiting or migrating whale to underwater sound at levels that may elicit a behavioural response, the energetic cost of this behavioural disturbance is considered minimal (see Section 8.6.4.1.2). As such the environmental benefit of an increased caution zone for other whale species is considered of negligible environmental benefit and would not significantly reduce the residual risk. No further evaluation has been undertaken.	
CM-18a: Pre Start-up Visual Observations for pygmy blue whales prior to station holding on DP (daytime).	Underwater sound radiated from vessels is primarily generated by cavitation at the propellers and thrusters; sound levels are typically highest when using these propulsion systems to maintain position (Ref. 314). During GS3 pipelay, installation and pre-commissioning operations, certain activities will require vessels to hold station, such as acoustic surveys, subsea installation, or resupply activities. In these situations, the DP system is a critical safety device. Powering down or shutting down DP during these activities to reduce underwater sound emissions is not considered a reasonable or practicable mitigation measure. However, using a pre start-up visual observation period before commencing activities requiring the vessel/s to hold station on DP, may assist in reducing the risk of eliciting a behavioural response and disrupting an opportunistic foraging event to pygmy blue whales that may already be in the vicinity. CAPL notes that observational evidence from recent CAPL installation campaigns for the J-IC Project indicate that pygmy blue whales appear undisturbed within	No additional personnel costs. The detection of pygmy blue whales may lead to increased activity duration and overall costs due to delayed start-ups. However, the environmental benefit of reducing potential impacts to opportunistically foraging pygmy blue whales, is considered to outweigh the operational and financial costs from not implementing this control. Therefore, control measure has been adopted for use.

CM	Benefit	Cost
	close proximity to installation vessels operating on DP. The whales were observed to exhibit normal behaviour (e.g. diving, breaching, swimming) including continuing to forage and feed. However, in acknowledgement of Action A.2.3 of the Conservation Management Plan for the Blue Whale (Ref. 42), this control measure has been proposed to potentially assist in mitigating the risk of disrupting opportunistic foraging. Before commencing activities that require holding station on DP: • vessel bridge-watch crew will undertake 30 minutes of Pre Start-Up Visual Observations • station holding activities can commence if no whale has been observed within the Predicted Behaviours Effect Zone during the observation period. See also Section 10.4 for related action flow charts and zone definitions for the vessel types and activities. Note: The visible distance to the horizon varies based on observer height and weather conditions. If the defined Potential Behavioural Effect Zone distances are not visible, then observations are to extend to the field-of-view of the bridge-watch.	
CM-18b: Pre Start-up Visual Observations for pygmy blue whales prior to station holding on DP (nighttime)	Implementation of a Pre Start-up Visual Observation period for pygmy blue whales during nighttime operations may afford similar protection from potential impacts from underwater sound emitted by vessels as daytime operations providing the whales can be detected. Technology (e.g. night vision camera or binoculars) may be used to support Pre-Start-up Visual Observations at nighttime, noting that the performance of any technology may have operational limits (range, field-of-view, etc.). Further, as noted above, the observational evidence from daytime operations during recent J-IC installation campaigns do not indicate any disturbance to pygmy blue whale activities due to vessels operating on DP.	The detection of pygmy blue whales during nighttime is likely to be challenging even with the assistance of technology. There will be some small additional costs associated with any technology (night vision camera/binoculars) to support observations. As with daytime operations, the detection of pygmy blue whales during nighttime operations may lead to increased activity duration and overall costs due to delayed start-ups. However, while this control measure is likely to provide only limited environmental benefit, it is considered to outweigh the operational and financial costs from not implementing this control. Therefore, control measure has been adopted for use.

CM	Benefit	Cost
Pre Start-up Visual Observations for other whale species	While the PMST report and CAPL soundscape monitoring do indicate the potential presence of other threatened and/or migratory whale species within the vicinity of the OA, there are no known BIAs, HCTS, or aggregation areas for other whale species that intersect with the OA. The closest BIA is a migration BIA for the humpback whale, ~50 km from the OA. Further, where a conservation advice has been developed for these species (i.e. fin and sei whales), no management actions relating to underwater sound have been identified. All three of these species (humpback, fin, and sei) are also capital breeders, and are not expected to feed while migrating. The presence of other whale species is expected to be of a transitory nature, and at lower abundance levels (compared to pygmy blue whales given the location of the OA within a migration BIA). While pre start-up observations may reduce the likelihood of exposure of other whale species to underwater sound at levels that may elicit a behavioural response, the energetic cost of this behavioural disturbance is considered minimal (see Section 8.6.4.1.2). As such the environmental benefit of an observation period for other whale species is considered of negligible environmental benefit and would not significantly reduce the residual risk. No further evaluation has been undertaken.	N/A.
Use of Dedicated Marine Fauna Observers (MFOs)	The use of Dedicated MFOs may increase the visual detection of cetaceans present within proximity to the vessel/s. Being able to better locate cetaceans may assist in reducing the risk of behavioural disturbance. However, while the use of dedicated MFOs may increase visual detection of cetaceans, the use of Dedicated MFOs during the GS3 pipelay, installation and pre-commissioning operations (~5 months for each pipelay and subsea installation campaign) is considered to be of limited environmental benefit given there are no additional control measures for the main construction vessels	Costs for engaging a Dedicated MFO are expected to be in the order of ~$1,200 per day per person. For an ~5 months duration for each campaign, this would result in up to ~$688,800 in additional personnel costs (allowing for two MFOs on the main construction vessel for ~5 months per campaign). Given the negligible environmental benefit, this financial cost is considered grossly disproportionate and as such this control has not been adopted for use.

CM	Benefit	Cost
	(e.g. no acoustic reduction control to reduce minimum power generation requirements on a vessel) and limited control measures (e.g. divert or delay operations) for vessels. As such there is no reduction in residual risk that would be realised from having Dedicated MFOs onboard the construction vessels and/or support vessels during the G&E pipelay, installation and pre-commissioning activities.	
CM-19: Communication Protocol	As identified in Section 8.6.3 there is the potential for multiple CAPL petroleum activities to be occurring at the same time. In the event that concurrent activities are occurring within proximity of each other, a Communications Protocol will be implemented to share pygmy blue whale sighting information (e.g. observed location and behaviour [if detected]) between the activities to assist in providing broader situational awareness.	No additional personnel costs. The sharing of pygmy blue whale sightings data will better inform situational awareness for concurrent petroleum activities occurring within proximity of each other. Therefore, control measure has been adopted for use.

8.6.4.4 Likelihood and residual risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk level as identified in Table 8-32.

Table 8-32: Likelihood and residual risk relevant to Planned emissions—Underwater sound (non-impulsive)

Risk/receptor	Consequence	Likelihood	Residual risk
Potential change in behaviour of marine fauna:			
Marine mammals	Minor (5)	Unlikely (4)	Low (8)
Marine reptiles	Incidental (6)	Rare (6)	Very low (10)
Fishes, including sharks and rays	Incidental (6)	Rare (6)	Very low (10)
Potential auditory impairment or injury to marine fauna:			
Marine mammals	Minor (5)	Rare (6)	Very low (10)
Marine reptiles	Incidental (6)	Rare (6)	Very low (10)
Fishes, including sharks and rays	Incidental (6)	Rare (6)	Very low (10)

8.6.5 Demonstration of acceptability

Table 8-33 describes the demonstration of acceptability relevant to this aspect.

Table 8-33: Demonstration of acceptability relevant to Planned emissions—Underwater sound (non-impulsive)

Comparison with acceptable level

The acceptable levels for this aspect are **AL-12**, **AL-13**, **AL-14,** and **AL-15** (see Section 6.6 for definitions).

Underwater sound emissions from the petroleum activity are predicted to result in a localised and temporary change in ambient sound (Section 8.6.4.1). Subsequent potential impacts to marine fauna were predicted to be localised behavioural disturbances or auditory masking to transient individuals and would not be expected to result in impacts at a population level that prevent their long-term recovery or survival. Therefore, the predicted level of impact for these receptors is equivalent or better than **AL-12**, **AL-14,** and **AL-15**.

Given the accumulated exposure required, the risk of auditory impairment or injury (TTS, AINJ) to a blue whale from non-impulsive sound was not considered credible. The predicted ensonified area from non-impulsive sound sources did not extend into BIAs or HCTS of marine turtle species. Therefore, the predicted level of impact is consistent with the acceptable level **AL-13**.

Principle of ESD

Precautionary Principle

In accordance with Table 6-5, a consequence level between Minor (5) to Incident (6) do not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required.

Intergenerational Principle

In accordance with Table 6-5, a consequence level between Minor (5) to Incident (6) do not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required.

Biodiversity Principle

Underwater sound emissions from the petroleum activity are predicted to result in a localised and temporary change in ambient sound, and potential temporary behavioural changes or auditory masking to a small number of transient fauna (marine mammals, marine reptiles, fishes). This is not considered to have the potential to affect biological diversity and ecological integrity, and therefore no further evaluation against the Biodiversity Principle is required.

Relevant environmental legislation and other requirements

Legislation and other requirements considered relevant for this aspect include:

- EPBC Regulations 2025
- *Blue Whale Conservation Management Plan* (Ref. 42)
- *Conservation Advice for fin whale* (Ref. 268)
- *Conservation Advice for sei whale* (Ref. 269)
- *Conservation Advice for Australian humpback dolphin* (Ref. 270)
- *Conservation Advice for Australian snubfin dolphin* (Ref. 271)
- *Recovery Plan for Marine Turtles in Australia* (Ref. 264).

CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
EPBC Regulations 2025 Part 8 Division 8.1 (Interacting with cetaceans) describes caution and no approach zones for when interacting with cetaceans from vessels, and vertical and horizontal distances for helicopter operations.	Requirements of regulation 8.05 and 8.06 for vessels have been incorporated into the **Vessels under transit or on standby within the OA** control measure. Requirements of regulation 8.07 for helicopters have been incorporated into the **Helicopters under transit within the OA** control measure.

Conservation Management Plan for the Blue Whale Action A.2.2: Assessing the effect of anthropogenic noise on blue whale behaviour. Action A.2.3: Anthropogenic noise in BIAs will be managed such that any blue whale continues to utilise the area without injury, and is not displaced from a foraging area.	Section 8.6.4 provides a risk assessment for underwater sound emissions from the petroleum activity to blue whales. This assessment included identifying control measures so that the risks are managed to ALARP and acceptable levels. Given the accumulated exposure required, the risk of auditory impairment or injury (TTS, AINJ) to a blue whale from non-impulsive sound was not considered credible. As such, continued use of the BIA without injury is expected. The predicted ensonified areas from non-impulsive sound sources do not intersect with designated Foraging Areas for the pygmy blue whale; the nearest foraging BIA occurs >210 km south-west of the OA. Similarly, the predicted ensonified areas from non-impulsive sound sources do not intersect with the 'most important areas' for foraging. As such, displacement from a foraging area is not expected. The petroleum activity is not considered to be inconsistent with the Conservation Management Plan for the Blue Whale.
Conservation Advice for fin whale No specific action identified.	N/A.
Conservation Advice for sei whale No specific action identified.	N/A.
Conservation Advice for Australian humpback dolphin No specific action identified.	N/A.
Conservation Advice for Australian snubfin dolphin No specific action identified.	N/A.
Recovery Plan for Marine Turtles in Australia Action A1.5: Manage anthropogenic activities to ensure marine turtles are not displaced from identified HCTS as per Section 3.3 Table 6 [of this Recovery Plan]. Action A1.6: Manage anthropogenic activities in BIAs to ensure that biologically important behaviour can continue.	The predicted ensonified areas from non-impulsive sound sources did not extend into BIAs or HCTS of marine turtle species. The petroleum activity is not considered to be inconsistent with the Recovery Plan for Marine Turtles in Australia.
Internal context	
This management process or procedure was deemed relevant for this aspect: • Adaptative management framework for pygmy blue whales exposed to underwater sound emissions from the Backfill Fields Development (see Section 10.4 of the OPP; Ref. 3). Control measures related to the above management process or procedure have been described for this aspect. As such, CAPL considers that impact management is consistent with company policy, culture, and standards.	
External context	
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). No changes to this impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.	

8.6.6 Environmental performance

Table 8-34 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-34: Environmental performance relevant to Planned emissions—Underwater sound (non-impulsive)

EPO	CM	EPS	MC
EPO-17: Sound emissions from planned petroleum activities will be managed such that EPBC Act listed species continue undertaking biological important behaviours[113]. **EPO-18:** Sound emissions from planned petroleum activities will be managed to prevent TTS or AINJ onset to EPBC Act listed species. **EPO-19:** Any blue whale continues to utilise the BIA without injury[114], and is not displaced from a foraging area[115,116].	**CM-15:** Vessels under transit or on standby within the OA	**EPS-15**: Vessels under transit[117] or on standby within the OA will implement caution and no approach zones as described in sections 8.05 and 8.06 of the EPBC Regulations 2025 (Cth): • 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. Note: Caution zones for pygmy blue whales are described in **EPS-17**.	**MC-15.1** Induction materials include relevant marine fauna caution and no approach zone requirements. **MC-15.2** Training records (or equivalent) verify offshore personnel involved in the petroleum activity have completed the induction. **MC-15.3** Vessel marine fauna sighting records (or equivalent) show if marine fauna interaction occurred within caution or approach zones and what mitigation (e.g. divert or slow vessel) measure was implemented.
	CM-17: Vessels under transit or on standby during within the OA—extended	**EPS-17:** Vessels under transit[117] or on standby within the OA will implement an Extended	**MC-17:** Induction materials include relevant pygmy blue whale

[113] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 311).

[114] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 42) 'injury to blue whales' is considered as "both permanent and temporary hearing impairment … and any other form of physical harm arising from anthropogenic sources of underwater noise" (Ref. 319).

[115] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 42) 'displaced from a foraging area' applies in relation to BIAs (Ref. 319); and these BIAs correspond to 'Foraging Area', 'Possible Foraging Area', and 'Known Foraging Area' as illustrated in Figure 1 of the Conservation Management Plan for the Blue Whale (Ref. 42; Ref. 319). There are no Foraging Area BIAs within or adjacent to the OA.

[116] In accordance with Australian Government guidance, activities outside designated Foraging Areas should adopt adaptive management approaches in the event that indicators (e.g. aggregation in a particular area) of whale foraging are evident to ensure that impacts are not unacceptable (e.g. no injury or biologically significant disturbance) (Ref. 319). EPO-17 incorporates foraging as one of the biologically important behaviours of marine fauna.

[117] For safety reasons this control measure is not applied to vessels holding station or with limited manoeuvrability (e.g. during lifts, bunkering, etc.) or during emergency situations.

EPO	CM	EPS	MC
	caution zone for pygmy blue whales.	Caution Zone for pygmy blue whales[118] in accordance with Section 10.4 and Table 10-12. All other requirements (speed, no approach zone, etc.) remain as per requirements of **EPS-15**.	caution zone requirements. See also **MC-15.2** and **MC-15.3**
	CM-16: Helicopters under transit within the OA	**EPS-16:** Helicopters under transit within the OA will operate in alignment with section 8.07 of the EPBC Regulations 2025 (Cth): • 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.	**MC-16:** Helicopter records show if marine fauna interaction occurred, and what mitigation (e.g. divert) measure was implemented.
	CM-18a: Pre Start-up Visual Observations for pygmy blue whales prior to station holding on DP (daytime). **CM-18b:** Pre Start-up Visual Observations for pygmy blue whales prior to station holding on DP (nighttime).	**EPS-18:** Prior to a vessel commencing station holding on DP, the vessel bridge-watch crew will undertake Pre Start-up Visual Observations within the Potential Behavioural Effect Zone in accordance with Section 10.4, Table 10-12, and Figure 10-8). Where Pre Start-up Visual Observations occur at night, technology (e.g. night vision camera/binoculars) may be used to support observations.	**MC-18** Vessel marine fauna sighting records (or equivalent) verify that Pre Start-up Visual Observations were undertaken prior to station holding on DP.
	CM-19: Communication Protocol	**EPS-19:** Where concurrent CAPL petroleum activities are occurring within proximity of each other, a Communications Protocol will be implemented to share pygmy blue whale[118] sightings data.	**MC-19:** Records confirm the communications protocol was implemented as required.

8.7 Planned emissions—Underwater sound (impulsive)

8.7.1 Aspect source

Activities identified as having the potential to generate impulsive[119] underwater sound are:

- acoustic survey equipment (SBP) during installation and contingency IMR activities

[118] Where the observation is of a positively identified pygmy blue whale or other unidentified large baleen whale that is considered likely to be a pygmy blue whale.

[119] Impulsive sounds are typically transient, brief (less than one second), broadband, and consist of high peak sound pressure with rapid rise and rapid decay times (Ref. 312; Ref. 313).

- use of acoustic position equipment (e.g. ultra-short baseline [USBL]).

8.7.2 Underwater sound modelling

JASCO undertook an estimation study (Ref. 322) to inform the impact and risk assessment associated with impulsive underwater sound emissions from the petroleum activity. The estimation study is based on literature reviews of sound source levels and the application of a spherical spreading loss model.

Effect criteria

The study used the following effect criteria (Table 8-35) which were based on the most applicable science available at the time of the modelling:

- un-weighted peak pressure levels (PK) and frequency-weighted SEL_{24h} from the US NMFS (Ref. 312) for the onset of AINJ and TTS in cetaceans
- un-weighted PK and frequency-weighted SEL_{24h} from the US Navy (Ref. 316) for the onset of AINJ and TTS in marine turtles
- un-weighted SPL from the US NOAA for marine mammal behavioural disruption (Ref. 318)
- un-weighted SPL from McCauley et al. (Ref. 341) for marine turtle behavioural response at 166 dB re 1 µPa and behavioural disturbance at 175 dB re 1 µPa
- sound exposure guidelines for fish, fish eggs and fish larvae from seismic airguns in Popper et al. (Ref. 317)[120].

Research is ongoing into the relationship between sound and its effects on benthic invertebrates, including the relevant metrics for both effect and impact (Ref. 322). Marine invertebrates lack a gas-filled bladder and are unable to detect the pressure component of sound waves (Ref. 342; Ref. 343) or “hear” sound in the way that mammals and fish can. Available literature suggests particle motion, rather than sound pressure, is a more important factor for crustacean and bivalve hearing (Ref. 322). Peak-peak pressure levels (PK-PK) and particle acceleration (ms^{-2}) at the seafloor were used to help assess effects of sound on benthic invertebrates. A PK-PK of 202 dB re 1 µPa is considered a no effect sound level (Ref. 344), and PK-PK of 209–213 dB re 1 µPa (Ref. 345; Ref. 346; Ref. 347; Ref. 348) for sound levels related to different levels of potential impairment.

[120] Only quantitative effect criteria were modelled; qualitative effect criteria were applied directly in the risk assessment.

Table 8-35: Effect criteria for impulsive sound for different types of impacts and species groups

Receptor	Mortality and potential mortal injury	Recoverable injury[121]	AINJ onset	TTS onset[121]	Masking[121]	Behaviour[121]
LF cetaceans	N/A	N/A	SEL_{24h}: 183 dB re 1 μPa^2s PK: 222 dB re 1 µPa	SEL_{24h}: 168 dB re 1 μPa^2s PK: 216 dB re 1 µPa	N/A	SPL: 160 dB re 1 µPa
HF cetaceans			SEL_{24h}: 193 dB re 1 μPa^2s PK: 230 dB re 1 µPa	SEL_{24h}: 178 dB re 1 μPa^2s PK: 224 dB re 1 µPa		
VHF cetacean			SEL_{24h}: 159 dB re 1 μPa^2s PK: 202 dB re 1 µPa	SEL_{24h}: 144 dB re 1 μPa^2s PK: 196 dB re 1 µPa		
Marine turtles			SEL_{24h}: 184 dB re 1 μPa^2s PK: 230 dB re 1 µPa	SEL_{24h}: 169 dB re 1 μPa^2s PK: 224 dB re 1 µPa		SPL: 166 dB re 1 µPa SPL: 175 dB re 1 µPa
Fish—no swim bladder (particle motion detection)[122]	SEL_{24h}: >219 dB re 1 μPa^2s PK: >213 dB re 1 µPa	SEL_{24h}: >216 dB re 1 μPa^2s PK: >213 dB re 1 µPa	N/A	SEL_{24h}: >>186 dB re 1 μPa^2s	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low
Fish—swim bladder not involved in hearing (particle motion detection)	SEL_{24h}: 210 dB re 1 μPa^2s PK: >207 dB re 1 µPa	SEL_{24h}: 203 dB re 1 μPa^2s PK: >207 dB re 1 µPa		SEL_{24h}: >>186 dB re 1 μPa^2s	(N) Low (I) Low (F) Low	(N) High (I) Moderate (F) Low

[121] Relative risk (high, moderate, low) is given for fauna at three distances from the source (near [N], intermediate [I] and far [F]). Where 'near' is considered to be in the order of tens of meters from the source, 'intermediate' is hundreds of meters, and 'far' in the thousands of meters (Ref. 317).

[122] Also appropriate for sharks.

Receptor	Mortality and potential mortal injury	Recoverable injury[121]	AINJ onset	TTS onset[121]	Masking[121]	Behaviour[121]
Fish—swim bladder involved in hearing (primarily pressure detection)	SEL_{24h}: 207 dB re 1 μPa^2s PK: >207 dB re 1 µPa	SEL_{24h}: 203 dB re 1 μPa^2s PK: >207 dB re 1 µPa	N/A	SEL_{24h}: 186 dB re 1 μPa^2s	(N) Low (I) Low (F) Moderate	(N) High (I) High (F) Moderate
Fish eggs and fish larvae	SEL_{24h}: >210 dB re 1 μPa^2s PK: >207 dB re 1 µPa	(N) Moderate (I) Low (F) Low		(N) Moderate (I) Low (F) Low	(N) Low (I) Low (F) Low	(N) Moderate (I) Low (F) Low

8.7.2.1 Acoustic positioning equipment

Transponders may be used to accurately track the location of deployed equipment. Transponders emit short pulses of sound; these transmissions are not continuous but consist of short 'chirps' when active and do not emit any sound when on standby. Indicative source levels for acoustic positioning equipment are ~180–204 dB re 1 µPa @ 1 m with operating frequencies of ~7–60 kHz (Ref. 321; Ref. 322; Ref. 349; Ref. 350; Ref. 351).

JASCO undertook spherical spreading modelling for a USBL system with a source level of 204 db re 1 µPa @ 1 m (Ref. 322). The spreading loss modelling indicated the following for marine mammals:

- Maximum horizontal distance ~151 m for the marine mammal behavioural response effect criteria
- PK effect criteria for all marine mammal hearing groups may be exceeded at very short horizontal distances from the sound source; e.g. ~2 m and ~4 m for AINJ and TTS onset in VHF cetaceans
- The estimated distance to reach SEL_{24h} effect criteria for AINJ onset were ~69 m, ~94 m, and ~2.4 km for LF, HF, and VHF cetaceans respectively
- The estimated distance to reach SEL_{24h} effect criteria for TTS onset were ~355 m, ~470 m, and ~4.5 km for LF, HF, and VHF frequency cetaceans respectively.

The spherical spreading modelling indicated that neither AINJ or TTS onset effect criteria for marine turtles was reached (Ref. 322). JASCO also noted that the sounds produced by the USBL are outside the hearing frequency range for turtles (Ref. 322). As such, any effect to marine turtles from the use of acoustic positioning equipment are not evaluated further within this risk assessment.

8.7.2.2 Acoustic survey equipment (SBP)

Acoustic survey techniques such as SBP generate impulsive sound emissions; however, these are moderate to high frequency sound emissions which attenuate rapidly in water. Three types of chirp SBPs and one boomer SBP were modelled by JASCO (Ref. 322). The spreading loss modelling indicated the following for marine mammals:

- Chirp SBP
  - maximum horizontal distance ~8–281 m for the marine mammal behavioural response criteria
  - PK effect criteria for all marine mammal hearing groups may be exceeded at very short horizontal distances from the SPB sources; e.g. ~4 m and ~8 m for AINJ and TTS onset in VHF cetaceans
  - for the lower-powered systems (source levels 178–179 db re 1 µPa @ 1 m) SEL_{24h} effect criteria for AINJ or TTS onset were not reached, except for TTS onset for VHF cetaceans at distances of ~48–97 m
  - for the higher-powered system (source level 209 db re 1 µPa @ 1 m) SEL_{24h} effect criteria for AINJ onset were ~66 m, ~6 m, and ~2.0 km for LF, HF, and VHF cetaceans respectively; and for TTS onset were ~1.7 km, ~196 m, and ~7.7 km for LF, HF, and VHF cetaceans respectively

- Boomer SBP
  - maximum horizontal distance ~178 m for the marine mammal behavioural response criteria
  - PK effect criteria for all marine mammal hearing groups may be exceeded at very short horizontal distances from the SPB source; e.g. ~3 m and ~6 m for AINJ and TTS onset in VHF cetaceans
  - SEL_{24h} effect criteria for AINJ onset were not reached for LF or HF cetaceans; and for VHF cetaceans the estimated distance to effect criteria was ~17 m
  - the estimated distance to reach SEL_{24h} effect criteria for TTS onset were ~24 m, ~2 m, and ~513 m for LF, HF, and VHF cetaceans respectively.

The spherical spreading modelling indicated that neither AINJ or TTS onset effect criteria for marine turtles was reached (Ref. 322). JASCO also noted that acoustic survey equipment would not result in physiological impacts to marine turtles located within metres of the sources because the sounds produced by the SBP are outside the hearing frequency range for turtles (Ref. 322).

JASCO's assessment also noted that based on comparison to the available Popper et al. (Ref. 317) criteria, the acoustic survey equipment considered could result in physiological impacts to fish located within metres of the sources, however, the likelihood of this occurring was considered remote (Ref. 322).

PK-PK effect criteria as relevant to benthic invertebrates may be exceeded but only within very close proximity to the acoustic sources; and given the general positioning of equipment (e.g. hull mounted from vessel, or several tens of metres from the seafloor on ROV/AUVs) it is unlikely that PK-PK effect criteria would be exceeded at the seafloor (Ref. 322).

As such, any effect to marine turtles, fish, or benthic invertebrates from the use of SBP are not evaluated further within this risk assessment.

8.7.3 Environmental impact and risk evaluation

Impulsive underwater sound emissions may result in a:

- localised and temporary change in ambient underwater sound.
- potential change in behaviour of marine fauna
- potential auditory impairment or injury to marine fauna.

8.7.3.1 Consequence evaluation

8.7.3.1.1 Impact: Localised and temporary change in ambient underwater sound

Impulsive underwater sound emissions from the petroleum activity will locally and temporarily increase underwater sound levels from ambient levels. The sources of impulsive sound associated the petroleum activity are temporary, with durations varying in the order of milli-seconds (e.g. from transponders) that may be in use intermittently during positioning equipment and up to several days for each pre- and post-laid survey.

Acoustic modelling determined that the distances to most effect criteria were small (e.g. metres to hundreds of metres); however, depending on the equipment type and power the exposure above effect criteria for VHF cetaceans may extend kilometres from the source (Section 8.7.2.2).

The worst-case consequence of causing a localised and temporary change in ambient underwater sound from impulsive sound sources has been assessed as Incidental (6) and the soundscape will return to ambient levels upon completion of the activity.

8.7.3.1.2 Risk: Potential change to behaviour in marine fauna

Marine mammals

A spreading loss model was used to estimate sound propagation from acoustic positioning and SBP survey equipment (Section 8.7.2). This modelling estimated that the maximum horizontal distance at which the marine mammal behavioural response effect criteria may be reached is ~151 m from acoustic position equipment and up to ~281 m from SBP survey equipment.

As identified in Section 5.3.3.1, several marine mammal species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the OA. The threatened and/or migratory cetaceans that may be present within the OA are predominantly LF[123] or HF cetaceans. VHF cetaceans were also identified within the PMST report as species or species habitat that may occur within the OA; however, these species are not listed as threatened and/or migratory under the EPBC Act.

The predicted ensonified area above the behavioural effect criteria for marine mammals also interests with the migration BIA for pygmy blue whales. The presence of pygmy blue whales within the Jansz region has been recorded from late-March to mid-September (peak late-May to June) during northern migration, and during early-October to late-January (peak late-November and early-December) for the southern migration (Section 5.3.3.1.1; Table 5-16). No other known BIAs, HCTS of marine mammal species, or aggregation areas intersect with the OA; as such, it is expected that any presence of cetacean species would be of a transitory nature.

Given the largest predicted R_{max} of ~281 m, the energetic cost of avoiding the sound source is small in the context of the greater migratory and/or transitory movements (e.g. several thousands of kilometres) of the cetacean species, including pygmy blue whales, that may be present within the vicinity of the OA.

The worst-case consequence of impulsive sound resulting in a change in the behaviour of a small number of migratory or transitory marine mammals and then subsequently causing a reduction in fitness due to deviations in migratory or transitory path, has been assessed as Incidental (6).

8.7.3.1.3 Risk: Potential auditory impairment or injury to marine fauna

Marine mammals

Impulsive underwater sound may cause auditory impairment (e.g. TTS, masking) or AINJ to marine mammals. TTS is considered to be a recoverable impairment (Ref. 312) and may or may not reduce fitness (Ref. 317). However, with respect to pygmy blue whales, guidance from the Australian Government has defined both TTS and permanent threshold shift as an auditory injury (Ref. 319).

A spreading loss model was used to estimate sound propagation from acoustic positioning and acoustic survey (SBP) equipment (Section 8.7.2). The PK effect criteria for all marine mammal hearing groups may be exceeded at very short

[123] Includes VLF cetaceans.

horizontal distances from the sources; e.g. ~2 m and ~4 m for AINJ and TTS onset respectively in VHF cetaceans from acoustic positioning equipment, and up to ~4 m and ~8 m from SBP equipment. Given these close distances and the transitory nature of cetaceans within the OA, the risk of AINJ or TTS onset from instantaneous exposure to an impulsive sound source is not considered credible and no further evaluation is presented.

The estimated horizontal distances to accumulated SEL_{24h} AINJ and TTS onset effect criteria from acoustic positioning survey equipment was ~69 m, ~94 m, and ~2.4 km, and ~355 m, ~470 m, and ~4.5 km for LF, HF, and VHF cetaceans respectively (Section 8.7.2.2). Given that the AINJ onset effect is an accumulated exposure metric, the intermittent signals from transponders, and the transitory nature of cetaceans within the OA, the risk of AINJ or TTS from these types of emissions sources is not considered credible and no further evaluation is presented.

The estimated horizontal distances to accumulated SEL_{24h} AINJ onset effect criteria varied depending on the type and power of SBP equipment. Estimated distances to AINJ onset effect criteria for LF, HF, and VHF cetaceans were up to ~66 m, ~6 m, and ~2.0 km respectively from the higher-powered chirp SBP equipment. The AINJ effect criteria was not reached or had much small effect radii for the lower-powered chirp and the boomer SBP systems (Section 8.7.2.2).
Note: The AINJ effect criteria is an accumulated exposure metric. The predicted radius for SEL_{24h} effect criteria does not mean that an animal travelling within this radius of the source will be impacted, but rather that an animal could experience auditory injury if the total accumulated sound energy it receives within the ensonified area exceeds the relevant AINJ onset criteria within a 24-hour period. Theoretically the onset of AINJ effects may also be reached by shorter durations of exposure at higher sound levels.

Swim speeds for VHF cetaceans are not publicly available; therefore, using swim speeds of pygmy blue whales as a proxy, the duration a transient VHF cetacean is expected to remain within the AINJ ensonified area from SBP survey equipment (R_{max} of ~2.0 km) would be ~0.8–1.7 hours; i.e. substantially less than the 24 hours exposure at this received level required for AINJ onset to occur. Additionally, the SBP is not a stationary sound source during the surveys but would be moving along subsea infrastructure. Therefore, given that cetaceans (if present) are expected to be transitory within the vicinity of the OA, the risk of accumulated sound exposure at levels sufficient to induce the onset of AINJ is not considered credible and has not been evaluated further.

The estimated horizontal distances to accumulated SEL_{24h} TTS onset effect criteria also varied depending on the type and power of SBP equipment. Estimated distances to TTS onset effect criteria for LF, HF, and VHF cetaceans were up to ~355 m, ~470 m, and ~4.5 km respectively from the higher-powered chirp SBP equipment. The TTS effect criteria was not reached or had much small effect radii for the lower-powered chirp and the boomer SBP systems (Section 8.7.2.2). Using swim speeds of pygmy blue whales as a proxy, the estimated duration a transient cetacean is expected to remain in within the TTS ensonified area from SBP survey equipment (R_{max} of ~7.7 km) would be ~3.1–6.4 hours; i.e. substantially less than the 24 hours exposure within this SEL_{24h} ensonified area required for TTS onset to occur. Additionally, the SBP is not a stationary sound source during surveys, but would be moving along subsea infrastructure. Therefore, given that cetaceans (if present) are expected to be transitory within the vicinity of the OA, the risk of accumulated sound exposure at

levels sufficient to induce the onset of TTS is not considered credible and has not been evaluated further.

Acoustic masking occurs when the ability to detect, recognise, and/or interpret a sound of interest is degraded by the presence of another sound (Ref. 333; Ref. 334). Quantitatively, masking refers to the number of decibels by which an auditory detection threshold is raised in the presence of another (masking) sound (Ref. 333). There are multiple factors that can affect acoustic communication, such as: the spectral characteristics of the source, the way this sound propagates through the environment (including loss, scattering, absorption), the subsequent characteristics of the received sound, and the auditory features of the receiver (Ref. 333). As such, masking is a complex and masking levels are difficult to predict for any particular combination of sender, environment, and receiver characteristics (Ref. 333). Masking has the greatest potential to occur when the masking sound (or noise) is at frequencies similar to those of biologically important signals of the animal (Ref. 334). Some marine mammal species respond to masking by stopping vocalisations, some raise the intensity of their vocalisations (Lombard Effect) to be above the noise, and some change the frequency of their vocalisation (Ref. 334). Masking may also result in changes in behaviour or re-locating to quieter environments (Ref. 335; Ref. 336). Given that the source spectra of the SBP would overlap with the hearing frequency ranges of some marine mammals that may be transiting through the OA, it is possible that some temporary masking of calls may occur.

Therefore, the worst-case consequence of impulsive sound resulting in localised and temporary masking effects on up to a small number of migratory or transitory marine mammals has been assessed as Incidental (6).

8.7.3.2 ALARP decision context justification

Acoustic surveys are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential impacts and risks associated with underwater sound emissions from these types of activities are managed through control measures aligned with applicable guidelines and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding underwater sound emissions from the petroleum activity by relevant persons during consultation in preparing this EP.

The potential impacts and risks from underwater sound emissions are considered lower-order impacts in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.7.3.3 Control measures

Table 8-36 details the control measures relevant to this aspect.

Table 8-36: Good practice control measures relevant to Planned emissions—Underwater sound (impulsive)

CM	Description
CM-20a: Pre start-up visual observation for whales prior to SBP surveys (daytime)	During daylight hours, visual observations for the presence of whales should be undertaken by a member of the vessel bridge-watch crew for at least 30 minutes before the commencement of any SBP survey. See Section 10.5 and Figure 10-9 for related action flow charts and zone definitions. This control is aligned with the intent of the pre-start up visual

CM	Description
	observations required under EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales (Ref. 352); noting that this Policy itself is not applicable to the use of SBP equipment.

Table 8-37: Additional control measures for Planned emissions—Underwater sound (impulsive)

CM	Benefit	Cost
CM-20b: Pre start-up visual observation for SBP surveys (nighttime)	Implementation of a Pre Start-up Visual Observation period for whales during nighttime operations may afford similar protection from potential impacts from underwater sound emitted by SBPs as daytime operations providing the whales can be detected. Technology (e.g. night vision camera or binoculars) may be used to support Pre-Start-up Visual Observations at nighttime, noting that the performance of any technology may have operational limits (range, field-of-view, etc.).	The detection of whales during nighttime is likely to be challenging even with the assistance of technology. There will be some small additional costs associated with any technology (night vision camera/binoculars) to support observations. As with daytime operations, the detection of whales during nighttime operations may lead to increased survey duration and overall costs due to delayed start-ups. However, while this control measure is likely to provide only limited environmental benefit, it is considered to outweigh the operational and financial costs from not implementing this control. Therefore, control measure has been adopted for use.
Implement a shut-down zone around SBP	Based on the predicted distances from an SBP source to PK effect criteria, instantaneous AINJ to marine mammals was not considered credible (Section 8.7.2.2 and 8.7.3.1.3). The potential for accumulated sound exposure (SEL_{24h}) from an SBP source to result in the onset of AINJ was also not considered credible given both the mobile sound source during the survey and the mobile nature of the receiver (i.e. migrating or transiting whales). Therefore, the use of a shut-down zone during SBP surveys is considered to provide no environmental benefit or risk reduction. No further evaluation has been undertaken.	N/A

8.7.3.4 Likelihood and residual risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk level as identified in Table 8-38.

Table 8-38: Likelihood and residual risk relevant to Planned emissions—Underwater sound (impulsive)

Risk/receptor	Consequence	Likelihood	Residual risk
Potential change in behaviour of marine fauna:			

Risk/receptor	Consequence	Likelihood	Residual risk
Marine mammals	Incidental (6)	Rare (6)	Very low (10)
Potential auditory impairment or injury to marine fauna:			
Marine mammals	Incidental (6)	Remote (5)	Very low (10)

8.7.4 Demonstration of acceptability

Table 8-39 describes the demonstration of acceptability relevant to this aspect.

Table 8-39: Demonstration of acceptability relevant to Planned emissions—Underwater sound (impulsive)

Comparison with acceptable level	
The acceptable levels for this aspect are **AL-12**, **AL-13**, **AL-14,** and **AL-15** (see Section 6.6 for definitions). Underwater sound emissions from the petroleum activity are predicted to result in a localised and temporary change in ambient sound (Section 8.7.3.1). Subsequent potential impacts to marine fauna were predicted to be highly localised behavioural disturbances or auditory masking to transient individuals and would not be expected to result in impacts at a population level that prevent their long-term recovery or survival. Therefore, the predicted level of impact for these receptors is equivalent or better than **AL-12**, **AL-14,** and **AL-15**. Given the accumulated exposure required, the risk of auditory impairment or injury (TTS, AINJ) to a blue whale from impulsive sound was not considered credible. The predicted ensonified area from impulsive sound sources did not extend into BIAs or HCTS of marine turtle species. Therefore, the predicted level of impact is consistent with the acceptable level **AL-13**.	
Principle of ESD	
Precautionary Principle In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required. *Intergenerational Principle* In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required. *Biodiversity Principle* Underwater sound emissions from the petroleum activity are predicted to result in a localised and temporary change in ambient sound, and potential localised and temporary behavioural changes or auditory masking to a small number of transient marine mammals. This is not considered to have the potential to affect biological diversity and ecological integrity, and therefore no further evaluation against the Biodiversity Principle is required.	
Relevant environmental legislation and other requirements	
Legislation and other requirements considered relevant for this aspect include: • *Blue Whale Conservation Management Plan* (Ref. 42) • *Conservation Advice for fin whale* (Ref. 268) • *Conservation Advice for sei whale* (Ref. 269) • *Conservation Advice for Australian humpback dolphin* (Ref. 270) • *Conservation Advice for Australian snubfin dolphin* (Ref. 271) • *Recovery Plan for Marine Turtles in Australia* (Ref. 264). CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below:	
Requirement	**Demonstration**

Conservation Management Plan for the Blue Whale Action A.2.2: Assessing the effect of anthropogenic noise on blue whale behaviour. Action A.2.3: Anthropogenic noise in BIAs will be managed such that any blue whale continues to utilise the area without injury, and is not displaced from a foraging area.	Section 8.7.3 provides a risk assessment for underwater sound emissions from the petroleum activity to blue whales. This assessment included identifying control measures so that the risks are managed to ALARP and acceptable levels. Given the accumulated exposure required, the risk of auditory impairment or injury (TTS, AINJ) to a blue whale from impulsive sound was not considered credible. As such, continued use of the BIA without injury is expected. The predicted ensonified areas from impulsive sound sources do not intersect with designated Foraging Areas for the pygmy blue whale; the nearest foraging BIA occurs >210 km south-west of the OA. Similarly, the predicted ensonified areas from impulsive sound sources do not intersect with the 'most important areas' for foraging. As such, displacement from a foraging area is not expected. The petroleum activity is not considered to be inconsistent with the Conservation Management Plan for the Blue Whale.
Conservation Advice for fin whale No specific action identified.	N/A.
Conservation Advice for sei whale No specific action identified.	N/A.
Conservation Advice for Australian humpback dolphin No specific action identified.	N/A.
Conservation Advice for Australian snubfin dolphin No specific action identified.	N/A.
Recovery Plan for Marine Turtles in Australia Action A1.5: Manage anthropogenic activities to ensure marine turtles are not displaced from identified HCTS as per Section 3.3 Table 6 [of this Recovery Plan]. Action A1.6: Manage anthropogenic activities in BIAs to ensure that biologically important behaviour can continue.	The predicted ensonified areas from impulsive sound sources do not extend into BIAs or HCTS of marine turtle species. The petroleum activity is not considered to be inconsistent with the Recovery Plan for Marine Turtles in Australia.
Internal context	
No management processes or procedures were deemed relevant for this aspect.	
External context	
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). No changes to this impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.	

8.7.5 Environmental performance

Table 8-40 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-40: Environmental performance relevant to Planned emissions—Underwater sound (impulsive)

EPO	CM	EPS	MC
EPO-17: Sound emissions from planned petroleum activities will be managed such that EPBC Act listed species continue undertaking biological important behaviours[124]. **EPO-18:** Sound emissions from planned petroleum activities will be managed to prevent TTS or AINJ onset to EPBC Act listed species. **EPO-19:** Any blue whale continues to utilise the BIA without injury[125], and is not displaced from a foraging area[126,127].	**CM-20a**: Pre start-up visual observation for whales prior to SBP surveys (daytime). **CM-20b**: Pre start-up visual observation for SBP surveys (nighttime)	**EPS-20:** Prior to commencing a SBP survey, the vessel bridge-watch crew will undertake Pre Start-up Visual Observations within the Potential Behavioural Effect Zone in accordance with Section 10.5 and Figure 10-9. Where Pre Start-up Visual Observations occur at night, technology (e.g. night vision camera/binoculars) may be used to support observations.	**MC-20** Vessel marine fauna sighting records (or equivalent) verify that Pre Start-up Visual Observations were undertaken prior to the commencing a SBP survey.

8.8 Planned discharges—Vessel operations

8.8.1 Aspect source

Activities identified as having the potential to result in planned discharges from vessels include:

- vessels operations within the OA during the petroleum activity.

8.8.2 Environmental impact and risk evaluation

Planned discharges from vessels may result in:

- localised and temporary change in water quality.

A localised and temporary change in water quality may result in:

- potential change in behaviour of marine fauna.

[124] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 311).

[125] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 42) 'injury to blue whales' is considered as "both permanent and temporary hearing impairment … and any other form of physical harm arising from anthropogenic sources of underwater noise" (Ref. 319).

[126] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 42) 'displaced from a foraging area' applies in relation to BIAs (Ref. 319); and these BIAs correspond to 'Foraging Area', 'Possible Foraging Area', and 'Known Foraging Area' as illustrated in Figure 1 of the Conservation Management Plan for the Blue Whale (Ref. 42; Ref. 319). There are no Foraging Area BIAs within or adjacent to the OA.

[127] In accordance with Australian Government guidance, activities outside designated Foraging Areas should adopt adaptive management approaches in the event that indicators (e.g. aggregation in a particular area) of whale foraging are evident to ensure that impacts are not unacceptable (e.g. no injury or biologically significant disturbance) (Ref. 319). EPO-17 incorporates foraging as one of the biologically important behaviours of marine fauna.

8.8.2.1 Consequence evaluation

Section 8.6.2 of the NOPSEMA-accepted Gorgon Backfill Fields Development OPP provides an evaluation of potential impacts from planned discharges from vessels. As this petroleum activity forms part of the Backfill Fields Development (the offshore project), the planned vessels discharges are of a similar (or smaller) nature and scale, and the relevant receptors are the same as those previously assessed, the consequence evaluation for this EP is considered covered by consequence evaluation within Section 8.6.2 of the OPP[128]. In accordance with regulation 56(1) of the OPGGS(E)R, as this information has been previously supplied and is publicly available[129] it is not repeated here.

The consequence evaluation for both a localised and temporary change in water quality and a potential change in behaviour of marine fauna have been assessed as Incidental (6).

8.8.2.2 ALARP decision context justification

Vessel operations, and subsequent planned discharges, are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential impacts associated with planned discharges from these types of activities are managed through established control measures prescribed by applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding planned discharges from vessel operations during the petroleum activity by relevant persons during consultation in preparing this EP.

The potential impacts and risks from planned discharges from vessel operations are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.8.2.3 Control measures

Table 8-41 details the control measures relevant to this aspect.

Table 8-41: Good practice control measures relevant to Planned discharges—Vessel operations

CM	Description
CM-21: Marine Order 91	Marine Order 91 (Marine pollution prevention—oil) 2025 gives effect to Annex I of MARPOL 73/78 and sets out requirements for the discharge of oily water to the marine environment: • relevant vessels (as appropriate to vessel class) will hold a valid International Oil Pollution Prevention (IOPP) Certificate • discharge of oily bilge water from machinery spaces requires the vessel to be actively proceeding *en route*, treated via an IMO approved oily water separator (OWS), and oil concentration to be <15 ppm.
CM-22: Marine Order 95	Marine Order 95 (Marine pollution prevention—garbage) 2018 gives effect to Annex V of MARPOL 73/78 sets out requirements for the discharge of macerated and unmacerated food waste from vessels to the marine environment.

[128] This risk is described as changes to predator–prey dynamics in the OPP.

[129] The NOPSEMA-accepted Gorgon Backfill Fields Development OPP is available online at: https://docs.nopsema.gov.au/A1265361. Section 8.6.2 of the Gorgon Backfill Fields Development OPP provides the consequence evaluation of the potential impacts from planned discharges from vessels.

CM	Description
CM-23: Marine Order 96	Marine Order 96 (Marine pollution prevention—sewage) 2018 gives effect to Annex IV of MARPOL 73/78 sets out requirements for the discharge of sewage from vessels to the marine environment: • relevant vessels (as appropriate to vessel class) will hold a valid International Sewage Pollution Prevention (ISPP) Certificate • sewage discharge and treatment requirements.
CM-24: Marine Order 15	Marine Order 15 (Construction—fire protection, fire detection and fire extinction) 2014 gives effect to Chapter II-2 of SOLAS, including the restricting regarding the use, storage and disposal of the fire-extinguishing media perfluorooctanesulfonic acid (PFOS).
CM-25: Hazardous materials selection process	Planned discharges to the marine environment are subject to selection and environmental assessment as per CAPL's Hazardous Materials Management Procedure (Ref. 8; see also Section 10.3.1.3). The environmental assessment process: • identifies the Chemical Hazard and Risk Management (CHARM) colour banding or the Offshore Chemical Notification Scheme (OCNS) group for nonCHARM products • evaluates the dosage, quantity, and frequency of the discharge, and the location and nature of the receiving environment • requires the selection of the least hazardous material where technically and operationally feasible.

8.8.2.4 Likelihood and residual risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk level as identified in Table 8-42.

Table 8-42: Likelihood and residual risk relevant to Planned discharges—Vessel operations

Risk/receptor	Consequence	Likelihood	Residual risk
Potential change in behaviour of marine fauna			
Marine fauna	Incidental (6)	Rare (6)	Very low (10)

8.8.3 Demonstration of acceptability

Table 8-43 describes the demonstration of acceptability relevant to this aspect.

Table 8-43: Demonstration of acceptability relevant to Planned discharges—Vessel operations

Comparison with acceptable level
The acceptable levels for this aspect are **AL-01**, **AL-12**, **AL-13**, **AL-14**, and **AL-15** (refer to Section 6.6). Planned intermittent discharges from general vessel operations are predicted to result in highly localised and temporary reduction in water quality (Section 8.8.2). Water quality will return to ambient conditions following cessation of the discharge. Therefore, the predicted level of impact for the relevant receptors is equivalent or better than **AL-01**. Potential impacts to marine fauna from a potential change to marine fauna behaviour were also predicted to be localised to the immediate vicinity of the discharge and short-term. The predicted impacts would not decrease the availability or quality of important habitat, result in impacts at population level that would prevent long-term recovery or survival or have lasting effects on ecosystem integrity. As such, the predicted level of impact will be managed to be equivalent or better than the acceptable levels **AL-12**, **AL-13**, **AL-14**, and **AL-15.**
Principle of ESD

Precautionary Principle

In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required.

Intergenerational Principle

In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required.

Biodiversity Principle

Potential impacts to marine fauna from a change in behaviour were predicted to be localised to the immediate vicinity of the discharge and temporary (i.e. during and immediately following an intermittent discharge). This is not considered to have the potential to affect biological diversity and ecological integrity, and therefore no further evaluation against the Biodiversity Principle is required.

Relevant environmental legislation and other requirements

Legislation and other requirements considered relevant for this aspect include:

- Marine Order 91
- Marine Order 95
- Marine Order 96
- Marine Order 15
- IChEMS.

CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
Marine Order 91 Gives effect to Annex I of MARPOL 73/78	Requirements for offshore discharge of oily bilge water from vessels have been incorporated into the **Marine Order 91** control measure.
Marine Order 95 Gives effect to Annex V of MARPOL 73/78	Requirements for offshore discharge of food from vessels have been incorporated into **Marine Order 95** control measure.
Marine Order 96 Gives effect to Annex IV of MARPOL 73/78	Requirements for offshore discharge of sewage from vessels have been incorporated into the **Marine Order 96** control measure.
Marine Order 15 Gives effect to Chapter II-2 of SOLAS	Requirements for offshore fire fighter procedures have been incorporated into the **Marine Order 15** control measure.
IChEMS Establishes nationally consistent standards for managing import, manufacture, export, use and disposal of industrial chemicals	Requirement for chemicals selection have been incorporated into the **Hazardous materials selection process** control measure.

Internal context

These management processes or procedures were deemed relevant for this aspect:

- Hazardous Materials Management Procedure (Ref. 8)
- Chevron Marine Standard (Ref. 171).

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

Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7).

No changes to this impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.

8.8.4 Environmental performance

Table 8-44 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-44: Environmental performance relevant to Planned discharges—Vessel operations

EPO	CM	EPS	MC
EPO-24: Planned discharges from general vessels operations within the OA will not cause lasting changes to water quality. Water quality will return to ambient state within seven days following the cessation of the discharge. **EPO-25:** Planned discharges from general vessels operations within the OA will not cause lasting changes to marine fauna behaviour. Predator-prey dynamics will return to ambient state within seven days following the cessation of the discharge.	**CM-21**: Marine Order 91	**EPS-21.1:** Relevant vessels (as appropriate to vessel class) will hold a valid IOPP Certificate.	**MC-21.1** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record confirms relevant vessels hold a valid IOPP Certificate.
		EPS-21.2: Offshore discharge of oily bilge water from vessels will be undertaken in accordance with requirements of Annex I of MARPOL 73: • vessel to be actively proceeding *en route* • treated via an IMO approved OWS, and • oil concentration to be <15 ppm.	**MC-21.2** Inspection records (or equivalent) show oily bilge water is discharged in accordance with Annex I MARPOL 73/78.
	CM-22: Marine Order 95	**EPS-22.1:** Offshore discharge of food waste from vessels will be in accordance 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.	**MC-22.1** Records (or equivalent) show sewage is discharged in accordance with Annex IV of MARPOL 73/78.
	CM-23: Marine Order 96	**EPS-23.1:** Relevant vessels (as appropriate to vessel class) will hold a valid ISPP Certificate.	**MC-23.1** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record confirms relevant vessels hold a valid ISPP Certificate.
		EPS-23.2: Offshore discharge of sewage from vessels will be undertaken in accordance with Annex IV of MARPOL 73/78:	**MC-23.2** Inspection records (or equivalent) show sewage is discharged in

EPO	CM	EPS	MC
		• 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.	accordance with Annex IV of MARPOL 73/78.
	CM-24: Marine Order 15	**EPS-24:** Vessels operating within the OA will comply with the requirements within Marine Order 15 regarding the use and disposal of PFOS within fire extinguishing media.	**MC-24** Records verify fire extinguishing media meets the requirements of Marine Order 15 and Chapter II-2 of SOLAS.
	CM-25: Hazardous materials selection process	**EPS-25:** Planned discharges to the marine environment are subject to selection and environmental assessment as per CAPL's *Hazardous Materials Management Procedure* (Ref. 8). The environmental assessment process: • identifies the CHARM colour banding or the OCNS group for nonCHARM products • evaluates the dosage, quantity, and frequency of the discharge, and the location and nature of the receiving environment • requires the selection of the least hazardous material where technically and operationally feasible.	**MC-25** Hazardous materials selection process assessment records (or equivalent).

8.9 Planned discharges—Subsea operations

8.9.1 Aspect source

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

- subsea infrastructure installation
- pre-commissioning activities
- FCS integration
- contingency IMR.

The types of discharges may include MEG, trace of biocide, treated water (i.e. water with biocide, oxygen scavenger, corrosion inhibitor and/or dye), chemical sticks (i.e. biocide, oxygen scavenger and dye), trapped hydrocarbons,

acid wash, control fluids and nitrogen gas (Table 4-8). These discharges typically occur at or near the seabed; some minor discharges may occur at or near the surface.

8.9.2 Treated water modelling

As described in section 8.9.1, activities undertaken under this petroleum activity may result in the discharge of chemicals to the marine environment. Treated water represents the largest planned subsea discharge (Table 4-8). As such, dispersion modelling was undertaken to estimate the potential extent and duration of exposure associated with this discharge and inform the environmental impact and risk assessment (Ref. 353; Ref. 354).

The dispersion modelling uses both near- and far-field models. The near-field model (three-dimensional flow model CORMIX) simulates the initial mixing of the treated water. Outputs from near-field modelling are used as inputs into the far-field model. The far-field model (three-dimensional plume model MUDMAP) simulates the subsequent transport and passive dispersion of the treated water under time-varying currents (Ref. 353; Ref. 354).

Far-field modelling was conducted using a stochastic approach, where multiple simulations (using the same discharge parameters) were conducted, under a range of oceanographic conditions. This approach provides an estimate of the potential exposure area from a subsea release of treated water.

Scenario

FCG and/or pressure testing may be undertaken as a contingency activity during pre-commissioning of the production flowline. CAPL has estimated the indicative volume of treated water released during this activity is 10,200 m^3 (Table 4-8).

Table 8-45 summarises the key inputs used for the treated water dispersion modelling.

Table 8-45: Treated water modelling scenarios

Parameter	Details	
	Site A	Site B
Release location	G&E Production PLET	G&E BFM Production PLET
Water depth at release location	1,222 m	1,346 m
Release outlet orientation	Horizontal and vertical upward[130]	
Total volume of chemically treated water released	10,200 m^3	
Duration of release	57.6 hours	
Simulated period	5 days	
Number of simulations	50 per season (150 total)	
Seasons	Summer (October to March) Transitional (April and September) Winter (May to August)	

[130] Two different orientations were modelled for each location to understand the dispersion characteristics and potential impacts associated with each orientation.

Exposure criteria

RPS undertook a desktop ecotoxicity assessment based on information available within Safety Data Sheets (SDSs) for a range of potential chemical treatments to derive Predicted No Effect Concentrations (PNECs) for use in the dispersion modelling. The assessment involved reviewing available ecotoxicity information within the SDSs, standardising constituent ecotoxicity endpoints using an assessment factor (AF) framework, and deriving constituent and product-level PNECs. AF frameworks are inherently conservative; the approach used in this assessment applied three multiplicative factors to address distinct sources of uncertainty. Based on the range of indicative chemical treatments assessed, the highest dilution factor (~1:17,000) was adopted for use (Ref. 353; Ref. 354).

The dispersion model was analysed using the minimum 1-hour, 24-hour, and 48-hour moving averaged dilutions to provide an indication of short- and longer-duration exposure conditions. The same dilution factor (1:17,000) was applied to the 24-hour and 48-hour analyses; and a factor of 10 was used to derive the corresponding 1-hour (1:1,700) dilution factor (Ref. 353; Ref. 354). Note: Acute ecotoxicity effects are typically assessed over periods of hours to days, whereas chronic effects are assessed over weeks to months. As such, the averaging periods used in this assessment are not intended to directly represent acute and chronic exposure durations.

Previous whole effluent toxicity (WET) testing and species sensitivity distributions (SSD) analysis for a combined biocide, oxygen scavenger and corrosion inhibitor product (Ref. 355) indicated an equivalent dilution factor of 1:10,000 over 48-hours. This supports that the dilution factors being used in the above dispersion modelling present a conservative approach for informing this impact and risk assessment.

Modelling results

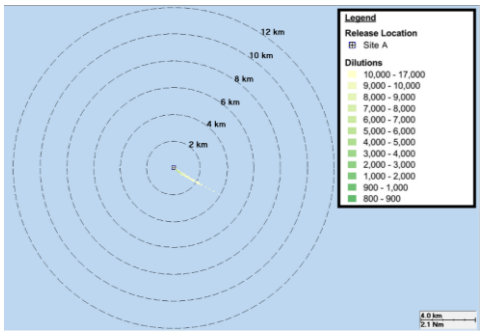
Stochastic modelling results (Ref. 353; Ref. 354) are summarised below:

- horizontal discharge:
  - near-field modelling from both release locations (G&E Production PLET and BFM Production PLET) indicated the treated water plume would immediately interact with the seabed under the influence of the Coanadă effect. The neutrally buoyant plume is then predicted to continue laterally under the influence of the ambient near-seabed currents. The far-field modelling indicated that the treated water plume is located within the bottom layer of the water column (seabed to ~20 m above seabed) during all seasonal conditions
  - the maximum extent of the 1-hour averaged dilution plume ranged from ~0.790–0.940 km for G&E Production PLET and ~2.41–4.19 km for BFM Production PLET from the release location. The corresponding plume area was ~0.49–0.61 km^2 and ~2.17–3.44 km^2 for G&E Production PLET and BFM Production PLET, respectively
  - the maximum extent of the 24-hour averaged dilution plume ranged from ~3.50–4.73 km for G&E Production PLET and ~5.52–7.50 km for BFM Production PLET from the release location. The corresponding plume area ranged from ~3.78–7.63 km^2 and ~12.53–19.39 km^2 for G&E Production PLET and BFM Production PLET, respectively
  - the maximum extent of the 48-hour averaged dilution plume ranged from ~1.60–2.63 km for G&E Production PLET and ~2.45–5.99 km for BFM

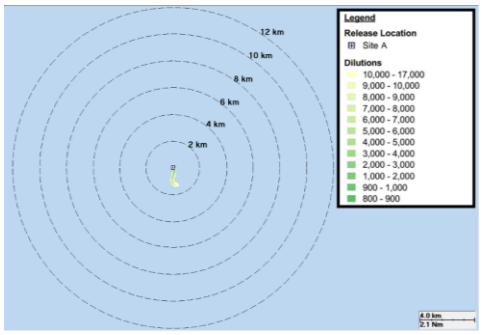
Production PLET from the release location. The corresponding plume area ranged from ~1.03–1.54 km^2 and ~3.14–6.85 km² for G&E Production PLET and BFM Production PLET, respectively.

- vertical discharge:
  - near-field modelling from both release locations (G&E Production PLET and BFM Production PLET) indicated that the treated water plume would initially travel vertically upward following discharge before reducing in momentum and being transported horizontally under the influence of the ambient currents. The far-field modelling indicated that the plume is primarily located ~50 m above the seabed during all seasonal conditions
  - the maximum extent of the 1-hour averaged dilution plume ranged from ~0.101–0.127 km for G&E Production PLET and ~0.117–0.175 km for BFM Production PLET from the release location. The corresponding plume area was ~0.02 km^2 and ~0.02–0.03 km^2 for G&E Production PLET and BFM Production PLET, respectively
  - the maximum extent of the 24-hour averaged dilution plume ranged from ~0.692–0.779 km for G&E Production PLET and ~0.643–1.001 km for BFM Production PLET from the release location. The corresponding plume area ranged from ~0.39–0.43 km^2 and ~0.45–0.59 km² for G&E Production PLET and BFM Production PLET, respectively
  - the maximum extent of the 48-hour averaged dilution plume ranged from ~0.459–0.540 km for G&E Production PLET and ~0.459–0.585 km for BFM Production PLET from the release location. The corresponding plume area ranged from ~0.18–0.22 km^2 and ~0.21–0.27 km² for G&E Production PLET and BFM Production PLET, respectively.

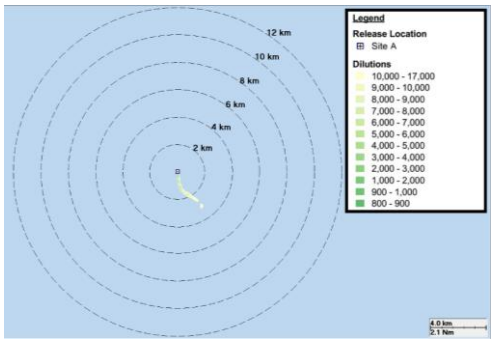
In addition to the seasonally-based stochastic minimum moving averaged treated water analyses, results from randomly selected deterministic (single simulation) models were presented to illustrate the dynamic nature of the treated water plume under the influence of time-varying current directions and speeds (Ref. 353; Ref. 354) The examples in Figure 8-2 and Figure 8-3 show time-series snapshots of instantaneous dilutions (not time-averaged) of the treated water plume following discharge from G&E Production PLET. The time-series snapshots demonstrate the rapid dilution of the plume. Furthermore, the final snapshot is ~14.4 hours following the cessation of the treated water discharge and illustrates negligible presence of the plume remaining.



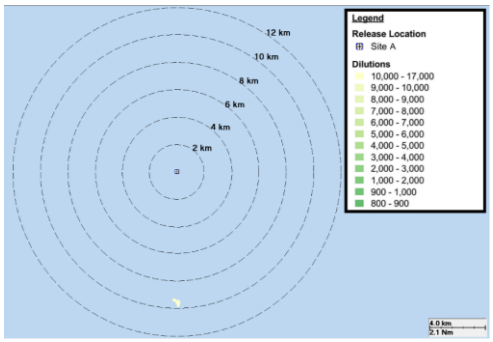
(a) 18 hours after commencement of discharge



(c) 54 hours after commencement of discharge

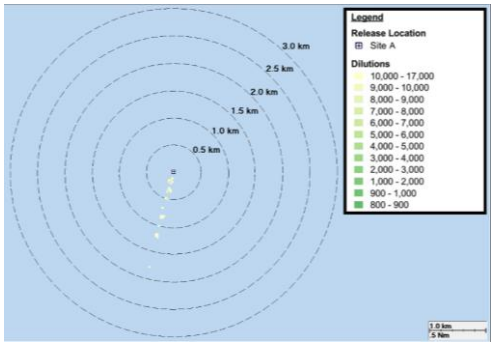


(b) 36 hours after commencement of discharge

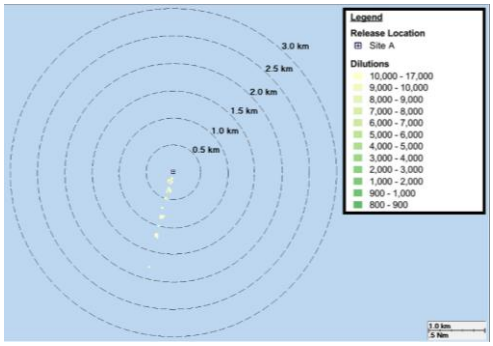


(d) 72 hours after commencement of discharge; ~14.4 hours after cessation of discharge

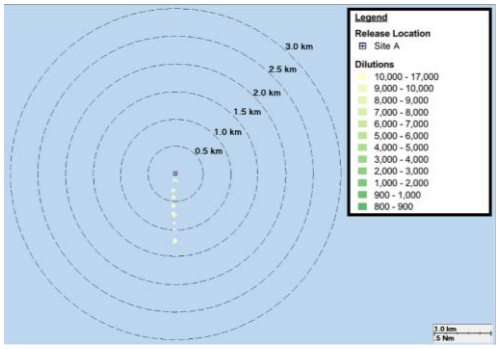
Figure 8-2: Time series of predicted instantaneous dilutions for a horizontal discharge at G&E Production PLET from a randomly selected simulation under winter conditions



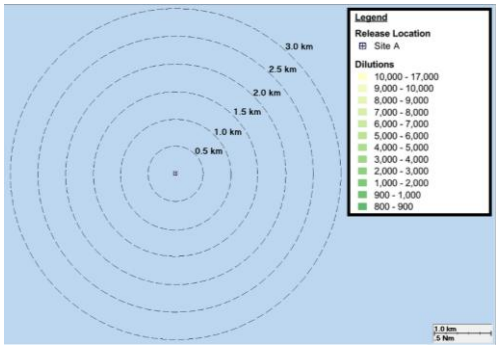
(a) 18 hours after commencement of discharge



(c) 54 hours after commencement of discharge



(b) 36 hours after commencement of discharge



(d) 72 hours after commencement of discharge; ~14.4 hours after cessation of discharge

Figure 8-3: Time series of predicted instantaneous dilutions for a vertical discharge at G&E Production PLET from a randomly selected simulation under winter conditions

8.9.3 Environmental impact and risk evaluation

Planned operational discharges may result in a:

- localised and temporary change in water quality
- localised alteration of BCH.

8.9.3.1 Consequence evaluation

8.9.3.1.1 Impact: localised and temporary change in water quality

Planned discharges from subsea operations (Table 4-8) occur primarily at or near the seabed, with minor potential releases (<1 m^3 per event) of MEG, control fluid, or acid wash at or near the sea surface. These discharges are intermittent, non-continuous, and of short duration and may result in localised and temporary change in water quality.

The largest discharge volumes are assessed for each discharge type.

Treated water

Planned discharges of treated water may occur during pre-commissioning activities and are expected to be released at or near the seabed. The largest individual planned discharge volume identified was ~90 m^3 associated with conditioning activities at the SCMS, G&E DC and Jansz DC-2. In addition, FCG and/or pressure testing and dewatering may be required for the production flowline as contingency activities. If undertaken, an indicative volume of ~10,200 m^3 of treated water may be discharged per event at the PLETs, BFM or G&E PTS.

Dispersion modelling was undertaken for both horizontal and vertical discharge orientations (Section 8.9.2; Ref. 353; Ref. 354). Results for the horizontal discharge orientation varied between locations (Ref. 353), with the greatest extent predicted at the BFM Production PLET. This extent corresponded to the 24-hour averaged dilution plume (corresponding to the PNEC), which was predicted to extend up to 7.50 km. At the G&E Production PLET, located in shallower water (~120 m shallower), the corresponding extent was smaller, reaching up to 4.73 km. Note that for the 48-hour averaging period, the predicted extents were reduced to 5.99 km and 2.63 km at the BFM Production PLET and G&E Production PLET locations, respectively.

Modelling results for the vertical discharge orientation (Ref. 354) predicted smaller and broadly similar exposure extents at both locations. The maximum extent corresponded to the 24-hour averaged dilution plume and was predicted to extend up to 0.779 km and 1.001 km at the BFM Production PLET and G&E Production PLET locations, respectively. Note that for the 48-hour averaging period, the predicted extents were reduced to ~0.6 km at both locations.

Overall, modelling predicted rapid mixing and dilution of the treated water plume for both discharge orientations and locations, with negligible presence of the plume ~14.4 hours following the cessation of the discharge (Ref. 353; Ref. 354). Consequently, any reduction in water quality is expected to be short-term and confined to the waters surrounding the discharge plume.

Chemical sticks

Chemical sticks are planned to be used during subsea infrastructure installation and pre-commissioning activities, with the largest identified volume being ~170 m^3. As these chemicals are used to treat seawater ingress within the

infrastructure, actual release volumes into the environment are expected to be smaller. The identified volume would also be applied intermittently throughout the petroleum activity, resulting in multiple smaller, discrete releases, rather than a large single release.

Chemical sticks include biocide, oxygen scavenger and dye. Consistent with the assessment of treated water, which contains similar chemical constituents and which were evaluated for substantially larger discharge volumes, any reduction in water quality is expected to be short-term and confined to waters surrounding the discharge plume.

Given the low release volumes and the infrequent nature of the discharges , the discharges are expected to disperse and dilute within the water column in close proximity to the release location. Consequently, any reduction in water quality is expected to be short-term and localised.

MEG

Planned discharges of MEG may occur during subsea infrastructure installation and pre-commissioning activities. The largest individual planned discharge volume identified is ~430 m^3 associated with testing activities at infrastructure tie-in locations. Note this volume would be discharged intermittently throughout the petroleum activity as multiple smaller, discrete releases. In addition, FCG and/or pressure testing may be required for the MEG pipeline as contingency activities. If undertaken, an indicative volume of ~600 m^3 may be discharged per event from either PLEM.

MEG has very low aquatic toxicity, is listed on the Oslo and Paris Conventions (OSPAR) list of substances that are considered to pose little or no risk (PLONOR) to the environment once released, is readily biodegradable, and has low potential for bioaccumulation (Ref. 357; Ref. 358). MEG is also miscible with water and is not expected to accumulate in sediments (Ref. 358). As such, it would disperse quickly when released into the marine environment.

Residual quantities of biocide may be present within existing infrastructure. As a result, MEG discharges associated with tie-in and testing activities around the existing infrastructure may contain trace concentrations of these chemicals. Given the trace concentrations involved and the rapid dilution of the receiving MEG release, any associated change in water quality is expected to be localised and short term.

Consequently, MEG discharges are expected to result in a localised and short-term change in water quality.

Nitrogen

Nitrogen may be released if contingency dewatering is required. If undertaken, an indicative volume of ~750,000 m^3 may be discharged[131].

Nitrogen gas does not react with water and is expected to rise and partially dissolve following release (Ref. 356). As the nitrogen plume rises through the water column, a proportion of the gas is expected to dissolve in the surrounding water, which may temporarily increase nitrogen concentrations and biological productivity, including plankton growth (Ref. 356); however, these potential effects

[131] The NOPSEMA-accepted Gorgon Backfill Fields Development OPP assessed a smaller subsea nitrogen release volume (~25,000 m^3); however, the risk assessment undertaken for this EP concluded that the overall risk profile remains unchanged. In addition, any nitrogen that reaches the sea surface and subsequently released to atmosphere would remain within the extent of the surface release previously assessed in the OPP.

are expected to be localised and short term due to dilution and dispersion within the surrounding water column. Any undissolved nitrogen is expected to migrate towards the sea surface (refer to Section 8.3 for the impact assessment relating to air quality).

Given the contingency and infrequent nature of the release (limited to production flowline dewatering activities during pre-commissioning), temporary change from water quality background water quality conditions may occur. Consequently, any reduction in water quality is expected to be localised and short term.

Trapped hydrocarbons

Trapped hydrocarbons (condensate and hydrocarbon gas) may be released during tie-in activities at the SCMS. The indicative volumes are <1 m^3 and <175 m^3 of condensate and hydrocarbon gas per tie-in, respectively. These types of discharges are discrete intermittent events of short duration.

Condensate released subsea would be buoyant and migrate upward through the water column. However, given the water depth, pressure, and the small volumes released, these volumes of condensate are not expected to reach the sea surface; rather, given the properties of the Jansz condensate (e.g. low viscosity, and non-persistent oil [Ref. 4]) the condensate would disperse, dissolve, and dilute within the water column.

Therefore, given the small and discrete volume of these discharges, localised and short-term reduction to water quality may occur.

Control fluids

Water-based hydraulic control fluids may be release intermittently throughout the petroleum activity, with an indicative volume of ≤1–2 m^3 per release, noting that discharges would occur as multiple smaller, discrete releases.

These water-based fluids are typically diluted (Ref. 359) to ~1–3% with potable water, and are expected to rapidly disperse due to the small discharge volumes and open marine conditions. Modelling undertaken for another petroleum project, with current speeds of 0.1 m/s and a total volume of ~2.1 m^3, indicated that releases of blowout preventer fluids (for which control fluids are the primary component) achieve dilution of 3,000 times (Ref. 359). This analogue is considered appropriate given the similar discharges volume (~2 m^3) and current speeds (average regional currents vary between 0.19–0.25 m/s [Ref. 370]) are expected from the petroleum activity. The results estimated the residence time or plume persistence to be ~77 minutes with a spatial extent of up to 98 m (Ref. 359).

Therefore, given the intermittent nature, short duration, and low volume of releases, together with rapid dilution and dispersion in open marine waters, any potential reduction in water quality is expected to be localised and short-term.

Acid wash

These discharges are intermittent, non-continuous and of short duration; as such, frequency of exposure is limited. The volumes of chemicals used for acid washing are low (≤1 m^3 per application) and are applied directly to the infrastructure. A typical growth removal (acid–water mix) discharge is expected to quickly dilute and neutralise through reaction with calcareous material on the subsea infrastructure.

Given the low release volume and the limited frequency, the discharges are expected to disperse and dilute within the water column in close proximity to the

release location. Consequently, only a short-term and localised reduction in water quality is expected.

Summary

Given the intermittent nature of the discharges identified during subsea operations, together with their rapid dilution and dispersion within the marine environment, any reduction in water quality is expected to be short term and localised. As such, CAPL has assessed the localised and short-term change in water quality as Incidental (6).

8.9.3.1.2 Impact: localised alteration of BCH

Most subsea discharges (with the exception of treated water and MEG) are either positively buoyant or released in small volumes that rapidly disperse within the open marine environment (Section 8.9.3.1.1). Consequently, these discharges are not expected to result in alteration of BCH.

Potential discharges of treated water and MEG would be limited to the subsea infrastructure installation locations (i.e. around J-IC SCMS, DC-2 and G&E DC [Figure 4-2]). Habitat mapping (Section 5.3.1.1; Ref. 32) predicted that BCH in these areas is characterised by low structural complexity, consisting mainly of smooth and irregular seabed with bare substrate and intermittent mounds with bare substrate. Ground truthing transects along the production flowline and MEG pipeline confirmed the absence of complex BCH (Ref. 32).

The habitats within the G&E DC primarily comprised of smooth seabed with bioturbation and scattered patches of bedforms. Ground truthing confirmed the absence of complex seafloor structures and did not identify any epifaunal communities or benthic infauna (Ref. 32). The BCH within the OA were not considered to be of regional significance (Ref. 32).

Treated water

Dispersion modelling indicates that, for the vertical discharge orientation (Ref. 354), the plume initially travels vertically upward following discharge and is predicted to be located ~50 m above the seabed. Consequently, no alteration of BCH is expected and no further assessment is undertaken.

For the horizontal discharge orientation, modelling results (Ref. 353) indicate that the plume would initially interact with the seabed after release and would be located within the bottom layer of the water column (seabed to ~20 m above seabed). However, the treated water is predicted to rapidly dilute within the receiving environment, with negligible concentrations remaining following cessation of the discharge (Ref. 353).

Given the low structural complexity of the BCH and the rapid dilution of the plume, any alteration to BCH is expected to be highly localised and short-term. As such, CAPL has assessed alteration to BCH as Incidental (6).

MEG

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 PLONOR to the environment once released. While concentrated MEG is weakly negatively buoyant, it is miscible with water and therefore not expected to persist or accumulate in sediments (Ref. 358). As such, MEG is not expected to result in adverse impacts to BCH and has not been evaluated further.

8.9.3.2 ALARP decision context justification

Offshore operations, and subsequent planned discharges, are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential impacts associated with planned discharges from these types of activities are managed through established control measures recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding planned discharges from operational activities during the petroleum activity by relevant persons during consultation in preparing this EP.

The potential impacts and risks from planned discharges from subsea operations are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.9.3.3 Control measures

Table 8-46 details the control measures relevant to this aspect.

Table 8-46: Good practice control measures relevant to Planned discharges—Subsea operations

CM	Description
CM-25: Hazardous materials selection process	Planned discharges to the marine environment are subject to selection and environmental assessment as per CAPL's Hazardous Materials Management Procedure (Ref. 8; see also Section 10.3.1.3). The environmental assessment process: • identifies the CHARM colour banding or the OCNS group for nonCHARM products • evaluates the dosage, quantity, and frequency of the discharge, and the location and nature of the receiving environment • requires the selection of the least hazardous material where technically and operationally feasible.

8.9.4 Demonstration of acceptability

Table 8-47 describes the demonstration of acceptability relevant to this aspect.

Table 8-47: Demonstration of acceptability relevant to Planned discharges—Subsea operations

Comparison with acceptable level
The acceptable levels for this aspect are **AL-01** and **AL-02** (refer to Section 6.6). Planned discharges from subsea operations are predicted to result in temporary reduction in water quality and localised impacts to BCH (Section 8.9.3.1). Therefore, it is not expected to affect biological diversity and ecosystem integrity. Consequently, the predicted level of impact for the relevant receptors is equivalent or better than the acceptable levels **AL-01** and **AL-02**.
Principle of ESD
Precautionary Principle In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required. *Intergenerational Principle* In accordance with Table 6-5, a consequence level of Incidental (6) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required.

Biodiversity Principle

The potential impact associated with this aspect is a localised and temporary reduction in water quality, which are not considered to have the potential to affect biological diversity and ecological integrity.

Relevant environmental legislation and other requirements

Legislation and other requirements considered relevant for this aspect include:

- IChEMS.

CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
IChEMS Establishes nationally consistent standards for managing import, manufacture, export, use and disposal of industrial chemicals	Requirement for chemicals selection have been incorporated into the **Hazardous materials selection process** control measure.

Internal context

These management processes or procedures were deemed relevant for this aspect:

- Hazardous Materials Management Procedure (Ref. 8).

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

Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7).

No changes to this impact and risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.

8.9.5 Environmental performance

Table 8-48 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-48: Environmental performance relevant to Planned discharges—Subsea operations

EPO	CM	EPS	MC
EPO-26: Planned discharges from subsea operations within the OA will not cause lasting changes to water quality. Water quality will return to ambient state within seven days following the cessation of the discharge. **EPO-39:** Planned discharges from subsea operations within the OA will only cause localised changes to BCH (i.e. within the vicinity	**CM-25**: Hazardous materials selection process	**EPS-25:** Planned discharges to the marine environment are subject to selection and environmental assessment as per CAPL's *Hazardous Materials Management Procedure* (Ref. 8). The environmental assessment process: • identifies the CHARM colour banding or the OCNS group for nonCHARM products • evaluates the dosage, quantity, and frequency of the discharge, and the location and nature of the receiving environment • requires the selection of the least hazardous material	**MC-25** Hazardous materials selection process assessment records (or equivalent).

EPO	CM	EPS	MC
of the subsea discharge).		where technically and operationally feasible.	

8.10 Unplanned disturbance—Fauna interaction

8.10.1 Aspect source

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

- temporary presence of vessels and ROV/AUV within the OA during the petroleum activity
- temporary presence of helicopters within the OA during the petroleum activity
- seawater intake associated with contingency flooding during pre-commissioning activities.

8.10.2 Environmental impact and risk evaluation

Unplanned interactions with marine fauna may result in:

- injury or mortality of marine fauna.

8.10.2.1 Consequence evaluation

8.10.2.1.1 Risk: injury or mortality of marine fauna

The OA occurs in water depths ~1,100 m–1,400 m and is ~75 km north-east of the Montebello Island and ~93 km north-east of Barrow Islands.

During the petroleum activity the vessels and ROVs/AUVs will be present within the OA. The estimated duration for pipelay, subsea installation and pre-commissioning activities is ~five months per campaign, while Jansz infield umbilical and IMR campaigns are expected to take ~one–two months per campaign (Table 4-1). Helicopter will be also present within the OA with an expected routine fight frequency varying from two per month (during FCS integration) to up to 12 trips per week (during pipelay activities).

Activities undertaken on the existing FCS infrastructure during the FCS integration, which takes ~60 days, have the potential to result in unplanned interactions with seabirds and migratory shorebirds. Note that Section 7.3 of the NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations EP*[132] (Ref. 5) provides an evaluation of the potential impacts and risks associated with the existing FCS infrastructure. Consistent with Regulation 56(1) of the OPGGS(E)R, this information is not repeated here as it has previously been provided to NOPSEMA and is publicly available.

Surface-dwelling marine fauna are most at risk from this unplanned interaction and thus are the focus of this evaluation.

Marine mammals

As identified in Section 5.3.3.1, several marine mammals species listed as threatened and/or migratory under the EPBC Act have the potential to occur within

[132] The NOPSEMA-accepted *Gorgon and Jansz Feed Gas Pipeline and Wells Operations EP* is available online at: https://docs.nopsema.gov.au/A1316111. Section 7.3. of this EP provides the consequence evaluation of the potential interaction between seabirds and migratory shorebirds and the permanent presence of the FCS.

the OA. The pygmy blue whale migration BIA was identified overlapping with the OA.

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. 320).

A review of the documents made or implemented under the EPBC Act for threatened and/or migratory cetacean species that may be present within the OA (i.e. blue whale [Ref. 42]; fin whale [Ref. 268]; sei whale [Ref. 269]; Australian humpback dolphin [Ref. 270]; Australian snubfin dolphin [Ref. 271]) indicates that either vessel disturbance or interaction (such as collisions) are a key threat to the recovery of the species. Management actions are limited to incident reporting via the national database (refer to Section 10.7.2) and ensuring that the risk of vessel strike is assessed and appropriate mitigation measures are implemented, where required (see the text below and Section 8.10.2.3).

The *Conservation Management Plan for the Blue Whale 2015–2025* (Ref. 42) 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. Nisi et al. (Ref. 360) indicate that reducing vessel speed lowers both the likelihood and severity of whale-ship collisions. Laist et al. (Ref. 361) 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.

There have been few recorded instances of cetacean deaths in Australian waters. Mackay et al. (Ref. 362) 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. 363) was also recorded, noting this data indicates deaths are more likely to be associated with container ships and fast ferries.

The OA overlaps with the pygmy blue whale migration BIA. As the petroleum activity may occur year-round, there is potential for overlap with the predicted migration periods. However, based on satellite tracking and acoustic detection studies, it is expected that pygmy blue whales use a broader migration corridor (i.e. extending further offshore than the defined BIA, Section 5.3.3.1.1). As such, only low numbers of transitory whales are expected to cross the OA.

Fauna strikes are not expected due to the low numbers of transitory marine mammals expected within the OA, the low number vessel within the OA, and the fact that fauna strikes have been demonstrated to be very rare. If a fauna strike occurred leading to mortality, it would result in individual impacts and is not expected to have a detrimental effect on the overall population. As such, a conservative consequence ranking of Minor (5) has been applied due to the potential for injury or mortality to individual EPBC-listed marine mammal species.

Marine reptiles

The *Recovery Plan for Marine Turtles in Australia* (Ref. 264) identifies vessel disturbance and habitat modification (e.g. construction of oil and gas infrastructure) as key threats; however, it also notes that these are particularly an issue in shallow, coastal nesting and/or foraging habitats, internesting areas with

high numbers of recreational and commercial craft, or in areas of marine development.

Unplanned entrainment and impingement of marine turtle hatchlings may occur due to seawater intake associated with contingency flooding. Upon entering the water, hatchlings primarily use wave direction to orient toward deeper waters (Ref. 264) and may drift passively; consequently, they are unlikely to out-swim intake currents and may be subject to entrainment or impingement. Flooding activities are contingency under this EP and, if required, may only occur over several days.

No BIAs or HCTS of marine turtle species overlap the OA. Given the OA is located in deep (>1,100 m) offshore waters (~75 km to the nearest land), turtle presence is expected to be limited to transient individuals. If a fauna strike, entrainment or impingement occurred leading to mortality, it would result in individual impacts and is not expected to have a detrimental effect on the overall population. As such, a conservative consequence ranking of Minor (5) has been applied due to the potential for injury or mortality to individual EPBC-listed marine reptiles species.

Fishes, including sharks and rays

A review of the documents made or implemented under the EPBC Act for listed threatened and/or migratory sharks species identified within the OA did not identify vessel disturbance or strike as a threat, except for whale sharks. The *Conservation Advice for the Whale Shark* (Ref. 273) indicates 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 OA does not overlap with these areas, and no BIAs for whale sharks were identified within the OA.

Seawater intake associated with contingency flooding has the potential to result in unplanned entrainment and impingement of juvenile fish, eggs and larvae. A 40-year literature review by Barnthouse (Ref. 364) found that such potential impacts are generally minor relative to natural mortality rates of susceptible life stages and population-level impacts from fishing. Flooding activities are contingency under this EP and, if required, any unplanned interactions with juvenile fish, eggs and larvae are not expected to adversely affect population viability.

Given the offshore location of the OA, the presence of fishes, including sharks and rays, is expected to be limited to transient individuals. If a fauna strike occurred leading to mortality, it would result in individual impacts and is not expected to have a detrimental effect on the overall population. On this basis, a conservative consequence ranking of Minor (5) has been applied due to the potential for injury or mortality to individual EPBC-listed fishes, including sharks and rays.

Seabirds and shorebirds

The risk of injury or mortality to seabirds and migratory shorebirds may occur during helicopter take-off or landing associated with passenger transfer / crew change operations, collision with the vessels. A review of the documents made or implemented under the EPBC Act for listed threatened and/or migratory birds species identified within the OA did not identify helicopter disturbance or strike as a threat, except for the *Wildlife Conservation Plan for Seabirds* (Ref. 74); however, it also notes that this is particularly an issue to those aircrafts flying low over breeding islands and nesting habitats. There are no islands within or adjacent to

the OA. In addition, the OA is ~75 km north-east of the Montebello Island and ~93 km north-east of Barrow Islands. Given this distance, bird presence is expected to be limited to transient individuals.

Migratory birds with potential migration routes overlapping with the OA may be at higher risk. In regions such as Canada and the Gulf of Mexico, bird injury or fatalities due to collisions have been reported (Ref. 365; Ref. 366). In the Gulf of Mexico, collisions with platforms were common during autumn, as most migrants were aloft over the platforms during nighttime hours in that season (Ref. 366). It is also noted that this impact is considered unusual (Ref. 365) or negligible compared to other anthropogenic sources of mortality (Ref. 366).

The OA overlaps the breeding BIA for wedge-tailed shearwaters. They typically begin arriving at their WA colonies around August; and then leave nests in early April to early-May (Ref. 77; Ref. 78). Helicopter activity within the OA is intermittent, ranging from one to two flights per month up to 12 trips per week. Given the low speeds during take-off and landing, and the limited number of vessels within the OA, if a bird strike resulting in severe injury or mortality were to occur, it is expected to affect only a small number of transient individuals and is not expected to have a detrimental effect on the overall population. As such, a consequence ranking of Minor (5) has been applied due to the potential for injury or mortality to individual EPBC-listed seabirds and migratory shorebirds.

8.10.2.2 ALARP decision context justification

Vessel and helicopter operations are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential risks associated with unplanned interactions with marine fauna from these types of activities are managed through control measures aligned with applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding unplanned interactions with marine fauna from the petroleum activity by relevant persons during consultation in preparing this EP.

The potential risks arising from unplanned interactions with marine fauna are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.10.2.3 Control measures

Table 8-49 details the control measures relevant to this aspect.

Table 8-49: Good practice control measures relevant to Unplanned disturbance—Fauna interaction

CM	Description
CM-15: Vessels under transit or on standby within the OA	For vessels under transit or on standby within the OA, the following cetacean interaction mitigation will be implemented: • caution and no approach zones for cetaceans as described in EPBC Regulations 2025 – Part 8 Division 8.1 – Interacting with cetaceans • vessels must operate at ≤6 knots within caution zones or when moving away to maintain a no-approach zone distance.

8.10.2.4 Likelihood and residual risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk level as identified in Table 8-50.

Table 8-50: Likelihood and residual risk relevant to Unplanned disturbance—Fauna interaction

Risk/receptor	Consequence	Likelihood	Residual risk
Injury or mortality of marine fauna			
Marine mammals	Minor (5)	Remote (5)	Very low (9)
Marine reptiles	Minor (5)	Remote (5)	Very low (9)
Fishes, including sharks and rays	Minor (5)	Remote (5)	Very low (9)
Seabirds and migratory shorebirds	Minor (5)	Unlikely (4)	Low (8)

8.10.3 Demonstration of acceptability

Table 8-51 describes the demonstration of acceptability relevant to this aspect.

Table 8-51: Demonstration of acceptability relevant to Unplanned disturbance—Fauna interaction

Comparison with acceptable level
The acceptable level for this aspect is **AL-19** (see Section 6.6 for definitions). The intent of adopting and implementing preventive control measures (Section 8.10.2.3) is to prevent the occurrence of an unplanned interaction with marine fauna. This preventative approach ensures that **AL-19** is met. In the event that an interaction with marine fauna did occur, the above risk evaluation demonstrates that the predicted impact is expected to be minor with no effects at population level.
Principle of ESD
Precautionary Principle In accordance with Table 6-5, a consequence level of minor (5) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required. *Intergenerational Principle* In accordance with Table 6-5, a consequence level of minor (5) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required. *Biodiversity Principle* In the event that an unplanned interaction with marine fauna did occur, the above risk evaluation demonstrates that the predicted impact is expected to be incidental. As such, this aspect is not considered as having the potential to affect biological diversity and ecological integrity.
Relevant environmental legislation and other requirements
Legislation and other requirements considered relevant for this aspect include: • EPBC Regulations 2025 (Cth) • *National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna* (Ref. 16) • *Blue Whale Conservation Management Plan* (Ref. 42) • *Conservation Advice for fin whale* (Ref. 268) • *Conservation Advice for sei whale* (Ref. 269) • *Conservation Advice for Australian humpback dolphin* (Ref. 270) • *Conservation Advice for Australian snubfin dolphin* (Ref. 271) • *Recovery Plan for Marine Turtles in Australia* (Ref. 264)

- Conservation Advice for leatherback turtle (Ref. 367)
- *Conservation Advice for whale shark* (Ref. 273)
- *Wildlife Conservation Plan for Seabirds* (Ref. 74)
- *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 265)
- *Marine Bioregional Plan for the NWMR* (Ref. 21).

CAPL considers that impact management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
EPBC Regulations 2025 Part 8 Division 8.1 (Interacting with cetaceans) describes caution and no approach zones for when interacting with cetaceans from vessels, and vertical and horizontal distances for helicopter operations.	Requirements of regulation 8.05 and 8.06 for vessels have been incorporated into the **Vessels under transit or on standby within the OA** control measure.
National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna No specific action identified.	N/A.
Conservation Management Plan for the Blue Whale 2015–2025 Action A.4.2: Ensure all vessel strike incidents are reported in the National Ship Strike Database. 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.	Section 8.10.2 provides a risk assessment for unplanned interactions with marine fauna from the petroleum activity. This assessment included identifying control measures so that the risks are managed to ALARP and acceptable levels. Requirements to report vessel strike incidents are included in Section 10.7.2. The petroleum activity is not considered to be inconsistent with the Conservation Management Plan for the Blue Whale or the Conservation Advices for fin whales, sei whales, Australian humpback dolphin and Australian snubfin dolphin.
Conservation Advice for fin whale Ensure all vessel strike incidents are reported in the National Ship Strike Database.	
Conservation Advice for sei whale Ensure all vessel strike incidents are reported in the National Ship Strike Database.	
Conservation Advice for Australian humpback dolphin Ensure all vessel strike incidents are reported in the National Ship Strike Database. Ensure the risk of vessel strike on Australian humpback dolphins is considered when assessing actions that increase vessel traffic on areas Australian humpback dolphins occur and, if required, appropriate mitigation measures are implemented.	
Conservation Advice for Australian snubfin dolphin Ensure all vessel strike incidents are reported in the National Ship Strike Database. Ensure the risk of vessel strike on Australian snubfin dolphins is considered when assessing actions that increase vessel traffic on areas Australian snubfin dolphins occur and, if required, appropriate mitigation measures are implemented.	

Recovery Plan for Marine Turtles in Australia No specific action identified.	N/A.
Conservation Advice for leatherback turtle No specific action identified.	N/A.
Conservation advice for the whale shark 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.	Section 8.10.2 provides a risk assessment for unplanned interactions with marine fauna from the petroleum activity. The OA does not overlap with BIAs or areas close to marine features likely to correlate with whale shark aggregations (Ningaloo Reef, Christmas Island and the Coral Sea) or along the northward migration route that follows the northern Western Australian coastline along the 200 m isobath. The petroleum activity is not considered to be inconsistent with the Conservation Advice for whale sharks.
Wildlife Conservation Plan for Seabirds No specific action identified.	N/A.
Wildlife Conservation Plan for Migratory Shorebirds No specific action identified.	N/A.
Marine Bioregional Plan for the NWMR No specific action identified.	N/A.
Internal context	
No management processes or procedures were deemed relevant for this aspect.	
External context	
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). No changes to this risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.	

8.10.4 Environmental performance

Table 8-52 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-52: Environmental performance relevant to Unplanned disturbance—Fauna interaction

EPO	CM	EPS	MC
EPO-34: No death or injury of an EPBC Act listed threatened, migratory, or cetacean species from the petroleum	**CM-15:** Vessels under transit or on standby within the OA	**EPS-15**: Vessels under transit[133] or on standby within the OA will implement caution and no approach zones as described in sections 8.05 and 8.06 of the EPBC Regulations 2025 (Cth): • caution zone (300 m either side of whales; 150 m either side of	**MC-15.1:** Induction materials include relevant marine fauna caution and no approach zone requirements.
			MC-15.2:

[133] For safety reasons this control measure is not applied to vessels holding station or with limited manoeuvrability (e.g. during lifts, bunkering, etc.) or during emergency situations.

EPO	CM	EPS	MC
activity within the OA.		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.	Training records (or equivalent) verify offshore personnel involved in the petroleum activity have completed the induction. **MC-15.3:** Vessel marine fauna sighting records (or equivalent) show if marine fauna interaction occurred within caution or approach zones and what mitigation (e.g. divert or slow vessel) measure was implemented.

8.11 Unplanned disturbance—Seabed disturbance

8.11.1 Aspect source

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

- incorrect position of infrastructure during installation activities
- dropped objects (e.g. jumpers, flying leads, UTAs) from the vessels or ROV/AUV during installation, pre-commissioning and FCS integration activities.

8.11.2 Environmental impact and risk evaluation

Unplanned seabed disturbance may result in:

- potential localised alteration of BCH
- a potential adverse effect to unknown UCH.

8.11.2.1 Consequence evaluation

8.11.2.1.1 Risk: temporary alteration of BCH

Object loss may occur due to operator error, bad weather events or failure of equipment. Based on a conservative assumption that the largest credible pipelay section (~2 km) or the largest subsea infrastructure item (~75 m^2) is dropped during installation, the associated seabed footprint is expected to be <1.4 m^2.

BCH may be altered via physical disturbance or indirectly by the temporary increase in suspended sediment near the seabed resulting from dropped objects.

As described in Section 5.3.1.1, habitat mapping (Ref. 32) predicted that BCH within the OA would be characterised by low structural complexity, consisting mainly of smooth and irregular seabed with bare substrate and intermittent mounds with bare substrate. Ground truthing transects along the production flowline and MEG pipeline confirmed the absence of complex BCH (Ref. 32).

Crossing the northern section of the proposed G&E umbilical route (i.e. near the Jansz FCS), habitat mapped identified a continuous scarp with bare substrate. Small patches along the scarp were predicted as areas of low likelihood of biota; however, a ground truthing transect of this area did not identify the presence of epifauna due to a thick coverage of sediment (Ref. 32). The habitats within the G&E DC primarily comprised of smooth seabed with bioturbation and scattered patches of bedforms. A ground truthing transect confirmed the absence of complex seafloor structures and did not identify any epifaunal communities or benthic infauna (Ref. 32). The BCH within the OA were not considered to be of regional significance (Ref. 32).

On this basis, potential impacts to BCH as a result of unplanned seabed disturbance would be limited to small, localised areas associated with individual occurrences and short-term localised impacts (i.e. area of impact limited to the size of dropped object or equipment). Given that the OA is largely characterised by low structural complexity habitats, with small patches predicted to have a low likelihood of supporting biota, and the isolated nature of dropped object events, CAPL ranked this consequence as Minor (5).

8.11.2.1.2 Risk: potential adverse effect to unknown UCH

During the petroleum activity, discovery of, and unintended disturbance to, unknown UCH may occur.

Given known sea level history, areas in water depths of <125 m would have been emergent land during the extended history of First Nations occupation of Australia. The OA occurs in water depths >1,100 m. Consequently, the OA would not have been emergent land during the history of First Nations occupation and the potential for unknown First Nations UCH is not considered credible and no further assessment has been undertaken.

As identified in Section 5.6.1, there are no known UCH within the OA, and the probability of encountering any historic UCH is low. Consequently, the discovery of, and unintended disturbance to, unknown UCH as a result of unplanned seabed disturbance is not expected. However, should such an event occur, it would be limited to individual occurrences and highly localised impacts (i.e. area of impact limited to the size of dropped object or equipment). Thus, CAPL has assessed potential adverse effect to unknown UCH sites and/or artefacts as Incidental (6).

8.11.2.2 ALARP decision context justification

Offshore installation and vessel-based activities are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential risks associated with unplanned seabed disturbance from these types of activities are managed through control measures recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding unplanned seabed disturbance from the petroleum activity by relevant persons during consultation in preparing this EP.

The risks arising from unplanned seabed disturbance are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.11.2.3 Control measures

Table 8-53 details the control measures relevant to this aspect.

Table 8-53: Good practice control measures relevant to Unplanned disturbance—Seabed disturbance

CM	Description
CM-26: Lift Plan (or equivalent)	All vessels undertaking complicated, complex, or heavy lifts have a Lifting Procedure (or equivalent) in place that complies with the requirements of the *Control of Work Process* (Ref. 170). The lifting procedure describes the requirements when performing lifting activities.
CM-27: Marine Order 28	Marine Order 28 (Operations standards and procedures) 2025 sets out requirements and responsibilities for vessel owners, including watchkeeping standards.
CM-28: Recover dropped 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.).
CM-09: UCH Procedure	CAPL's *Inadvertent Underwater Cultural Heritage Discovery Procedure* (Ref. 10) has been developed in alignment with the *Guidelines for Assessing and Managing Impacts to Underwater Cultural Heritage in Australian Water* (Ref. 9). The Procedure is implemented where there are activities interacting with the seabed with the risk of disturbing unlocated UCH. The Procedure ensures that inadvertent discoveries of UCH (including First Nations UCH) are responded to with adequate conservation and management actions.

8.11.2.4 Likelihood and residual risk level summary

The unplanned loss of equipment and/or dragged equipment has occurred previously in the industry. With the application of the above control measures CAPL has assessed the likelihood and residual risk level as identified in Table 8-54.

Table 8-54: Likelihood and residual risk relevant to Unplanned disturbance—Seabed disturbance

Risk/receptor	Consequence	Likelihood	Residual risk
Temporary alteration of BCH			
BCH	Minor (5)	Remote (5)	Very low (9)
Potential adverse effect to unknown UCH			
Unknown UCH	Incidental (6)	Rare (6)	Very low (10)

8.11.3 Demonstration of acceptability

Table 8-55 describes the demonstration of acceptability relevant to this aspect.

Table 8-55: Demonstration of acceptability relevant to Unplanned disturbance—Seabed disturbance

Comparison with acceptable level

The acceptable level for this aspect is **AL-21** (see Section 6.6 for definitions).

The intent of adopting and implementing preventive control measures (Section 8.11.2.3) is to prevent the occurrence of an unplanned release of solid objects to the environment. This preventative approach ensures that **AL-21** is met.

In the event that an unplanned release of solid objects did occur, the above risk evaluation demonstrates that the predicted consequence is expected to be minor to incidental.

Principle of ESD

Precautionary Principle

In accordance with Table 6-5, a consequence level between a Minor (5) to Incidental (6) do not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required.

Intergenerational Principle

In accordance with Table 6-5, a consequence level between a Minor (5) to Incidental (6) do not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required.

Biodiversity Principle

The risks associated with this aspect include localised and short-term seabed disturbance, which is not expected to represent a threat of serious or irreversible environmental damage. As such, this aspect is not considered as having the potential to affect biological diversity and ecological integrity.

Relevant environmental legislation and other requirements

Legislation and other requirements considered relevant for this aspect include:

- Marine Order 28
- UCH Act.

CAPL considers that risk management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
Marine Order 28 Vessel watchkeeping standards.	Vessel watchkeeping requirements has been incorporated into the **Marine Order 28** control measure.
UCH Act Notifications of the discovery of suspected UCH as per section 40 of the UCH Act.	Notifications requirements consistent with section 40 of the UCH Act have been incorporated into the **Inadvertent UCH Discovery Procedure** control measure.

Internal context

These management processes or procedures were deemed relevant for this aspect:

- *Inadvertent Underwater Cultural Heritage Discovery Procedure* (Ref. 10)
- *Control of Work Process* (Ref. 170).

Control measures related to the above management process or procedure have been described for this aspect. As such, CAPL considers that risk management for this aspect is consistent with company policy, culture, and standards.

External context

Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7).

No changes to this risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.

8.11.4 Environmental performance

Table 8-56 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-56: Environmental performance relevant to Unplanned disturbance—Seabed disturbance

EPO	CM	EPS	MC
EPO-36: No unplanned release of solid objects to the environment attributable to the petroleum activity.	**CM-26:** Lift Plan (or equivalent)	**EPS-26:** Where required under the CoW process, develop and implement a Lift Plan (or equivalent) for the petroleum activity.	**MC-26** Records confirm that a Lift Plan (or equivalent) is in place prior to complicated, complex, or heavy lifts being undertaken.
	CM-27: Marine Order 28	**EPS-27:** Vessels will implement watchkeeping standards in accordance with Marine Order 28.	**MC-27** Records verify that watchkeeping was undertaken in accordance with the requirements of Marine Order 28 during the petroleum activity.
	CM-28: Recover dropped equipment	**EPS-28:** Dropped equipment will be retrieved wherever practicable within operational and safety constraints.	**MC-28** Records show that, where assessed as safe and practicable, the lost equipment has been retrieved.
	CM-09: UCH Procedure	**EPS-09.2:** Discovery of suspected UCH is reported to the Minister within 21 days of discovery as per section 40 of UCH Act.	**MC-09.2** Record of lodgement of the notification to relevant agency, if suspected UCH was discovered.

8.12 Non-indigenous species—Introduction of invasive marine pests

8.12.1 Aspect source

Activities identified as having the potential to result in the introduction of invasive marine pests (IMP) include:

- planned discharged of ballast water or the presence of biofouling on vessels undertaking activities within the OA
- presence of biofouling on subsea equipment used within the OA.

8.12.2 Environmental impact and risk evaluation

A potential introduction and establishment of an IMP may subsequently result in:

- alteration to BCH.

8.12.2.1 Consequence evaluation

Section 8.11.2 of the NOPSEMA-accepted Gorgon Backfill Fields Development OPP provides an evaluation of potential impacts from introduction of IMP to BCH. As this petroleum activity forms part of the Backfill Fields Development (the offshore project), the potential introduction and establishment of an IMP are of a similar (or smaller) nature and scale, and the relevant receptor[134] (BCH) has been previously assessed, the consequence evaluation for this EP is considered

[134] Given the location of the OA, potential risks from introduction of IMP to KEFs and cultural heritage values were not considered credible for this petroleum activity.

covered by consequence evaluation within Section 8.11.2 of the OPP. In accordance with regulation 56(1) of the OPGGS(E)R, as this information has been previously supplied and is publicly available[135] it is not repeated here.

Consistent with information presented in the OPP, the risk consequence of a potential introduction and establishment of an IMP that may subsequently result in effects to BCH was assessed as Major (3).

8.12.2.2 ALARP decision context justification

Vessel operations are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential risks associated with an unplanned introduction of an IMP from these types of activities are managed through established control measures prescribed by applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding an unplanned introduction of an IMP from the petroleum activity by relevant persons during consultation in preparing this EP.

The risks of introducing of IMPs are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.12.2.3 Control measures

Table 8-57 and Table 8-58 detail the control measures relevant to this aspect.

Table 8-57: Good practice control measures relevant to Non-indigenous species—Introduction of invasive marine pests

CM	Description
CM-29: Quarantine procedure	CAPL's *Quarantine Procedure Marine Vessels* (Ref. 14) 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: • All vessels needing to discharge ballast in title areas must carry low risk ballast water, have a Ballast Water Management Plan and an International Ballast Water Management Certificate (for international vessels). Vessels with a Ballast Water Management System (BWMS) should also carry a Type Approval Certificate specific for the type of BWMS which is compliant with the IMO D-2 discharge standard. • All vessels must adhere to the *Australian Ballast Water Management Requirements* (Ref. 11) • All vessels must adhere to the *Australian Biofouling Management Requirements* (Ref. 12). The *Quarantine Procedure Marine Vessels* (Ref. 14) requires that all vessels complete and submit to CAPL a Marine Vessel Questionnaire, which addresses both ballast water and biofouling management, 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 is satisfied that the vessel meets marine quarantine requirements, CAPL will issue authorisation to mobilise via a Vessel Mobilisation Certificate.

[135] The NOPSEMA-accepted Gorgon Backfill Fields Development OPP is available online at: https://docs.nopsema.gov.au/A1265361. Section 8.11.2 of the Gorgon Backfill Fields Development OPP provides the consequence evaluation of the potential introduction and establishment of an IMP that may subsequently result in effects to BCH.

CM	Description
CM-30: 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. 12) all operators of vessels intending to enter Australian territorial waters must also provide information relating to biofouling management as part of the PAR via MARS.

Table 8-58:Additional control measures evaluated for Non-indigenous species—Introduction of invasive marine pests

CM	Benefit	Cost
Use locally sourced vessels and equipment	The use of locally sourced vessels and equipment may reduce the likelihood of introducing IMPs from international locations. However, it does not eliminate the risk of introducing species that are native to Australia but non-native to the NWMR, nor species that have established populations elsewhere in Australia. In addition, all contracted vessels are required to undergo IMP risk assessment and implement ballast water and biofouling management measures in accordance with regulatory requirements, regardless of origin. While the use of locally sourced vessels and equipment may reduce exposure to international sources of marine pests, the existing IMP controls applied to all vessels ensure that only vessels presenting an acceptably low IMP risk are mobilised to the OA. As such, no reduction in residual risk would be gained through the use of locally sourced vessels and equipment.	Restricting vessel and equipment selection to locally sourced providers may reduce vessel availability and flexibility, potentially resulting in scheduling delays and increased project costs. Given the negligible environmental benefit, the cost and operational constraints of implementing this control measure are considered grossly disproportionate. Therefore, this control has not been adopted for use.

8.12.2.4 Likelihood and residual risk level summary

As vessel activities are occurring within areas that are unlikely to provide benthic habitat suitable for IMP establishment, and with the application of the above control measures CAPL has assessed the likelihood and residual risk level as identified in Table 8-59.

Table 8-59: Likelihood and residual risk relevant to Non-indigenous species—Introduction of invasive marine pests

Risk/receptor	Consequence	Likelihood	Residual risk
Alteration to BCH			
BCH	Major (3)	Rare (6)	Low (8)

8.12.3 Demonstration of acceptability

Table 8-60 describes the demonstration of acceptability relevant to this aspect.

Table 8-60: Demonstration of acceptability relevant to Non-indigenous species—Introduction of invasive marine pests

Comparison with acceptable level
The acceptable levels for this aspect are **AL-20** (see Section 6.6 for definitions). The intent of adopting and implementing preventive control measures (Section 8.12.2.3) is to prevent the occurrence of an unplanned introduction of an IMP. This preventative approach ensures that **AL-20** is met.

Principle of ESD

Precautionary Principle

In accordance with Table 6-5, a consequence level of Major (3) could represent a threat of serious or irreversible environmental damage and therefore further evaluation against the Precautionary Principle 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. As such, there is limited scientific uncertainty associated with this aspect; therefore, no further evaluation against the Precautionary Principle is required.

Intergenerational Principle

In accordance with Table 6-5, a consequence level of Major (3) could represent a threat of serious or irreversible environmental damage and therefore further evaluation against the Intergenerational Principle is required. However, as previously stated, there is limited scientific uncertainty associated with this aspect; consequently, prevention measures are proposed in line with relevant environmental legislation and other requirements to prevent the introduction of IMPs and to ensure that risks are managed such that the environment is maintained for the benefit of future generations.

Biodiversity Principle

The risks associated with this aspect is a potential long-term alteration to BCH and a subsequent potential change to the values and sensitivity of benthic KEFs. Therefore, the introduction of an IMP has the potential to affect biological diversity and ecological integrity. However, the location (~75 km from Montebello Islands), water depths (>1,100 m), and predominant BCH within the OA (smooth or irregular seabed with bare substrate of bioturbation) are not likely to be suitable for IMP establishment.

There is little scientific uncertainty associated with this aspect as the cause-effect pathways are well known and the activities are well managed via established preventative control measures. The risk to BCH is considered to be managed to ALARP and acceptable levels.

Relevant environmental legislation and other requirements

Legislation and other requirements considered relevant for this aspect include:

- *Biosecurity Act 2015* (Cth)
- *Australian Ballast Water Management Requirements* (Ref. 11)
- *Australian Biofouling Management Requirements* (Ref. 12)
- *North-west Marine Parks Network Management Plan* (Ref. 131)
- *Marine Bioregional Plan for the NWMR* (Ref. 21).

CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
Biosecurity Act 2015 (Cth) PAR through MARS.	Requirement for PAR has been incorporated into the **Maritime Arrivals Reporting System** control measure.
Australian Ballast Water Management Requirements Best practice guidance for ballast water management within Australian seas, including legislative obligations under *Biosecurity Act 2015* (Cth).	Requirements for ballast water exchange and 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 PAR has been incorporated into the **Maritime Arrivals Reporting System** control measure. Proactive management of biofouling (e.g. use of biofouling management plan) has been incorporated into the **Quarantine Procedure** control measure.
North-west Marine Parks Network Management Plan	N/A.

No specific action identified.	
Marine Bioregional Plan for the NWMR No specific action identified.	N/A.
Internal context	
These management processes or procedures were deemed relevant for this aspect: • *Quarantine Procedure Marine Vessels* (Ref. 14). Control measures related to the above management process or procedure have been described for this aspect. As such, CAPL considers that impact management is consistent with company policy, culture, and standards.	
External context	
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). No changes to this risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.	

8.12.4 Environmental performance

Table 8-61 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-61: Environmental performance relevant to Non-indigenous species—Introduction of invasive marine pests

EPO	CM	EPS	MC
EPO-35: No introduction of an invasive marine pest attributable to the petroleum activity.	**CM-29:** Quarantine procedure	**EPS-29:** Vessels undertaking activities in the OA must meet the relevant requirements of CAPL's *Quarantine Procedure Marine Vessels* (Ref. 14), including that a Marine Vessel Questionnaire has been completed and submitted to CAPL.	**MC-29** The Vessel Mobilisation Certificate issued by CAPL confirms that relevant vessels meet requirements of the Quarantine Procedure Marine Vessels.
	CM-30: MARS	**EPS-30:** Vessels entering into the Australian territorial sea from outside Australian territory will be required to complete PAR (unless excepted under Biosecurity Determination 2016), in accordance with the *Biosecurity Act 2015* (Cth).	**MC-30** Records verify that relevant vessels completed PAR (or can demonstrate meeting conditions for an exception).

8.13 Unplanned release—Solid waste

8.13.1 Aspect source

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

- inappropriately handled or stored solid waste onboard vessels operating within the OA during the petroleum activity.

8.13.2 Environmental impact and risk evaluation

Unplanned release of solid waste to the environment may result in:

- injury or mortality of marine fauna.

8.13.2.1 Consequence evaluation

Section 8.12.2 of the NOPSEMA-accepted Gorgon Backfill Fields Development OPP provides an evaluation of potential impacts from unplanned release of solid objects. As this petroleum activity forms part of the Backfill Fields Development (the offshore project), the risk of unplanned release of waste is of a similar (or smaller) nature and scale, and the relevant receptors[136] (marine fauna) are the same as those previously assessed, the consequence evaluation for this EP is considered covered by consequence evaluation within Section 8.12.2 of the OPP. In accordance with regulation 56(1) of the OPGGS(E)R, as this information has been previously supplied and is publicly available[137] it is not repeated here.

Consistent with information presented in the OPP, the risk consequence of injury or mortality of marine fauna was assessed as Incidental (6). However, to align with updates to Chevron's *Integrated Risk Prioritization Matrix* (Table 6-2) a conservative consequence ranking of Minor (5) has been applied due to potential impacts to individuals EPBC listed species.

8.13.2.2 ALARP decision context justification

Vessel operations are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential risks associated with an unplanned release of solid wastes from these types of activities are managed through established control measures prescribed by applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding unplanned release of solid waste from the petroleum activity by relevant persons during consultation in preparing this EP.

The potential risks from an unplanned release of solid waste are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.13.2.3 Control measures

Table 8-62 details the control measures relevant to this aspect.

Table 8-62: Good practice control measures relevant to Unplanned release—Solid waste

CM	Description
CM-22: Marine Order 95	Marine Order 95 (Marine pollution prevention—garbage) 2018 gives effect to Annex V of MARPOL 73/78 and sets out the requirements for garbage management plans and garbage record books. MARPOL is the primary international treaty aimed at preventing marine environment pollution by ships from both routine operations and accidents. Annex V of MARPOL contains regulations for the prevention of pollution by garbage from ships; requirements include: • ships of ≥100 gross tonnage (GT) or certified to carry ≥15 persons is required to carry a Garbage Management Plan. The Plan contains procedures for collecting,

[136] Given the location of the OA, potential risks from unplanned release of solid waste to KEFs were not considered credible for this petroleum activity. Potential risks from unplanned release of dropped objects to BCH and UCH are assessed in Section 8.11.

[137] The NOPSEMA-accepted Gorgon Backfill Fields Development OPP is available online at: https://docs.nopsema.gov.au/A1265361. Section 8.12.2 of the Gorgon Backfill Fields Development OPP provides the consequence evaluation of the potential impacts from unplanned release of solid waste.

CM	Description
	storing, processing and the discharge of garbage, including the use of equipment onboard. • ships of ≥400 GT or certified to carry ≥15 persons engaged in international voyages, is required to maintain and retain onboard a Garbage Record Book. • any waste incinerated on board must be done using an IMO-approved incinerator, and all incineration operations must be recorded in accordance with MARPOL regulations.

8.13.2.4 Likelihood and residual risk level summary

The unplanned release of solid waste has occurred previously in the industry. With the application of the above control measures CAPL has assessed the likelihood and residual risk level as identified in Table 8-63.

Table 8-63: Likelihood and residual risk relevant to Unplanned release—Solid waste

Risk/receptor	Consequence	Likelihood	Residual risk
Potential injury or mortality of marine fauna			
Marine fauna	Minor (5)	Remote (5)	Very low (9)

8.13.3 Demonstration of acceptability

Table 8-64 describes the demonstration of acceptability relevant to this aspect.

Table 8-64: Demonstration of acceptability relevant to Unplanned release—Solid waste

Comparison with acceptable level
Acceptable level **AL-21** (see Section 6.6) is applicable to the unplanned release of solid waste associated with the petroleum activity. The intent of adopting and implementing preventive control measures (Section 8.13.2.3) is to prevent the occurrence of an unplanned release of solid objects to the environment. This preventative approach ensures that **AL-21** is met. In the event that an unplanned release of solid objects did occur, the above risk evaluation demonstrates that the predicted impact is expected to be minor.
Principle of ESD
Precautionary Principle In accordance with Table 6-5, a consequence level of Minor (5) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required. *Intergenerational Principle* In accordance with Table 6-5, a consequence level of Minor (5) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required. *Biodiversity Principle* In the event that an unplanned release of solid objects did occur, the above risk evaluation demonstrates that the predicted impact is expected to be minor. As such, this aspect is not considered as having the potential to affect biological diversity and ecological integrity.
Relevant environmental legislation and other requirements
Legislation and other requirements considered relevant for this aspect include: • Marine Order 95 • *Threat Abatement Plan for the Impacts of Marine Debris on the vertebrate Wildlife of Australia's Coasts and Oceans* (Ref. 368) • *Blue Whale Conservation Management Plan* (Ref. 42)

- *Recovery Plan for Marine Turtles in Australia* (Ref. 264)
- *Conservation Advice for leatherback turtle* (Ref. 367)
- *Sawfish and River Sharks Multispecies Recovery Plan* (Ref. 68)
- *Conservation Advice for whale shark* (Ref. 273)
- *Wildlife Conservation Plan for Seabirds* (Ref. 74)
- *National Recovery Plan for Albatrosses and Petrels* (Ref. 266)
- Marine Bioregional Plan for the NWMR (Ref. 21).

CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
Marine Order 95 Gives effect to Annex V of MARPOL 73/78	Requirements for offshore discharge of food from vessels have been incorporated into the **Marine Order 95** control measure.
Threat Abatement Plan for the Impacts of Marine Debris on the vertebrate Wildlife of Australia's Coasts and Oceans No specific action identified.	N.A.
Blue Whale Conservation Management Plan No specific action identified.	N.A.
Recovery Plan for Marine Turtles in Australia No specific action identified.	N.A.
Conservation Advice for leatherback turtle No specific action identified.	N.A.
Sawfish and River Sharks Multispecies Recovery Plan No specific action identified.	N.A.
Conservation advice for the whale shark No specific action identified.	N.A.
Wildlife Conservation Plan for Seabirds No specific action identified.	N.A.
National Recovery Plan for Albatrosses and Petrels No specific action identified.	N.A.
Marine Bioregional Plan for the NWMR No specific action identified.	N.A.
Internal context	
No management processes or procedures were deemed relevant for this aspect.	
External context	
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). No changes to this risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.	

8.13.4 Environmental performance

Table 8-65 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-65: Environmental performance relevant to Unplanned release—Solid waste

EPO	CM	EPS	MC
EPO-36: No unplanned release of solid objects to the environment attributable to the petroleum activity.	**CM-22**: Marine Order 95	**EPS-22.2:** Ships ≥100 GT or certified to carry ≥15 persons must carry a Garbage Management Plan.	**MC-22.2** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record verifies that a Garbage Management Plan is on board for relevant ships.
		EPS-22.3: Ships ≥400 GT must carry and maintain a Garbage Record Book.	**MC-22.3** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record verifies that a Garbage Record Book is on board for relevant ships.
		EPS-22.4 Any waste incinerated on board must be done using an IMO-approved incinerator, and all incineration operations must be recorded in accordance with MARPOL regulations.	**MC-22.4.1** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record verifies that IMO Type Approval Certificate is available for onboard incinerators.
			MC-22.4.2 Inspection report or equivalent record verifies that incinerated waste is recorded within the Garbage Record Book (as relevant to ship class).

8.14 Unplanned release—Leaks and spills

8.14.1 Aspect source

The operation of vessels includes handling, using, and transferring hazardous materials, and has the potential to result in leaks or minor spill events. During subsea installation, leaks or minor spill events may also occur during tie-in activities with existing infrastructure. Based on the activities described in this EP, the following potential leaks or minor spill scenarios were identified:

- using, handling, and transferring hazardous materials and chemicals on board (~1 m^3)[138]
- bunkering of marine fuel between a support vessel and the main vessels (~50 m^3)[139]
- transferring hazardous materials and chemicals between vessels (<50 m^3)
- hydraulic line failure from equipment (~2 m^3)[140]
- release of operational chemicals (e.g. MEG, control fluids, hydraulic oil) or hydrocarbons during tie-in, testing and/or FCS integration activities (~0.5–50 m^3 per release)

[138] A range of hydrocarbons and other hazardous chemicals/materials are likely to be present during onboard the vessels; 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.

[139] AMSA (Ref. 165) suggests the maximum credible spill volume from a refuelling incident with continuous supervision is the transfer rate × 15 minutes of flow while with intermittent supervision the transfer rate is 2 hours. 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.

[140] 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.

- release of treated water and MEG in response to unplanned events (up to 10,200 m^3 and 330 m^3, respectively, per release).

8.14.2 Environmental impact and risk evaluation

Unplanned release of hazardous materials may result in:

- localised and temporary reduction in water quality
- potential adverse effects to marine fauna.

8.14.2.1 Consequence evaluation

8.14.2.1.1 Risk: localised and temporary reduction in water quality

Leaks and minor spills have the potential to result in a localised and temporary reduction in water quality at the release location.

The potential environmental risks associated with a surface release during bunkering are expected to be significantly lower than those associated with a vessel collision. As such, the consequence evaluation in Section 8.15 is considered adequate.

Similarly, releases of treated water and MEG may occur in response to unplanned events, such as a wet buckle during production flowline installation, unsuccessful barrier testing, seawater ingress, or contingency flooding, dewatering and re-flushing activities during pre-commissioning. The volumes associated with these releases are expected to be comparable to those evaluated in Section 8.9, and are therefore not assessed further in this section.

The remaining scenarios are expected to result in localised and temporary reduction in water quality, based on the release volumes (typically ~0.5 m^3 up to 50 m^3) and the properties of the operational chemicals (e.g. MEG, control fluids, hydrocarbons), which are anticipated to rapidly evaporate, disperse, or dilute due to wave action and local currents. Consequently, potential impacts to the water quality are expected to be short-term and spatially limited. As such, CAPL has assessed this risk as Incidental (6).

8.14.2.1.2 Risk: potential adverse effects to marine fauna

As identified in Section 5.3.3, several marine species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the OA. The presence of these species (including marine mammals, reptiles, and pelagic and demersal fishes) are expected to the transitory, with no known aggregation areas within the vicinity of the OA:

Based on the nature of these unplanned releases, which are small (typically ~0.5 m^3 up to 50 m^3), instantaneous and intermittent, the extent and severity of any potential impact is expected to be spatially and temporally limited.

Given the nature of unplanned releases covered under this EP and the transient nature of marine fauna species, 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 transient individuals, thus the potential adverse effects to marine fauna arising from chemical toxicity due to unplanned leaks and/or minor spills was determined as Incidental (6).

8.14.2.2 ALARP decision context justification

Offshore installation and vessel-based activities are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential risks associated with an unplanned leak or spill to the marine environment from these types of activities are managed through control measures prescribed by applicable legislation and/or recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding unplanned leaks or spills from the petroleum activity by relevant persons during consultation in preparing this EP.

The potential risks from an unplanned leak or spill to the marine environment are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.14.2.3 Control measures

Table 8-66 details the control measures relevant to this aspect.

Table 8-66: Good practice control measures relevant to Unplanned release—Leaks and spills

CM	Description
CM-31: Bunkering Procedure	Develop and implement a Bunkering Procedure (or equivalent) for any fuel bunkering activities within the OA. Bunkering procedures will be aligned with the requirements of CAPL's Offshore Cargo Handling Procedure (Ref. 369) and the relevant vessel contractor procedure. The requirements of the Procedure and Bulk Hydrocarbon Transfer Checklist include: • the transfer of hydrocarbons during darkness can only proceed following risk assessment • confirmation that safe weather and sea state conditions exist for the transfer.
CM-32: Marine Standard	Prior to commencement of the petroleum activity, the OVIS requirements within the Chevron Marine Standard (Ref. 171) are used to verify that: • dry-break couplings or similar automated stop devices are available for use on vessels that are refuelled at sea • secondary containment is available for hazardous materials (hydrocarbons and chemicals) stored on the deck of vessels.
CM-21: Marine Order 91	Marine Order 91 (Marine pollution prevention—oil) 2025 gives effect to Annex I of MARPOL 73/78 and sets out requirements for the prevention of pollution of the environment by oil for regulated vessels. Requirements of Annex I of MARPOL include having a Shipboard Oil Pollution Emergency Plan (SOPEP) in place for relevant vessel class. 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.

8.14.2.4 Likelihood and residual risk level summary

Unplanned leaks or spills to the marine environment have occurred previously in the industry. With the application of the above control measures CAPL has assessed the likelihood and residual risk level as identified in Table 8-67.

Table 8-67: Likelihood and residual risk relevant to Unplanned release—Leaks and spills

Risk/receptor	Consequence	Likelihood	Residual risk
Potential adverse effects to marine fauna			
Marine fauna	Minor (5)	Remote (5)	Very Low (9)

8.14.3 Demonstration of acceptability

Table 8-68 describes the demonstration of acceptability relevant to this aspect.

Table 8-68: Demonstration of acceptability relevant to Unplanned release—Leaks and spills

Comparison with acceptable level
The acceptable level for this aspect is **AL-22** (see Section 6.6 for definitions). The intent of adopting and implementing preventive control measures (Section 8.14.2.3) is to prevent the occurrence of an unplanned leak or spill to the marine environment. This preventative approach ensures that AL-22 is met. In the event that an unplanned leak or spill to the marine environment did occur, the above risk evaluation demonstrates that the predicted impact is expected to be incidental to minor.
Principle of ESD
Precautionary Principle In accordance with Table 6-5, a consequence level of Minor (5) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required. *Intergenerational Principle* In accordance with Table 6-5, a consequence level of Minor (5) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required. *Biodiversity Principle* In the event that an unplanned leak or spill to the marine environment did occur, the above risk evaluation demonstrates that the predicted impact is expected to be incidental to minor. As such, this aspect is not considered as having the potential to affect biological diversity and ecological integrity.
Relevant environmental legislation and other requirements
Legislation and other requirements considered relevant for this aspect include: • Marine Order 91 • *Blue Whale Conservation Management Plan* (Ref. 42) • *Conservation Advice for fin whale* (Ref. 268) • *Conservation Advice for sei whale* (Ref. 269) • *Conservation Advice for Australian humpback dolphin* (Ref. 270) • *Conservation Advice for Australian snubfin dolphin* (Ref. 271) • *Recovery Plan for Marine Turtles in Australia* (Ref. 264) • *Sawfish and River Sharks Multispecies Recovery Plan* (Ref. 68) • *Recovery Plan for the Grey Nurse Shark* (Ref. 69) • *Recovery Plan for the White Shark* (Ref. 70) • *Wildlife Conservation Plan for Seabirds* (Ref. 74)

- *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 265)
- *National Recovery Plan for Albatrosses and Petrels* (Ref. 266)
- *National Recovery Plan for the Australian Fairy Tern* (Ref. 73)
- *Conservation Advice for curlew sandpiper* (Ref. 276)
- *Conservation Advice for far eastern curlew* (Ref. 277)
- *Conservation Advice for red knot* (Ref. 281)
- *Conservation Advice for sharp-tailed sandpiper* (Ref. 283)
- Marine Bioregional Plan for the NWMR (Ref. 21).

CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration
Marine Order 91 Gives effect to Annex V of MARPOL 73/78.	Requirements to have a SOPEP (or equivalent) as appropriate to vessel class have been incorporated into the **Marine Order 91** control measure.
Conservation Management Plan for the Blue Whale No specific action identified.	N/A.
Conservation Advice for fin whale No specific action identified.	N/A.
Conservation Advice for sei whale No specific action identified.	N/A.
Conservation Advice for Australian humpback dolphin No specific action identified.	N/A.
Conservation Advice for Australian snubfin dolphin No specific action identified.	N/A.
Recovery Plan for Marine Turtles in Australia No specific action identified.	N/A.
Sawfish and River Sharks Multispecies Recovery Plan No specific action identified.	N/A.
Recovery Plan for the Grey Nurse Shark No specific action identified.	N/A.
Recovery Plan for the White Shark No specific action identified.	N/A.
National Recovery Plan for Albatrosses and Petrels Action 5c: Risk based response strategies for marine pollution incidents are developed.	Assessment of spill risk strategies is within scope of the OPEP (Ref. 2). Therefore, this activity is not considered to be inconsistent with the *National Recovery Plan for albatrosses and petrels.*
National Recovery Plan for the Australian Fairy Tern No specific action identified.	N/A.
Conservation Advice for curlew sandpiper No specific action identified.	N/A.
Conservation Advice for far eastern curlew No specific action identified.	N/A.

Conservation Advice for red knot No specific action identified.	N/A.
Conservation Advice for sharp-tailed sandpiper) No specific action identified.	N/A.
Wildlife Conservation Plan for Seabirds No specific action identified.	N/A.
Wildlife Conservation Plan for Migratory Shorebirds No specific action identified.	N/A.
Marine Bioregional Plan for the NWMR No specific action identified.	N/A.

Internal context

These management processes or procedures were deemed relevant for this aspect:

- OPEP (Ref. 2)
- OSM-BIP (Ref. 6).

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.

External context

Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7).

No changes to this risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.

8.14.4 Environmental performance

Table 8-69 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-69: Environmental performance relevant to Unplanned release—Leaks and spills

EPO	CM	EPS	MC
EPO-37: No unplanned release of hydrocarbons or chemicals to the environment attributable to the petroleum activity.	**CM-31:** Bunkering Procedure	**EPS-31:** Develop and implement a Bunkering Procedure (or equivalent) for the petroleum activity. The Procedure shall include the following requirements: • the transfer of hydrocarbons during darkness can only proceed following a risk assessment • confirmation that safe weather and sea state conditions exist for the transfer.	**MC-31** Records verify that refuelling was undertaken in accordance with the Bunkering Procedure (or equivalent).
	CM-32: Marine Standard	**EPS-32: Marine Standard** Prior to commencement of the petroleum activity the following will be confirmed: • dry-break couplings or similar automated stop devices are available for use on marine	**MC-32** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record, verifies that dry-break couplings (or similar) are available for use, and secondary containment is available

EPO	CM	EPS	MC
		vessels that are refuelled at sea • secondary containment is available for hydrocarbons and chemicals stored on the deck of marine vessels.	on the deck of the marine vessel.
	CM-21: Marine Order 91	**EPS-21.3:** Relevant vessels (as appropriate to class) will hold a valid SOPEP (or equivalent).	**MC-21.3.1** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record, confirms an approved SOPEP is on board marine vessels >400 GT.
			MC-21.3.2 Inspection records (or equivalent) show drills conducted in accordance with SOPEP.
		EPS-21.4: Marine Order 91 In the event of a vessel-based spill event, emergency response activities will be implemented in accordance with the vessel SOPEP (or equivalent).	**MC-21.4** Records verify that emergency response activities were implemented in accordance with the vessel SOPEP in the event of a vessel-based spill.

8.15 Unplanned release—Loss of containment (vessel collision)

8.15.1 Aspect source

A vessel collision event within the OA is considered a credible (but unlikely) unplanned event. A major marine spill because of vessel collision is only expected to occur under exceptional circumstances (e.g. loss of DP, navigational error, or floundering due to inclement weather conditions). A collision could potentially occur between the vessels undertaking the petroleum activity and/or third-party vessels. Given the location, water depths, and lack of submerged features within the OA, grounding is not considered credible and is not considered further.

8.15.2 Credible scenario

Based upon the type of vessels and marine fuels likely to be used during the petroleum activity, CAPL has identified the credible worst-case scenario as being a:

- surface release of ~850 m^3 of MDO over 12 hours.

The estimate of spill volume is aligned with AMSA's guidance for maximum credible spill volumes for vessel collisions (Ref. 165). The spill duration is based on industry experience and guidance from RPS.

8.15.3 Oil spill modelling

RPS undertake stochastic and deterministic spill modelling (Ref. 370) to inform the risk assessment associated with a vessel collision event. Table 8-70 provides a summary of the oil spill model settings.

Oil spill modelling was performed using a three-dimensional trajectory and fates model: Spill Impact Mapping and Analysis Program (SIMAP). The SIMAP model calculates the transport, spreading, entrainment, and evaporation of spilled hydrocarbons over time, based on the prevailing wind and current conditions and the physical and chemical hydrocarbon properties.

Because an oil spill can occur during any set of wind and current conditions, modelling was conducted using a stochastic (random or non-deterministic) approach, which involved running 100 spill simulations per season using random start times and the same spill release information (spill volume, duration, and hydrocarbon composition). This ensured that each stochastic simulation was subject to different wind and current conditions and, in turn, movement and weathering of the hydrocarbon. Stochastic modelling informs that potential EMBA by hydrocarbons from an oil spill event.

Deterministic modelling is predictive modelling based on a single simulation; i.e. it represents of single event under particular environmental conditions (unlike the multiple simulations used to generate the stochastic modelling results). From the 300 stochastic simulations, particular deterministic runs were selected based on ‘worst case’ spatial extents above exposure values and used to inform the risk assessment.

Table 8-70: Vessel collision credible spill scenario inputs

Parameter	Details
Release Location	G&E DC
Latitude	19° 56’ 25.5” S
Longitude	114° 53’ 6.7” E
Water depth	1,220 m
Oil type	MDO
Simulation spill type	Surface
Simulation spill volume	850 m^3
Simulation spill duration	12 hours
Total simulation duration	40 hours
Number of randomly selected spill simulation start times	100 per season (300 total)
Seasons modelled	Summer (September to the following March) Transitional (April and August) Winter (May to July)

Hydrocarbon properties

MDO is a light persistent fuel oil used in the maritime industry. The physical properties and boiling point distributions for the MDO are presented in Table 8-71. The low viscosity indicates that this oil will spread quickly when released and will form a thin film on the sea surface, increasing its rate of evaporation (Ref. 370). Generally, about 6.0% of the MDO mass should evaporate within the first

12 hours (Boiling point [BP] <180 °C); a further ~34.6% should evaporate within the first 24 hours (BP 180 °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, though will decay slowly over time (Ref. 370).

The heavier components of the MDO, specifically the low volatiles and persistent portions, will have a strong tendency to become entrained into the water column in the presence of moderate winds (>10 knots) and in turn breaking waves; however, it can re-surface under calm conditions (<10 knots) (Ref. 370).

Table 8-71: Physical properties and boiling point ranges for MDO

Characteristics	Value			
Density	829.1 kg/m^3 at 25°C			
Dynamic viscosity	4.0 cP at 25°C			
Pour point	-14 C			
API gravity	37.6			
Classification	Group II, light persistent.			
BP	**Volatile <180°C C_4 to C_{10}**	**Semi-volatile 180–265°C C_{11} to C_{15}**	**Low volatility 265–380°C C_{16} to C_{20}**	**Residual >380°C >C_{20}**
	Non-persistent			
	6.0%	34.6%	54.4%	5.0%

Exposure values

NOPSEMA's *information paper on the Application of oil spill modelling in Environment Plans* (Ref. 18) provides recommended exposure values that should be applied for different purposes to meet the different requirements of the OPGGS(E)R):

- identification of the EMBA by hydrocarbons (regulations 21(2) and 21(3)) and the evaluation of consequences of hydrocarbon exposure on all relevant environmental values and sensitivities (regulations 21(5) and (6))
- informing oil spill response option selection and operational and scientific monitoring arrangements (regulations 22(9) and 22(10)).

Table 8-72 provides the exposure values adopted in this EP to identify the EMBA by hydrocarbons (the 'Hydrocarbon EMBA' in Section 5.1) and to inform the consequence evaluation for this aspect (Section 8.15.4.1). These exposure values are based on the recommended values in Table 1 of NOPSEMA's information paper (Ref. 18).

Note: For exposure values related to oil spill response and operational and scientific monitoring planning refer to Section 9.1.

Table 8-72: Hydrocarbon exposure values

Oil component	Exposure value	Purpose of exposure value*
Shoreline	High (≥1,000 g/m^2)	It represents the concentration of shoreline oil at or above which there is an increased likelihood of consequences on ecological, social, economic, or cultural features of the environment.

Oil component	Exposure value	Purpose of exposure value*
	Moderate (≥100 g/m^2)	It represents a lower concentration for identifying ecological features of the EMBA by shoreline oil, and for assessing the potential consequences on these features.
	Low (≥10 g/m^2)	It represents a lower concentration for identifying social, economic, or cultural features of the EMBA by shoreline oil, and for assessing the potential consequences on these features. At this concentration, consequences on ecological features of the environment are generally not expected; however, consequences may occur depending on factors such as the sensitivity of specific features or any management, conservation, or protection objectives for the environment (e.g. marine protected areas, First Nations cultural heritage).
Surface (floating)	High (≥50 g/m^2)	It represents the concentration of surface oil at or above which there is an increased likelihood of consequences on ecological, social, economic, or cultural features of the environment.
	Moderate (≥10 g/m^2)	It represents a lower concentration for identifying ecological features of the EMBA by floating oil, and for assessing the potential consequences on these features.
	Low (≥1 g/m^2)	It represents a lower concentration for identifying social, economic, or cultural features of the EMBA by surface oil, and for assessing the potential consequences on these features. At this concentration, consequences on ecological features of the environment are generally not expected; however, consequences may occur depending on factors such as the sensitivity of specific features or any management, conservation, or protection objectives of the environment (e.g. marine protected areas, First Nations cultural heritage).
Dissolved	High (≥300 ppb PAH)	It represents a concentration of dissolved oil at or above which there is an increased likelihood of consequences on ecological, social, economic, or cultural features of the environment.
	Moderate (≥50 ppb PAH)	It represents a concentration of dissolved oil at or above which there is an increased likelihood of consequences on ecological, social, economic, or cultural features of the environment.
	Low (≥10 ppb PAH)	It represents a lower concentration for identifying ecological, social, economic and cultural features of the EMBA by dissolved oil, and for assessing the potential consequences on these features.
Entrained	High (≥1,000 ppb total hydrocarbons [THC])	It represents a concentration of entrained oil at or above which there is an increased likelihood of consequences on ecological, social, economic, or cultural features of the environment.
	Moderate (≥100 ppb THC)	It represents a lower concentration for identifying ecological, social, economic, or cultural features of the EMBA by entrained oil, and for assessing the potential consequences on these features. It is a conservative exposure value to account for the uncertainty in consequences on ecological, social, economic, and cultural features of the environment.

** Source: Table 1 from NOPSEMA's information paper on the application of oil spill modelling in EPs (Ref. 18).*

Modelling results

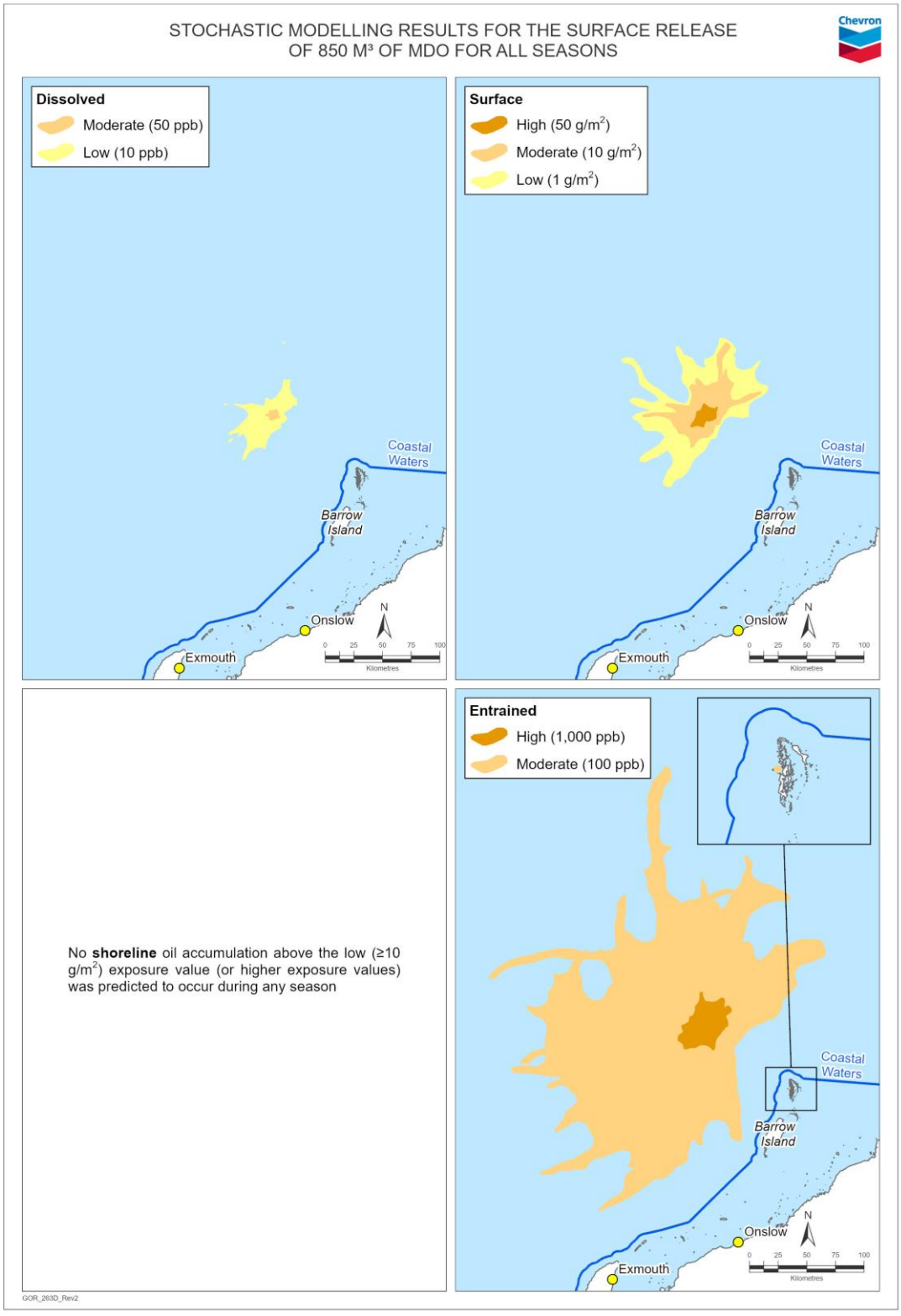
Outcomes of the stochastic modelling undertaken by RPS (Ref. 370) are provided in the following:

- visual representation of areas at risk of exposure to surface, dissolved, entrained, and shoreline accumulated oil at each of the relevant exposure values (Figure 8-4)
- an overall summary of stochastic modelling results (below) and a summary of the maximum predicted exposures and/or concentrations to key individual receptors (Table 8-73).

RPS analysed the stochastic modelling results to determine the worst-case deterministic (i.e. single simulation) runs that represented particular criteria (e.g. largest swept area of surface oil). The outcomes from the deterministic modelling analyses are summarised in Table 8-74.

Stochastic modelling outputs from RPS (Ref. 370) are summarised below:

- shoreline
  - no shoreline oil accumulation above the low (≥10 g/m^2), moderate (≥100 g/m^2) or high (≥1,000 g/m^2) exposure values were recorded for any season.
- surface
  - the maximum distances to the low exposure value (≥1 g/m^2) ranged between 69 km (winter) to 85.3 km (summer)
  - the maximum distances to the moderate exposure value (≥10 g/m^2) ranged between 36.1 km (winter) to 63 km (summer)
  - the maximum distances to the high exposure value (≥50 g/m^2) remained within 17.9 km from the release location
  - no surface exposure above the low (1 g/m^2) exposure value was predicted in State waters during any season.
- dissolved
  - dissolved oil above the low (≥10 ppb) and moderate (≥50 ppb) exposure values was predicted to occur during all three seasons; no dissolved oil above the high (≥400 ppb) exposure value was predicted to occur
  - no dissolved oil above the low (≥10 ppb) exposure value was recorded in State waters during any season.
- entrained
  - entrained oil at the moderate (≥100 ppb) and high (≥1,000 ppb) exposure values was predicted to occur during all three seasons
  - the probability of the Gascoyne AMP being exposed to entrained oil at ≥100 ppb was 3% during transitional season only
  - the probability of the Montebello marine park being exposed to entrained oil at ≥100 ppb was 1% during summer only
  - no entrained oil above high (≥1,000 ppb) exposure values was predicted to occur in any AMP or State waters.



Note: Exposure values not presented in the figure were not predicted.

Figure 8-4: Zones of potential exposure to surface, dissolved, entrained, and shoreline accumulated oil based on 300 simulations for an 850 m³ surface release of MDO

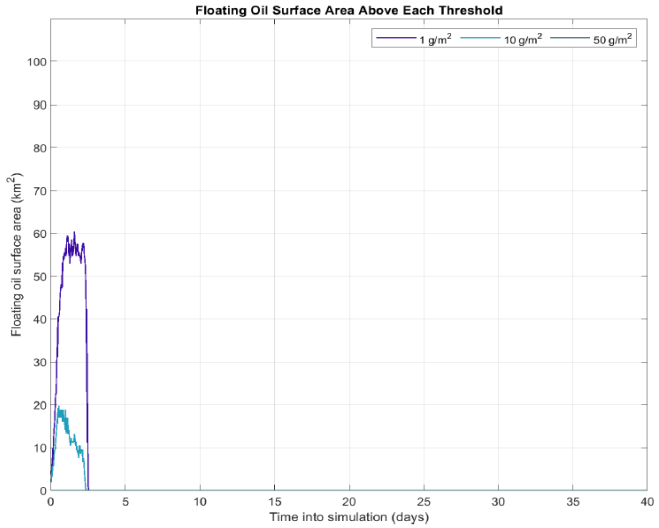
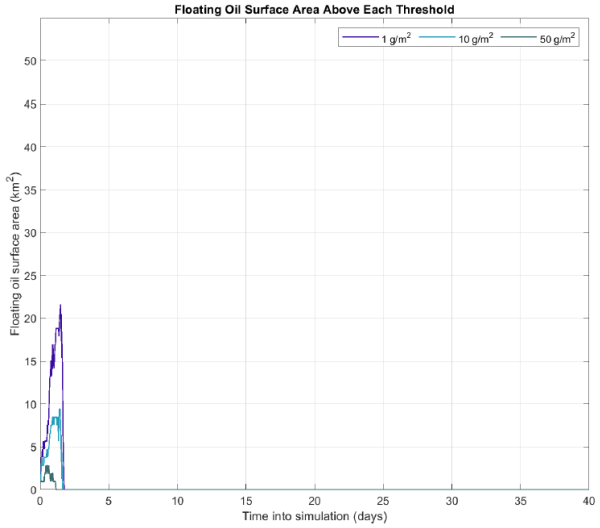
Table 8-73: Maximum predicted probability of exposure[141] and/or concentrations (from any season) to individual receptors based on stochastic modelling of 850 m³ surface release of MDO

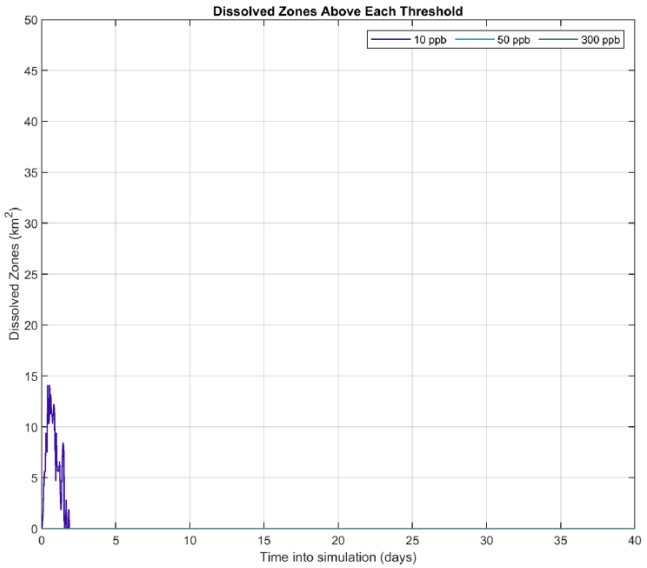
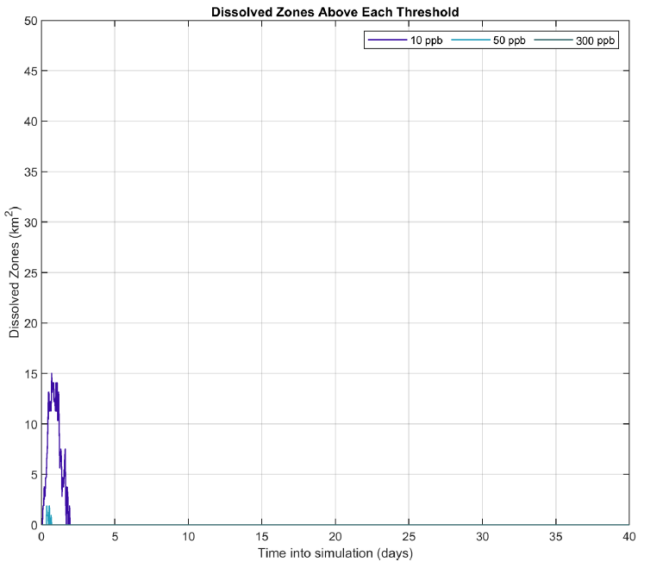
Value or sensitivity (Receptor)	Surface oil			Dissolved oil				Entrained oil			Shoreline accumulated oil			
	Maximum probability (%) of exposure			Maximum concentration (ppb)	Maximum probability (%) of exposure			Maximum concentration (ppb)	Maximum probability (%) of exposure		Maximum accumulated concentration (g/m²)	Maximum probability (%) of exposure		
	≥1 g/m²	≥10 g/m²	≥50 g/m²		≥10 ppb	≥50 ppb	≥300 ppb		≥100 ppb	≥1,000 ppb		≥10 g/m²	≥100 g/m²	≥1,000 g/m²
Australian Marine Parks														
Montebello	–	–	–	–	–	–	–	201.3	3	–	N/A			
State marine protected areas														
Montebello Islands Marine Park	–	–	–	–	–	–	–	153.7	1	–	N/A			
KEFs														
Ancient coastline at 125 m depth contour	–	–	–	–	–	–	–	382.7	NIE (SB)	–	N/A			
Continental slope demersal fish communities	NIE (NSB)	NIE (NSB)	–	10.9	NIE (NSB)	–	–	1,090.4	NIE (NSB)	NIE (NSB)	N/A			
Exmouth Plateau	NIE (SB)	–	–	–	–	–	–	482.2	NIE (SB)	–	N/A			
Reefs, banks, and shoals														
No reef, banks or shoal features within the spatial extents predicted to potentially be exposed to oil above the relevant Hydrocarbon EMBA exposure values.											N/A			
BIAs for protected marine fauna														
Humpback whale	–	–	–	–	–	–	–	349.2	14	–	N/A			
Pygmy blue whale	100	100	53	81.5	79	12	–	13,180.2	100	94	N/A			
Flatback turtle	–	–	–	–	–	–	–	582.3	8	–	N/A			
Green turtle	–	–	–	–	–	–	–	153.7	1	–	N/A			
Hawksbill turtle	–	–	–	–	–	–	–	154.8	1	–	N/A			
Loggerhead turtle	–	–	–	–	–	–	–	153.7	1	–	N/A			
Whale shark	–	–	–	–	–	–	–	450.5	8	–	N/A			
Fairy tern	–	–	–	–	–	–	–	153.7	1	–	N/A			
Lesser crested tern	–	–	–	–	–	–	–	153.7	1	–	N/A			
Roseate tern	–	–	–	–	–	–	–	153.7	1	–	N/A			
Wedge-tailed shearwater	100	100	53	81.5	76	12	–	13,180.2	99	91	N/A			
HCTS of marine turtles														
Flatback turtle	1	–	–	–	–	–	–	523.7	14	–	N/A			
Green turtle	–	–	–	–	–	–	–	153.7	1	–	N/A			
Hawksbill turtle	–	–	–	–	–	–	–	153.7	1	–	N/A			
World Heritage property														
No World Heritage listed properties were identified within the Hydrocarbon EMBA (Section 5.6).											N/A			
National Heritage place														
No National Heritage listed places were identified within the Hydrocarbon EMBA (Section 5.6).											N/A			
Commonwealth Heritage place														

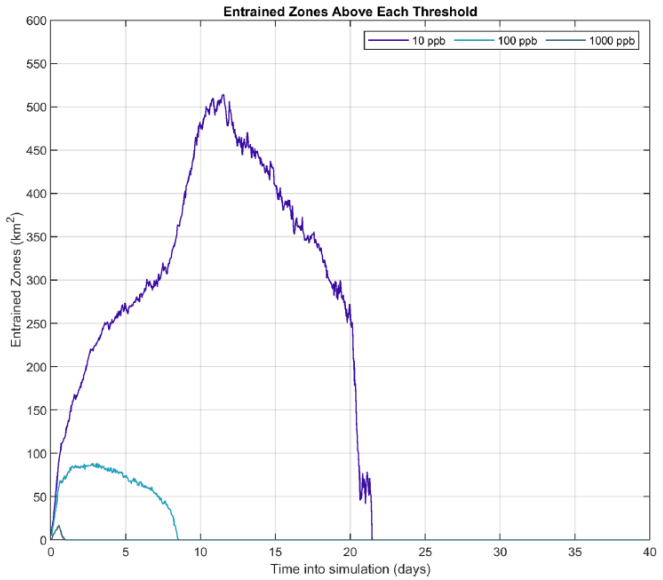
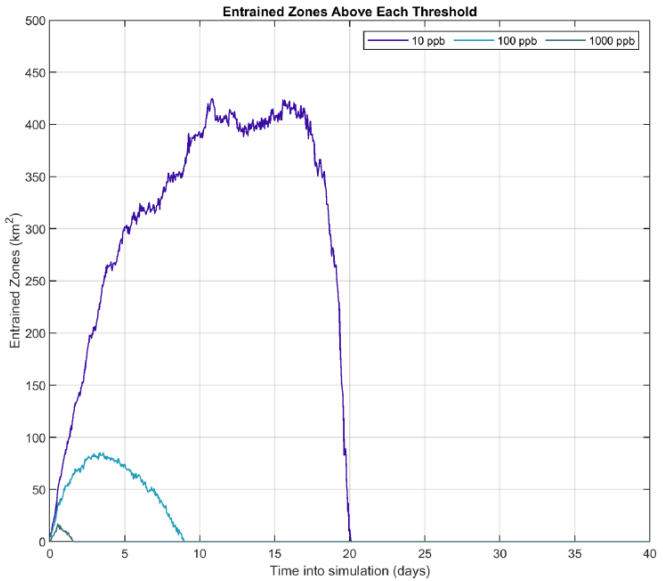
[141] Where – = no contact predicted, NIE (SB) = spatial overlap based on plan view, but no interaction expected as value or sensitivity is a seabed based receptor; NIE (NSB) = spatial overlap based on plan view, but no interaction expected as value or sensitivity is a near-seabed based receptor), N/A = not applicable

Value or sensitivity (Receptor)	Surface oil			Dissolved oil				Entrained oil			Shoreline accumulated oil			
	Maximum probability (%) of exposure			Maximum concentration (ppb)	Maximum probability (%) of exposure			Maximum concentration (ppb)	Maximum probability (%) of exposure		Maximum accumulated concentration (g/m^2)	Maximum probability (%) of exposure		
	≥1 g/m^2	≥10 g/m^2	≥50 g/m^2		≥10 ppb	≥50 ppb	≥300 ppb		≥100 ppb	≥1,000 ppb		≥10 g/m^2	≥100 g/m^2	≥1,000 g/m^2
No Commonwealth Heritage listed places were identified within the Hydrocarbon EMBA (Section 5.6).											N/A			
State waters														
WA State waters	–	–	–	–	–	–	–	153.7	1	–	N/A			
Shorelines														
N/A											No shoreline oil accumulation predicted to occur.			

Table 8-74: Summary of deterministic modelling analyses for surface, dissolved, entrained, and shoreline accumulated oil based on a 850 m³ surface release of MDO

Variable	Deterministic scenario	
Surface oil	**Largest swept area of surface oil ≥10 g/m²**	**Largest swept area of surface oil ≥50 g/m²**
Season	Summer	Transitional
Peak volume (m^3) of surface oil and day of occurrence	503.4 (Day 1)	349.7 (Day 1)
Volume (m^3) of surface oil at end of simulation (Day 40)	0.1	0.0
Predicted area of surface oil above each exposure value *Image source: RPS (Ref. 370)*		
Dissolved oil	**Largest area of dissolved oil ≥10 ppb**	**Largest area of dissolved oil ≥50 ppb**
Season	Winter	Winter
Peak volume (m^3) of dissolved oil and day of occurrence	7.2 (Day 1)	6.9 (Day 1)

Variable	Deterministic scenario	
Volume (m^3) of dissolved oil at end of simulation (Day 40)	0.1	0.2
Predicted area of dissolved oil above each exposure value *Image source: RPS (Ref. 370)*		
Entrained oil	**Largest area of entrained oil ≥100 ppb**	**Largest area of entrained oil ≥1,000 ppb**
Season	Winter	Winter
Peak volume (m^3) of entrained oil and day of occurrence	615.3 (Day 1)	590.7 (Day 1)
Volume (m^3) of entrained oil at end of simulation (Day 40)	90.9	11.6

Variable	Deterministic scenario	
Predicted area of entrained oil at each exposure value *Image source: RPS (Ref. 370)*		
Shoreline accumulated oil	**Largest (total) volume of shoreline oil accumulation**	**Longest length of shoreline oil accumulation ≥100 g/m²**
N/A (no shoreline oil accumulation at the ≥10 g/m^2 exposure value [or higher exposure values] was predicted to occur during any season).		

8.15.4 Environmental impact and risk evaluation

Unplanned release of MDO due to a vessel collision event may result in:

- change in water quality
- potential adverse effects to BCH
- potential adverse effects to marine fauna
- potential changes to the functions, interests and activities of other marine users
- potential changes to values and sensitivities of protected areas
- potential changes to tangible cultural heritage values.

8.15.4.1 Consequence evaluation

8.15.4.1.1 Risk: change in water quality

An unplanned release of hydrocarbon from a vessel collision may result in a reduction in water quality in offshore waters extending from the release location.

Impacts to water quality are expected to be short-term, consistent with the typical weathering properties of MDO. Following release to the marine environment, MDO spreads quickly and evaporates rapidly when exposed to air, up ~95% may evaporate over several days depending on wind and wave conditions affecting how much is entrainment into the water column (Section 8.15.3; Ref. 370).

Deterministic modelling for the largest swept area of surface oil at ≥10 g/m^2 predicted that oil at this concentration may be present for <3 days following the spill event with a peak area of coverage of ~20 km^2 (Ref. 370).

Deterministic modelling for the largest entrained oil >100 ppb indicated that entrained oil above this concentration may be present for <10 days following the spill event, with a peak area of coverage of ~90 km^2. Deterministic modelling for the largest area of dissolved oil ≥10 ppb were predicted to be present for <3 days following the spill event, with a peak area of coverage of ~15 km^2. (Ref. 370).

The release of MDO would be subject to evaporation (when exposed to air), dispersion, dilution, and physical and biological degradation. Based on the predicted magnitude, spatial extent, and duration of an unplanned release of MDO, potential changes in water quality are expected to occur for short-term durations. Therefore, potential change in water quality due to a MDO spill has been evaluated as Minor (5).

8.15.4.1.2 Risk: potential adverse effects to BCH

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. 371; Ref. 372), act as a barrier to diffusion of CO_2 across cell walls in macroalgae (Ref. 373), and a decline in metabolic rate, bleaching or partial mortality in corals (Ref. 374; Ref. 375) and impair respiration and photosynthesis by symbiotic zooxanthellae (Ref. 376; Ref. 377). The recovery of benthic habitats can be slow, with studies following the Deepwater Horizon (DWH) incident

showing long-term non-acute effects of the spill on coral colonies seven years after the event (Ref. 378).

Given the surface release of the MDO, and that most of the oil is expected to either remain on the surface or within the upper water column, impacts to BCH within the deep offshore waters of the Hydrocarbon EMBA are typically not anticipated. Geomorphic features located within the water column, such as banks and shoals, may be impacted by dissolved or entrained hydrocarbons. However, stochastic modelling did not predict exposure above the low (>10 ppb) exposure value for dissolved oil or the moderate (>100 ppb) exposure value for entrained oil for these features (Ref. 370). Therefore, potential impacts to BCH associated with banks and shoals from an unplanned release of MDO 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 exposure value occurs in the intertidal area.

No surface exposure at the ≥10 g/m^2 exposure value was predicted at any protected marine area or within State waters during any season. Therefore, impacts from smothering within intertidal areas due to surface oil is not expected to occur.

Stochastic modelling (Ref. 370) predicted a low (1%) probability of entrained oil at ≥100 ppb within the western section of Montebello Islands during summer only. Based on the stochastic modelling, the maximum residence time of entrained oil exposure ≥100 ppb within these locations is predicted to be ~22 hours.

As the extent and duration of exposure to nearshore environments is expected to be highly limited the potential for environmental impacts would also be limited.

Based on an assessment of the predicted magnitude and duration of entrained oil from an unplanned release of MDO, exposure occurs to nearshore benthic habitats (if occurs) above the exposure value is expected to result in limited alteration. Therefore, the risk associated with potential adverse effects to BCH was ranked as Incidental (6).

8.15.4.1.3 Risk: potential adverse effects to marine fauna

Marine mammals

Marine mammals may be exposed to hydrocarbons from an oil spill at both the surface and within the water column, either through contact, inhalation, and/or ingestion (Ref. 379; Ref. 380).

Marine mammals are highly vulnerable to oil spills, although the effects at both individual and population levels are not fully understood (Ref. 381). The degree of exposure is strongly influenced by their morphology, biological behaviours and distribution, as well as the origin and evolution of the spill (Ref. 381). For example, marine mammals that feed on prey near the ocean surface are more likely to inhale oil following a spill, compared to deep-diving species like sperm whales, which spend extended periods at depth (Ref. 381; Ref. 380). Benthic feeders may ingest sunken oil while feeding in areas of contaminated sediment. Cetacean species that feed on invertebrates are at risk of indirect oil ingestion, as many invertebrates can accumulate PAHs without metabolising them (Ref. 380).

Baleen whales are vulnerable due to blowhole breathing, surface filter feeding, and invertebrate prey (Ref. 380), killer whales may also be at risk due to

population sizes, complex social structure, slow reproductive turnover, and dietary specialisation (Ref. 380). The effect of oil on cetacean skin is likely minor; however, prolonged contact with oil can lead to long-term coating that may interfere with filtering capacity in baleen whales (Ref. 382). Toothed whales and dolphins may be susceptible to ingestion of in-water oil as they gulp feed at depth. However, as highly mobile species, in general it is not expected that these animals will be constantly exposed to concentrations of hydrocarbons in the water column for continuous durations (e.g. >48–96 hours) that would lead to chronic effects.

After an oil spill, the highest concentrations of volatile hydrocarbons are typically found at the air-water interface (Ref. 383). If compounds from the oil get into the bloodstream of marine mammals, they can cause neurological disorders, physiological damage and impacts on the endocrine system, with the consequent effects on reproductive success (Ref. 384; Ref. 385; Ref. 386; Ref. 387).

Following the DWH oil spill, a population of bottlenose dolphins experienced increased mortality, reproductive failure, and a rise in disease incidence (Ref. 381; Ref. 388). Although baseline data from the spill location were limited, combined models extrapolated from detailed studies of nearshore bottlenose dolphin populations with predictions of offshore cetacean survival and recovery identified that population declines are likely to occur in the initial years, with recovery expected within 5–15 years (Ref. 388). Given the characteristics of the crude oil, the physical extent and duration of the DWH spill, the event and impacts are considered severe, in comparison with potential MDO spill from the petroleum activity.

Dugongs have smooth skin, which makes them less susceptible to oil adhering to their surface. However, their sparsely distributed sensory hairs, believed to play a role in orientation, could be negatively impacted if coated in oil (Ref. 389). Ingestion of oil, whether directly or indirectly through contaminated seagrass, may lead to toxic effects; however, there is currently no information on potential sublethal effects of oil exposure in sirenians, and reports of oil pollution impacts to dugongs are rare (Ref. 389). Toxic effects of oil and associated vapours on the eyes and respiratory system in dugongs are expected to be similar to those observed in other marine mammals (Ref. 389).

As identified in Section 5.3.3.1, marine mammals listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Hydrocarbon EMBA. The following BIAs for marine mammals intersect the Hydrocarbon EMBA:

- humpback whale (migration [north and south])
- pygmy blue whale (migration).

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

Deterministic modelling for the largest swept area of surface oil at ≥10 g/m^2 predicted that surface oil at this concentration may be present for <3 days following the spill event, with a peak area of coverage of <20 km^2 occurring the same day the spill commenced (Ref. 370). Using the pygmy blue whale migration BIA as an example, the spatial extent of surface oil above the exposure value was predicted to be <0.01% of the entire BIA.

The modelling did not predict surface hydrocarbons concentrations ≥10 g/m^2 in State waters during any season (Ref. 370); consequently, nearshore waters and

subsequent impacts from surface exposure to marine mammals using nearshore habitats are not expected.

Deterministic modelling for the largest area of entrained oil ≥100 ppb indicated that entrained oil at this concentration may be present for <10 days following the spill event, with a peak area of coverage of ~90 km^2 occurring over the first five days after the spill commenced (Ref. 370). Using the pygmy blue whale migration BIA as an example, the spatial extent of entrained oil above the exposure value was predicted to be <0.1% of the entire BIA. Based on the stochastic modelling, the maximum residence time of entrained oil exposure ≥100 ppb within this BIA is predicted to be between ~3 to 6 days.

Based on an assessment of the predicted magnitude and duration of an unplanned release of MDO and the mobile and transitory nature of marine mammals within the potentially impacted area, it is expected that only individuals to a small proportion of any marine mammal population is likely to be exposed above the defined exposure value that may result in sublethal or lethal effects. Therefore, the potential impacts of oil to cause sublethal or lethal effects to marine mammals were ranked as Minor (5) and Moderate (4), respectively.

Marine reptiles

Marine reptiles may be exposed to hydrocarbons from oil spills at the water surface, within the water column, and along shorelines. Turtles are vulnerable at all life stages, with exposure occurring through direct contact or contamination of their habitats (Ref. 390). Direct exposure, particularly when it blocks the nostrils, may lead to prolonged inhalation of toxic gases, potentially causing respiratory diseases and damage to organs such as the liver and brain (Ref. 391; Ref. 392; Ref. 393).

Oil contact may also result in skin lesions (e.g. inflammation, elevated skin temperature, and chemical burns) (Ref. 392; Ref. 394; Ref. 395; Ref. 396; Ref. 397) and impar movements, leading to exhaustion and increased vulnerability to predators (Ref. 398). Ingested oil can lead to bioaccumulation of PAHs and reduces the assimilation of food (Ref. 393).

Oil spills in shallow coastal foraging areas have been linked to increased marine turtle strandings. Yaghmour (Ref. 392) reported that nearly one-third of strandings along the eastern coast of the United Arab Emirates occurred within 10 days of a spill, with affected turtles showing signs of oil exposure and buoyancy disorders. Additionally, nesting habitat for Kemp's ridley marine turtles in the Gulf of America declined in 2010 and 2013, coinciding with the DWH oil spill. While this suggests a potential link, it is noted that causality remains uncertain due to other anthropogenic stressors (Ref. 393).

As identified in Section 5.3.3.2, several marine reptiles species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Hydrocarbon EMBA. BIAs for flatback, green, hawksbill and loggerhead turtles may be exposed to hydrocarbon concentrations above relevant entrained exposure value for ecological effects.

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

Stochastic modelling did not predict shoreline accumulation ≥100 g/m^2; therefore, impacts to nesting adult turtles and emerging hatchlings are not predicted and no further evaluation has been undertaken. Stochastic modelling also did not predict any surface or dissolved oil exposure within State waters, or any overlap between

surface or dissolved oil and the BIAs for marine turtles. However, for comparative purposes, deterministic modelling for the largest swept area of surface oil at ≥10 g/m^2 predicted that surface oil at this concentration may be present for <3 days following the spill event, with a peak area of coverage of <20 km^2 occurring the same day the spill commenced (Ref. 370). Using the flatback turtle internesting buffer BIA as an example, the spatial extent of surface oil above the exposure value was predicted to be limited to <0.1% of the entire BIA.

Deterministic modelling for the largest area of entrained oil ≥100 ppb indicated that entrained oil at this concentration may be present for <10 days following the spill event, with a peak area of coverage of ~90 km^2 occurring over the first five days after the spill commenced (Ref. 370). Using the flatback turtle internesting BIA as an example, the spatial extent of entrained oil above the exposure value was predicted to be <0.5% of the entire BIA. However, stochastic modelling indicates that the probability of exposure to this BIA is low at 5–8%. As such, if a vessel spill was to occur during nesting season, it is possible that a small proportion of turtles may be exposed to entrained oil either within nearshore internesting habitats and/or further offshore.

The EPBC threatened short-nosed seasnake and leaf-scaled seasnake, along other EPBC marine listed seasnake species, may be present within the Hydrocarbon EMBA. Oil pollution has been identified as a pressure 'of potential concern' for seasnakes[142] (Ref. 297). These species are susceptible to oil on the sea surface (Ref. 297; Ref. 399; Ref. 400). As air-breathing, obligate bottom feeders, seasnakes may inhale or ingest oil (Ref. 297; Ref. 401). Both the threatened short-nosed seasnake and leaf-scaled seasnake occur primarily on reef flats or in shallow waters of the outer reef edges to depths of 10 m (Ref. 402; Ref. 403).

The EPBC migratory salt-water crocodile may also be present within the Hydrocarbon EMBA. Oil pollution has been identified as a pressure 'of not of concern' for this species (Ref. 297). The salt-water crocodile inhabits Australian coastal waters, estuaries, lakes, inland swamps, and marshes (Ref. 67).

Stochastic modelling did not predict surface oil exposure in State waters or nearshore habitats during any season, and shoreline exposure at or above ≥100 g/m^2 was not predicted. Consequently, exposure to most seasnakes or the salt-water crocodile habitats are not expected.

There are some seasnake species (e.g. yellow-bellied seasnake) which are known to be pelagic and live in the open ocean. Although seasnakes may be present in offshore waters, their abundance is not expected to be high. Potential impacts to seasnakes from direct contact with hydrocarbons are likely to result in similar physical effects to those recorded for marine turtles and may include potential damage to the dermis and irritation to mucus membranes of the eyes, nose and throat (Ref. 404). Seasnakes may also be impacted when they return to the surface to breathe and inhale the toxic vapours associated with the hydrocarbons, resulting in damage to their respiratory system.

Based on an assessment of the predicted magnitude and duration of an unplanned release of MDO, it is expected that only individuals to a small proportion of any marine reptile population is likely to be exposed above the defined exposure value that may result in sublethal or lethal effects. Therefore, the

[142] The pressure analysis distinguished between oil pollution from shipping ('of less concern') and oil rigs ('of potential concern') (Ref. 297). Although the aspect source for this risk assessment is a spill from a vessel, the higher-pressure concern has been adopted.

potential impacts of oil to cause sublethal or lethal effects was ranked as Minor (5).

Fishes, including sharks and rays

Fishes, including sharks and rays, may be exposed to hydrocarbons from an oil spill within the water column. However, some shark species (including whale sharks) feed in surface waters, so there is also the potential for surface hydrocarbons to be ingested.

The impact of oil on fish can vary depending on habitat, behaviour, diet, life stage, and the type of oil involved (Ref. 405). Light oils and petroleum products may cause acute toxicity, although the toxic event is generally over quickly (Ref. 406). Chronic or long-term damage is less likely, as dissolved or entrained hydrocarbons are usually insufficient to harm free-swimming fish and sharks (Ref. 407).

Potential effects on fish include liver damage, irritation of the stomach and intestinal lining, reduced oxygen absorption, decreased reproductive output, and toxic effects on embryos (Ref. 405; Ref. 408). Fish are most vulnerable to oil during embryonic and larval stages (Ref. 409; Ref. 410; Ref. 411). In contrast, juvenile and adult fish are generally more mobile, selective in their feeding, and possess enzymes that help detoxify many oil compounds (Ref. 406), which limits their exposure.

Given the surface release of the MDO, and that most of the oil is expected to either remain on the surface or within the upper water column, impacts to demersal fish within the deep offshore waters of the Hydrocarbon EMBA are typically not anticipated. Near the surface, fish can detect and avoid oil slicks, which means fish mortalities are rare during hydrocarbon spills in open waters (Ref. 413).

As identified in Section 5.3.3.3, several fishes, including sharks and rays species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Hydrocarbon EMBA. The foraging BIA for the whale shark may be exposed to hydrocarbon concentrations above the relevant entrained exposure values for ecological effects.

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

Deterministic modelling for the largest area of entrained oil ≥100 ppb indicated that entrained oil at this concentration may be present for <10 days following the spill event, with a peak area of coverage of ~90 km^2 occurring over the first five days after the spill commenced (Ref. 370). Using the whale shark foraging BIA as an example, the extent above exposure value was predicted to be <0.05% of the entire BIA. Based on the stochastic modelling, the maximum residence time of entrained oil exposure ≥100 ppb within this BIA is predicted to be <2 days.

Based on an assessment of the predicted magnitude and duration of an unplanned release of MDO and the mobile and transitory nature of fishes, including sharks and rays within the potentially impacted area, it is expected that only individuals to a small proportion of fishes, including sharks and rays are likely to be exposed above the defined exposure value that may result in sublethal or lethal effects. Therefore, the potential impact was ranked as Minor (5).

Seabirds and shorebirds

Birds may be exposed to hydrocarbons from an oil spill at the water surface (e.g. foraging, resting, roosting) or on the shoreline (e.g. roosting, nesting). Species that rest or roost on the water's surface (e.g. shearwaters), and those that plunge-dive to feed (e.g. terns, boobies), are particularly vulnerable to surface oil due to their frequent contact with the water surface, small body size, and limited fat reserves (Ref. 414; Ref. 415).

Birds may suffer direct impacts from oil exposure, including suffocation or ingestion of toxic oil, often through preening contaminated feathers (Ref. 416). Ingestion of the aromatic fraction of an oil (e.g. BTEX) may result in metabolic and endocrine disruption, with emerging evidence indicating potential cardiotoxic effects (Ref. 415). Cardiac impairment may also contribute to embryotoxicity, which can occur when eggs are exposed to small amounts of oil (Ref. 415). Additionally, direct contact with oil can interfere with key physiological and behavioural functions such as thermoregulation, flight, diving, swimming, and buoyancy (Ref. 416; Ref. 417).

As identified in Section 5.3.3.4, several birds species listed as threatened and/or migratory under the EPBC Act have the potential to occur within the Hydrocarbon EMBA. Breeding BIAs for fairy tern, lesser crested tern, roseate tern and wedge-tailed shearwater may be exposed to hydrocarbon concentrations above entrained exposure value for ecological effects. Breeding BIAs for and wedge-tailed shearwater may also be exposed to hydrocarbon concentrations above relevant surface exposure value for ecological effects.

Stochastic and deterministic analysis were utilised to understand the potential extent and duration of exposure.

Stochastic modelling did not predict shoreline accumulation ≥100 g/m^2; therefore, impacts to roosting or nesting birds on shorelines are not predicted, and no further evaluation has been undertaken. Stochastic modelling also did not predict any surface or dissolved oil exposure within State waters. The only overlap between predicted surface oil exposure and a BIA was for the wedge-tailed shearwater.

Deterministic modelling for the largest swept area of surface oil at ≥10 g/m^2 predicted that surface oil at this concentration may be present for <3 days following the spill event, with a peak area of coverage of <20 km^2 occurring the same day the spill commenced (Ref. 370). Using the wedge-tailed shearwater breeding BIA as an example, the spatial extent of surface oil above the exposure value was predicted to be <0.05% of the entire BIA. As such, 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 an unplanned release of MDO and the mobile and transitory nature of seabirds and migratory shorebirds within the potentially impacted area, it is expected that only individuals to a small proportion of any bird population is likely to be exposed above the defined exposure value that may result in sublethal or lethal effects. Therefore, the potential impact was ranked as Minor (5).

8.15.4.1.4 Risk: potential changes to the functions, interests and activities of other marine users

Commercial fisheries

As identified in Section 5.4.1.1, several commercial fisheries with fishing management areas and recent fishing effort recorded were identified within the

Hydrocarbon EMBA. A spawning ground for the southern bluefin tuna was also identified within the Hydrocarbon EMBA.

Direct impacts to commercially targeted fish species are expected to be similar to those evaluated above for pelagic and demersal fishes. In the event of an unplanned release of MDO, limited exposure to juvenile and adult free-swimming fish are expected (Ref. 406; Ref. 407); this would be the same for commercially important adult or migratory juvenile fish species (e.g. southern bluefin tuna, yellowfin tuna). However, fish stocks may be vulnerable to oil spills close to the spawning grounds or egg and larval drift areas. Fish eggs and larvae are typically vulnerable to toxic oil compounds due to their small size, poorly developed membranes and detoxification systems as well as their position in the water column (Ref. 409; Ref. 410; Ref. 411). Despite potential mortality of eggs and larvae following a spill, subsequent depletion of adult wild fish stocks is rarely recorded (Ref. 407).

Entrained and dissolved deterministic analyses were utilised to understand the potential extent and duration of exposure to known southern bluefin tuna spawning ground.

Deterministic modelling for the largest area of entrained oil ≥100 ppb indicated that entrained oil at this concentration may be present for <10 days following the spill event, with a peak area of coverage of ~90 km^2 occurring over the first five days after the spill commenced (Ref. 370). Based on the spatial extent of the southern bluefin tuna spawning ground (~1,850,475 km^2), the spatial extent of entrained hydrocarbons above the exposure value was predicted to be <0.01% of the entire spawning ground.

Deterministic modelling for the largest area of dissolved oil ≥10 ppb was predicted to be present for <3 days following the spill event, with a peak area of coverage of ~15 km^2 occurring the day the spill commenced (Ref. 370). Based on the spatial extent of the southern bluefin tuna spawning ground, the spatial extent of dissolved oil above the exposure value was predicted to be <0.01% of the entire spawning ground. As such, effects on southern bluefin tuna larvae are expected to be limited and unlikely to substantially affect the broader population of this commercially targeted species.

Spill events also have the potential to impact commercial fisheries through indirect impacts. Commercial fishing may be impacted by exclusion zones associated with the unplanned release of MDO, and subsequent reduction in fishing effort. Exclusion zones may impede access to commercial fishing areas for a short time, and nets and lines may become oiled. However, the impacts to commercial fishing from a public perception may be much more significant and longer term than the actual spill.

Fishing areas may be temporarily closed for fishing because of the risks of the catch being tainted by hydrocarbons. Concentrations of oil contaminants in fish, crustacean and mollusc tissues could pose a significant potential for adverse human health effects, and until these products are cleared by health authorities, they could be restricted for sale and human. Toxicity in adult fish has been reported in response to diesel exposure (Ref. 418; Ref. 419). Uptake of oil has been demonstrated in bony fish after exposure to water-accommodated fraction of between 24 and 48 hours. Davis et al (Ref. 420) reported detectable tainting of fish flesh after a 24-hour exposure to marine fuel oil concentrations of 0.33 ppm and diesel concentrations of 0.25 ppm. Most studies, from laboratory trials or of fish collected after release events (including the Hebei Spirit, Macondo, and Sea Empress spills), find evidence of elimination of PAHs in fish, with tissues returning

to reference levels within two months of exposure (Ref. 420; Ref. 421; Ref. 422; Ref. 423; Ref. 424; Ref. 425; Ref. 426).

If there are impacts to fish stocks associated with impacts to the larval life phase of fish, there is the potential for reduced profits for commercial fisheries over a longer time, and potential for reduced fishing quotas or exclusion zones which could exclude fishing effort. The Montara spill of a light gas condensate (the most recent [2009] example of a large hydrocarbon spill in Australian waters) occurred over an area fished by the Northern Demersal Scalefish Managed Fishery (11 licences held by 7 operators), with goldband snapper, red emperor, saddletail snapper and yellow spotted rockcod being the key species fished (Ref. 427). As a precautionary measure, the then WA Department of Fisheries (now part of DPIRD) advised the commercial fishing fleet to avoid fishing in oil-affected waters. Testing of fish caught in areas of a visible slick (November 2009) found no detectable petroleum hydrocarbons in fish muscle samples, suggesting fish were safe for human consumption. Limited ill effects were only detected in a small number of individual fish (Ref. 427). No consistent effects of exposure on fish health could be detected within two weeks of the end of the well release. Follow-up sampling in areas affected by the spill during 2010 and 2011 (Ref. 427) found negligible ongoing environmental impacts from the spill.

If an MDO spill occurred as the result of a vessel collision, a temporary fisheries closure may be put in place by DPIRD or AFMA (or voluntarily by the fishers themselves). MDO may foul the hulls of fishing vessels and associated equipment, such as gill nets. A temporary fisheries closure, combined with oil tainting of target species (actual or perceived), may lead to financial losses to fisheries and economic losses for individual licence holders. Fishery closures and the flow-on losses from the lack of income derived from these fisheries are likely to have short-term and localised socio-economic consequences, such as reduced employment (in fisheries service industries, such as tackle and bait supplies, fuel, marine mechanical services, accommodation etc.). Therefore, based on limited effects to commercial fishery stocks, and potential minor loss of revenue due to closures (for perceived or actual impact) CAPL assesses change to the functions, interests and activities of fisheries as localised and short term and it is ranked as Minor (5) consequence.

Tourism and recreation

As identified in Section 5.4.5, tourism and recreational activities may occur within the Hydrocarbon EMBA, however except for some offshore recreational fishing, most marine tourism and recreational activities occur in the shallower State waters. Marine nature-based tourist and recreational areas within the Hydrocarbon EMBA include charter vessel activities in waters surrounding the Montebello Islands.

The presence of oil within areas used for tourism or recreational activities may reduce the visual amenity of the area, and because these destinations offer primarily nature-based tourism, potential environmental impacts to these places may also reduce visitor numbers. Reduced visitor numbers may also lead to a minor loss of revenue for tourist operators (e.g. charter fishing cancellations due to fishery closures).

Stochastic modelling did not predict visible oil on the water (≥1 g/m^2 exposure value) in State waters or shoreline oil accumulation (≥10 g/m^2 visible exposure value), during any season (Ref. 370). Therefore, no further evaluation of visual amenity effects on water-based tourism and recreational activities in State waters has been undertaken.

Limited tourism and recreational activities may also occur within Commonwealth waters. In the event of a vessel collision resulting in a surface release of MDO, any impacts would be of short-term due to the weathering behaviour of MDO (up ~95% may evaporate over several days; [Ref. 370]). Consequently, exposure is predicted to be limited.

CAPL therefore assesses the reduction in amenity resulting in change to the functions, interests and activities of tourism and recreation as an Incidental (6) consequence.

8.15.4.1.5 Risk: potential changes to values and sensitivities of protected areas

As identified in Section 5.5, several marine protected areas were identified within the Hydrocarbon EMBA.

Stochastic modelling predicted a very low probability of entrained oil exposure at ≥100 ppb within the Gascoyne AMP (3% during transitional season only) (Ref. 370). No surface oil or dissolved oil was predicted to occur within any AMP. No seabed oil exposure was predicted, given the propensity of MDO to remain within the upper water column.

The natural values of the AMP include species listed as threatened, migratory, marine, or cetacean under the EPBC Act, as well as any identified BIAs for protected marine fauna. Social and economic values of the AMPs include fishing and tourism and recreation. The consequence evaluations to marine fauna and commercial fisheries are provided above.

Given the expected behaviour and weathering of MDO, the limited spatial and temporal exposure to marine fauna or commercial fish species above exposure values that may result in sublethal or lethal effects, the potential impacts of a vessel spill event to the values and sensitivities of these protected areas have been ranked as Moderate (4).

8.15.4.1.6 Risk: potential changes to tangible cultural heritage values

As identified in Section 5.6 only protected UCH (shipwrecks, Table 5-25) have been identified within the Hydrocarbon EMBA. Given known sea level history, areas in water depths of <125 m would have been emergent land during the extended history of First Nations occupation of Australia; therefore, shallower waters within the Hydrocarbon EMBA have a higher relative likelihood of encountering UCH than the deeper waters, given the concentration of maritime infrastructure, anchorage activity, navigational hazards, and vessel groundings, as well as increased potential for the survival of remains (Ref. 133). At the time of writing this EP, CAPL understands through consultation with the relevant First Nations people and/or representative bodies that no Aboriginal UCH has been identified within the Hydrocarbon EMBA where seabed disturbance could credibly occur.

Stochastic modelling did not predict shoreline oil accumulation (≥10 g/m^2), during any season (Ref. 370). Given the surface release of the MDO, no shoreline oil accumulation was predicted and that most of the oil is expected to either remain on the surface or within the upper water column, impacts to seabed-based UCH (e.g. shipwrecks or archaeology), including First Nations UCH, are not expected.

8.15.4.2 ALARP decision context justification

Vessel operations are routinely undertaken across the offshore petroleum industry, both nationally and internationally. The potential risks associated with a

loss of containment from a vessel collision event are managed through established control measures prescribed by applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL. In addition, CAPL has worked in the NWS region for over 10 years, and has a demonstrated understanding of industry requirements and their operational implementation in this area.

During relevant persons consultation, a claim was raised regarding vessel collision and associated anti-collision control measures. CAPL responded to this claim (see summary in 'external context' [Section 8.15.5] and within appendix e). Additional control measures have been also identified and evaluated to demonstrate that risks have been reduced to ALARP and can be managed to acceptable levels (Table 8-76).

Stochastic oil spill modelling has been used to inform the spatial extent of the Hydrocarbon EMBA and identify areas of potential oil exposure, and this is considered an appropriate basis to inform environmental risk assessments.

The potential risks from a loss of containment from a vessel collision event are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.15.4.3 Control measures

Table 8-75 details the control measures relevant to this aspect.

Table 8-75: Good practice control measures relevant to Unplanned release—Loss of containment (vessel collision)

CM	Description
CM-01: 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.
CM-33: Standards of Training, Certification and Watchkeeping for Seafarers (STCW) Certifications	Crew members on regulated vessels operating under the *Navigation Act 2012* (Cth) must hold valid STCW certifications (or equivalent) as appropriate to their duties. AMSA is responsible for administering these requirements to ensure compliance with international maritime obligations.
CM-34: Marine Order 27	Marine Order 27 (Safety of navigation and radio equipment) 2023 sets out requirements for navigation equipment, radio equipment, and communications. The Automatic identification system (AIS) is a maritime communications device, and AIS equipped vessels (shipborne AIS) can use it to send and receive identifying information. This identifying information can be displayed on an electronic chart, computer display, chart plotter or compatible navigation radar. As such, this identifying information can: • aid in situational awareness • provide a means to assist in collision avoidance.

CM	Description
CM-27: Marine Order 28	Marine Order 28 (Operations standards and procedures) 2025 sets out requirements and responsibilities for seafarers and vessel owners. These requirements include: • watchkeeping standards.
CM-35: Marine Order 30	Marine Order 30 (Prevention of collisions) 2016 gives effect to COLREGS and sets out requirements for prevention of collisions including the lights and signals to be provided and used by a vessel. The requirements include the use of appropriate lights and shapes to reflect the nature of vessel activities (e.g. restricted in the ability to manoeuvre, vessels underway, etc.). These requirements ensure other marine users in the vicinity are aware of the nature of the vessel activities.
CM-21: Marine Order 91	Marine Order 91 (Marine pollution prevention—oil) 2025 gives effect to Annex I of MARPOL 73/78 and sets out requirements for the prevention of pollution of the environment by oil for regulated vessels. Requirements of Annex I of MARPOL include having a SOPEP in place for relevant vessel class. 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.
CM-02: CoW process	CAPL's Operations Process: CoW Process (Ref. 170) ensures that workplace safety and health hazards are assessed and managed. The work authorisation system is part of this process and includes SIMOPS and hazard analysis. Where required under the CoW process, a SIMOPS Plan will be developed to identify and manage hazards arising from the petroleum activity and other CAPL planned petroleum activities when occurring within the same area.
CM-36: OPEP	Regulations 22(8) of the OPGGS(E)R requires that the implementation strategy must contain an OPEP. CAPL has developed an OPEP (Ref. 2) to support Level 2 or 3 oil spill response activities across all its assets.
CM-37a: OSM-BIP	Regulations 22(10) of the OPGGS(E)R requires that the implementation strategy must provide for monitoring of impacts to the environment from oil pollution and response activities. CAPL has elected to use the Joint Industry Operational and Scientific Monitoring Framework (OSM Framework; Ref. 429) and supporting operational and scientific monitoring plans. CAPL have developed an OSM-BIP (Ref. 6) to describe how the OSM Framework aligns with their activities, oil spill risks, and internal management systems. The OSM-BIP includes arrangements with OSM services providers with the scientific and technical capability to mobilise operational and scientific monitoring resource according to the timeframes required to help inform response decision-making and remediation activities.
CM-38: EMT	An emergency management team (EMT) capable of managing a response to the worst-case discharge scenario described in this EP will be maintained.

Table 8-76: Additional control measures relevant to Unplanned release—Loss of containment (vessel collision)

CM	Benefit	Cost
Additional warnings and/or lights	Additional warnings and lights may further reduce the potential for vessel interaction and consequently reduce the risk of vessel collision. However, existing navigational lights and signals, have been incorporated in accordance with Marine Order 30 requirements (Table 8-75). This lighting is managed to ensure it is sufficient for safe operations and navigation while reducing the potential exposure of light-sensitive marine fauna to artificial light and is considered sufficient to manage vessel interaction risks associated with planned activities. As a result, the additional reduction in residual risk is expected to be limited.	Increased light emissions may also increase the exposure of light-sensitive marine fauna to artificial light. Given the limited reduction in residual risk, the cost and potential environmental disbenefits of implementation are considered grossly disproportionate to the additional benefit that may be achieved. Therefore, the measure has not been adopted.
Offshore guard vessel/s	An offshore guard vessel may provide an additional level of marine traffic monitoring and communication, supporting awareness of the petroleum activity within the shipping fairway and facilitating engagement with nearby marine users where required. This may further reduce the potential for vessel collision or interference between the petroleum activity and other marine users. The risk of potential vessel collision is already proposed to be managed through the implementation of established maritime safety requirements and controls, including compliance with relevant Marine Orders and radio-navigation warnings (Table 8-75).	Deployment of an additional offshore guard vessel would result in significant increases in vessel mobilisation and operational costs. The presence of an additional vessel on standby would also increase vessel presence within the OA and may introduce additional environmental impacts and risks (e.g. sound emissions, vessel discharges, GHG emissions) as well as vessel interaction and safety risks associated with additional marine traffic. Given the implementation of established maritime safety requirements and controls, the additional risk reduction that may be achieved through the use of an additional offshore guard vessel is considered limited. As such, the cost and potential impacts associated with implementing this measure are considered grossly disproportionate to the limited environmental benefit that may be achieved. Therefore, the measure has not been adopted.
Vessel traffic management plan	A vessel traffic management plan for the shipping fairway was considered. However, the EP already incorporates a range of navigational safety controls, including the use of shipborne AIS, marine safety notifications, appropriate lights and signals, and watchkeeping standards in accordance with relevant Marine Orders (Table 8-75). These controls are widely implemented across the offshore industry and are considered appropriate for maintaining navigational safety.	N/A

CM	Benefit	Cost
	Activities identified within or adjacent to the shipping fairway include pipelay and umbilical installation, which are expected to be of limited duration, ranging from hours to days over the overall duration of each campaign. Taking into consideration the nature and duration of the activities and the navigational safety controls already proposed, CAPL considers that a vessel traffic management plan would not provide an additional environmental or risk reduction benefit. As this control measure is not providing an environmental or risk reduction benefit, no further evaluation has been undertaken.	
Vessels with fully protected internal tanks (double hull)	The use of vessels with fully protected internal tanks (double-hull construction) may reduce the potential environmental impacts and risks associated with a vessel collision incident.	Restricting vessel selection to vessels with fully protected internal tanks (double hull) would reduce vessel availability and operational flexibility, potentially resulting in scheduling constraints, activity delays and increased project costs. Proposed control measures, together with compliance with applicable maritime requirements, already reduce the likelihood of a vessel incident. As a result, the additional reduction in environmental risk that may be achieved through exclusive use of vessels with fully protected internal tanks is limited. Given the limited incremental environmental benefit and the associated operational and cost impacts, the costs of implementing this control measure are considered grossly disproportionate to the reduction in risk achieved. Therefore, this control has not been adopted for use.
OSM-BIP—Pre-contracted dedicated OSM sampling vessel, with trained OSM personnel, on standby for the duration of the drilling activity	Chartering and equipping vessels on standby for OSM would reduce mobilisation time for water quality monitoring by an estimated 12 to 24 hours following a Level 2 or Level 3 spill event, providing earlier data on hydrocarbon exposure.	Implementation of this control would require a dedicated standby vessel for the duration of the activity, resulting in additional vessel charter costs of ~$75,000 to $200,000 per week (depending on vessel specifications and readiness), increased organisational complexity, and additional environmental impacts and risks associated with vessel presence (e.g. GHG emissions, sound emissions, vessel discharges). The costs of having a small team of trained OSM personnel available on standby closer to the spill location release would be >$3–4 M / per annum, regardless of whether an oil spill occurred. Under the current OSM Services Provider contract,

CM	Benefit	Cost
		activation is provided within 72 hours of notification. CAPL maintains standing OSM-BIP arrangements and has access to the NWS vessel fleet through concurrent operations and MoU, providing access to suitable vessels and resources within the planned response timeframes. As such, maintaining a dedicated standby vessel and OSM personnel would provide limited additional environmental benefit. Given the limited incremental environmental benefit, together with the additional environmental impacts, operational complexity and vessel charter costs, the costs associated with implementing this control measure are considered grossly disproportionate to the environmental benefit gained. This approach is also not standard industry practice in Australia or internationally. Therefore, this control has not been adopted for use.
CM-37b: OSM-BIP—Maintain initial water quality / hydrocarbon sampling kits for pre-positioning on Barrow Island and selected vessels and develop technical procedure for sample collection.	The availability of initial water quality / hydrocarbon sampling kits on Barrow Island and selected vessels (and an accompanying technical procedure for sample collection) provides an opportunity for more rapid initial measurements of hydrocarbon properties. This information can provide important initial situational awareness information that aids decision making in both monitoring and response efforts.	Implementing this control measure will involve time and effort to source and supply the initial water quality / hydrocarbon sampling kits. There will also be employee time involved in developing the technical procedure (such that untrained vessel personnel are able to collect these initial samples). However, adoption of this control measure provides an additional and potentially quicker opportunity for initial water quality sampling to aid situational awareness for decision making in monitoring and response teams, therefore this control measure has been adopted
CM-37c: OSM-BIP—Conduct periodical review of existing baseline data sources across receptors within the CAPL OSM Planning Area.	This ensures that receptors with deficient baseline data are identified. This a consideration for initial monitoring prioritisation and the finalisation of each SMP design.	Understanding the presence or absence, suitability and quality of baseline data for priority receptors is an important preparatory measure. Understanding which receptors have insufficient baseline data will help guide monitoring prioritisation and the finalisation of each SMP design and whether there is a need to include alternative designs. The costs for implementing this control measure are negligible in comparison with the environmental gained. Therefore, this control measure is considered reasonably practicable to implement and has been adopted.

8.15.4.4 Likelihood and residual risk level summary

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 loss of containment 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 not expected.

Considering the inherent low likelihood of a collision occurring, and with the application of the above control measures, CAPL has assessed the likelihood and residual risk level as identified in Table 8-77.

Table 8-77: Likelihood and residual risk relevant to Unplanned release—Loss of containment (vessel collision)

Risk/receptor	Consequence	Likelihood	Residual risk
Change in water quality			
Water quality	Minor (5)	Remote (5)	Very low (9)
Potential adverse effects to BCH			
BCH	Incidental (6)	Remote (5)	Very low (10)
Potential adverse effects to marine fauna			
Marine mammals	Moderate (4)	Remote (5)	Low (8)
Marine reptiles	Minor (5)	Remote (5)	Very low (9)
Fishes, including sharks and rays	Minor (5)	Remote (5)	Very low (9)
Seabirds and shorebirds	Minor (5)	Remote (5)	Very low (9)
Potential changes to the functions, interests and activities of other marine users			
Commercial fisheries	Minor (5)	Remote (5)	Very low (9)
Tourism and recreation	Incidental (6)	Remote (5)	Very low (10)
Potential changes to values and sensitivities of protected areas			
Protected areas	Moderate (4)	Remote (5)	Low (8)
Potential changes to tangible cultural values			
Tangible cultural values	N/A		

8.15.5 Demonstration of acceptability

Table 8-78 describes the demonstration of acceptability relevant to this aspect.

Table 8-78: Demonstration of acceptability relevant to Unplanned release—Loss of containment (vessel collision)

Comparison with acceptable level
The acceptable level for this aspect is **AL-23** (see Section 6.6 for definitions). The intent of adopting and implementing preventive control measures (Section 8.15.4.3) is to prevent the occurrence of an unplanned hydrocarbon release to the environment. This preventative approach ensures that AL-23 is met. In the event that an unplanned release of marine fuel did occur, the above risk evaluation demonstrates that the predicted impact is expected to be incidental to moderate.
Principle of ESD
Precautionary Principle

In accordance with Table 6-5, consequence level ranging from Incidental (6) to Moderate (4) do not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required.

Intergenerational Principle

In accordance with Table 6-5, consequence level ranging from Incidental (6) to Moderate (4) do not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required.

Biodiversity Principle

The risks associated with this aspect is expected to affect only individuals to a small proportion of any marine fauna, 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.

Relevant environmental legislation and other requirements

Legislation and other requirements considered relevant for this aspect include:

- *Navigation Act 2012* (Cth)
- Marine Order 27
- Marine Order 28
- Marine Order 30
- Marine Order 91
- *Blue Whale Conservation Management Plan* (Ref. 42)
- *National Recovery Plan for the Southern Right Whale* (Ref. 37)
- *Conservation Advice for fin whale* (Ref. 268)
- *Conservation Advice for sei whale* (Ref. 269)
- *Conservation Advice for Australian humpback dolphin* (Ref. 270)
- *Conservation Advice for Australian snubfin dolphin* (Ref. 271)
- *Recovery Plan for Marine Turtles in Australia* (Ref. 264)
- *Conservation Advice for leatherback turtle* (Ref. 367)
- *Conservation Advice for short-nosed sea snake* (Ref. 285)
- Conservation Advice for dwarf sawfish (Ref. 308)
- *Sawfish and River Sharks Multispecies Recovery Plan* (Ref. 68)
- *Recovery Plan for the Grey Nurse Shark* (Ref. 69)
- *Recovery Plan for the White Shark* (Ref. 70)
- *Conservation Advice for largetooth sawfish* (Ref. 272)
- *Wildlife Conservation Plan for Seabirds* (Ref. 74)
- *Wildlife Conservation Plan for Migratory Shorebirds* (Ref. 265)
- *National Recovery Plan for Albatrosses and Petrels* (Ref. 266)
- *National Recovery Plan for the Australian Fairy Tern* (Ref. 73)
- *Conservation Advice for curlew sandpiper* (Ref. 276)
- *Conservation Advice for far eastern curlew* (Ref. 277)
- *Conservation Advice for Northern Siberian bar-tailed godwit (Yakutian bar-tailed Godwit)* (Ref. 280)
- *Conservation Advice for red knot* (Ref. 281)
- *Conservation Advice for sharp-tailed sandpiper* (Ref. 283)
- North-west Marine Parks Network Management Plan (Ref. 131)
- Marine Bioregional Plan for the NWMR (Ref. 21).

CAPL considers that impact and risk management is consistent with these requirements, as demonstrated below:

Requirement	Demonstration

Navigation Act 2012 (Cth) Notice to Mariners.	Requirement to issue a Notice to Mariners has been incorporated into the **Maritime safety Information** control measure.
Navigation Act 2012 (Cth) STCW certifications.	Requirement for crew members on regulated vessels to hold valid STCW certifications (or equivalent) has been incorporated into the **STCW Certifications** control measure.
Marine Order 27 Use of shipborne AIS.	The use of shipborne AIS has been incorporated into the **Marine Order 27** control measure.
Marine Order 28 Vessel watchkeeping standards.	Vessel watchkeeping requirements have been incorporated into the **Marine Order 28** control measure.
Marine Order 30 Use of lights and signals as per COLREGS.	Requirement to provide and exhibit appropriate lights and signals to reflect the nature of vessel operations has been incorporated into the **Marine Order 30** control measure.
Marine Order 91 Gives effect to Annex V of MARPOL 73/78.	Requirements to have a SOPEP (or equivalent) as appropriate to vessel class have been incorporated into the **Marine Order 91** control measure.
Conservation Management Plan for the Blue Whale No specific action identified.	N/A.
National Recovery Plan for the Southern Right Whale No specific action identified.	N/A.
Conservation Advice for fin whale No specific action identified.	N/A.
Conservation Advice for sei whale No specific action identified.	N/A.
Conservation Advice for Australian humpback dolphin No specific action identified.	N/A.
Conservation Advice for Australian snubfin dolphin No specific action identified.	N/A.
Recovery Plan for Marine Turtles in Australia Action A4.2: Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in reference to 'slow to recover habitats', e.g. nesting habitat, seagrass meadows or coral reefs. Note: This is also a specific action identified for the green turtle NWS (G-NWS), loggerhead turtle WA (LH-WA), and F-Pil individual stocks.	Assessment of spill risk strategies is within scope of the OPEP (Ref. 2). Response and recovery of habitats and marine fauna is within the scope of the OSM-BIP (Ref. 6). The petroleum activity is not considered to be inconsistent with the *Recovery Plan for Marine Turtles in Australia.*
Conservation Advice for leatherback turtle No specific action identified.	N/A.

Conservation Advice for leaf-scaled sea snake No specific action identified.	N/A.
Conservation Advice for short-nosed sea snake No specific action identified.	N/A.
Sawfish and River Sharks Multispecies Recovery Plan No specific action identified.	N/A.
Recovery Plan for the Grey Nurse Shark No specific action identified.	N/A.
Recovery Plan for the White Shark No specific action identified.	N/A.
Conservation Advice for largetooth sawfish No specific action identified.	N/A.
National Recovery Plan for Albatrosses and Petrels Action 5c: Risk based response strategies for marine pollution incidents are developed.	Assessment of spill risk strategies is within scope of the OPEP (Ref. 2). Therefore, this activity is not considered to be inconsistent with the *National Recovery Plan for albatrosses and petrels.*
National Recovery Plan for the Australian Fairy Tern No specific action identified.	N/A.
Conservation Advice for curlew sandpiper No specific action identified.	N/A.
Conservation Advice for far eastern curlew No specific action identified.	N/A.
Conservation Advice for Northern Siberian bar-tailed godwit (Yakutian bar-tailed Godwit No specific action identified.	N/A.
Conservation Advice for red knot No specific action identified.	N/A.
Conservation Advice for sharp-tailed sandpiper) No specific action identified.	N/A.
Wildlife Conservation Plan for Seabirds No specific action identified.	N/A.
Wildlife Conservation Plan for Migratory Shorebirds No specific action identified.	N/A.
North-west Marine Parks Network Management Plan Actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with mining	The Gascoyne and Montebello Marine Parks are multiple use zone (IUCN VI). The control measures identified (Section 8.15.4.3) for managing an unplanned release provide for the response to, and environmental monitoring and remediation of, an oil pollution incident.

operations authorised under the OPGGS Act, may be conducted in all zones without an authorisation issued by the Director, provided that the actions are taken in accordance with an EP that has been accepted by NOPSEMA, and the Director is notified in the event of oil pollution within a marine park, or where an oil spill response action must be taken within a marine park, so far as reasonably practicable, prior to response action being taken.	Requirements to report oil pollution incidents that occur within, or may impact upon, an AMP is included in Section 10.7.2. The petroleum activity is not considered to be inconsistent with the North-west Marine Parks Network Management Plan.
Marine Bioregional Plan for the NWMR No specific action identified.	N/A.
Internal context	
These management processes or procedures were deemed relevant for this aspect: • OPEP (Ref. 2) • OSM-BIP (Ref. 6). 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.	
External context	
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). During relevant persons consultation, the following claims were raised: • further measures were recommended to be incorporated the EP, including evaluation and implementing adequate anti-collision control measures. CAPL provided a response that confirmed: – consideration of each proposed control measure, including (where relevant) a summary of the equivalent CAPL control measure included within the EP. This has been covered by the control measures listed in Section 8.15.4.3. Additional control measures were evaluated by cost-benefit analysis within the EP (Table 8-76).	

8.15.6 Environmental performance

Table 8-79 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-79: Environmental performance relevant to Unplanned release—Loss of containment (vessel collision)

EPO	CM	EPS	MC
EPO-38: No unplanned release of hydrocarbons to the environment attributable to the petroleum activity.	**CM-01**: Maritime safety information	**EPS-01:** Vessels operating within the OA will comply with any Notice to Mariners requirements under the *Navigation Act 2012* (Cth).	**MC-01** Records of lodgement of notification to relevant agency.
	CM-33: STCW Certifications	**EPS-33:** Vessel crew must hold valid STCW Certifications (or equivalent) as appropriate to duties.	**MC-33** Records verify that vessel crew held valid STCW certifications (or equivalent) as appropriate to duties during the petroleum activity.
	CM-34: Marine Order 27	**EPS-34:**	**MC-34**

EPO	CM	EPS	MC
		Vessels operating within the OA will use shipborne AIS during the petroleum activity.	Records verify that shipborne AIS was used by the vessels during the petroleum activity.
	CM-27: Marine Order 28	**EPS-27:** Vessels will implement watchkeeping standards in accordance with Marine Order 28.	**MC-37** Records verify that watchkeeping was undertaken in accordance with the requirements of Marine Order 28 during the petroleum activity.
	CM-35: Marine Order 30	**EPS-35: Marine Order 30** Vessels will implement light and signals appropriate to the nature of their operations.	**MC-35** Records verify that vessel lights and signals were consistent with the requirements of COLREGS and the *Navigation Act 2012* (Cth) during the petroleum activity.
	CM-21: Marine Order 91	**EPS-21.3:** Relevant vessels (as appropriate to class) will hold a valid SOPEP (or equivalent).	**MC-21.3.1** OVIS report, ABU Marine OE Inspection Checklist, or equivalent record, confirms an approved SOPEP is on board marine vessels >400 GT.
			MC-21.3.2 Inspection records (or equivalent) show drills conducted in accordance with SOPEP.
		EPS-21.4: In the event of a vessel-based spill event, emergency response activities will be implemented in accordance with the vessel SOPEP (or equivalent).	**MC-21.4** Records verify that emergency response activities were implemented in accordance with the vessel SOPEP in the event of a vessel-based spill.
	CM-02: CoW process	**EPS-02:** Where required under the CoW process, CAPL will develop and implement SIMOPS Plan(s) to manage the petroleum activity and other planned CAPL petroleum activities that may occur concurrently within the vicinity of the OA.	**MC-02** 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.
	CM-36: OPEP	**EPS-36: OPEP** In the event of a Level 2 (or above) oil spill occurring, response activities are implemented in accordance	**MC-36** Records verify the OPEP has been activated and response activities implemented.

EPO	CM	EPS	MC
		with CAPL's Consolidated OPEP.	
		OPEP Refer to the OPEP (Ref. 2) for EPOs, EPSs, and MC related to emergency management, emergency preparedness, and each response tactic.	
	CM-37a: OSM-BIP	**EPS-37.1:** In the event of a Level 2 (or above) oil spill occurring, the OSM-BIP will be activated and: • operational and scientific monitoring programs are implemented once the specific initiation criteria are met • operational and scientific monitoring programs are implemented within the timeframes outlined in the OSM-BIP • operational and scientific monitoring components are continued until respective termination criteria are met.	**MC-37.1.1** Records verify the OSM-BIP has been activated.
			MC-37.1.2 Records verify that once initiation criteria have been met, operational and scientific monitoring programs were initiated.
			MC-37.1.3 Records verify that operational and scientific monitoring programs were implemented within the timeframes outlined in the OSM-BIP.
			MC-37.1.4 If any OSM-BIP programs requiring vessels are activated, records demonstrate that CAPL EMT identified vessel availability through existing contracts within 12 hours of OSM-BIP component initiation activation.
			MC-37.1.5 If any OSM-BIP programs requiring aircraft are activated, records demonstrate that CAPL EMT identified aircraft availability through existing contracts within 12 hours of OSM-BIP component initiation activation.
			MC-37.1.6 Records show CAPL EMT mobilised a minimum of one identified, contracted vessel within 24 hours to Onslow, Dampier or Barrow Island (subject to Barrow Island quarantine requirements).
			MC-37.1.7

EPO	CM	EPS	MC
			Records confirm that once termination criteria have been met, operational and scientific monitoring programs were ceased.
		EPS-37.2: Capability required to implement all operational and scientific monitoring programs are in place to meet the requirements outlined in the OSM-BIP.	**MC-37.2.1** Records show CAPL obtained monthly capability reports from OSM services provider to demonstrate that the capability outlined in Section 10 of the CAPL OSM-BIP was available throughout the petroleum activity.
	CM-37b: OSM-BIP—Maintain initial water quality / hydrocarbon sampling kits for pre-positioning on Barrow Island and selected vessels, and develop technical procedure for sample collection.		**MC-37.2.2** Water quality / hydrocarbon sample kits are maintained at Barrow Island and selected vessels, and a technical procedure for sample collection was developed.
	CM-37c: OSM-BIP—Conduct periodical review of existing baseline data sources across receptors within the CAPL OSM Planning Area.	**EPS-37.3:** CAPL maintains available marine baseline data for receptors within their OSM Planning Area as part of a joint-industry marine baseline data assessment project.	**MC-37.3:** Records show that CAPL maintains marine baseline data via the joint-industry marine baseline data assessment project.
	CM-38: EMT	**EPS-38.1:** CAPL core and support EMT members will complete all hazards and oil spill training in accordance with the Training and Exercise Procedure (Appendix G of the OPEP).	**MC-38.1** Records verify training has been conducted.
		EPS-38.2: CAPL shall maintain an EMT duty roster with a minimum of 10 qualified EMT personnel to fulfil core CAPL EMT positions.	**MC-38.2** EMT Duty Roster records.
		EPS-38.3:	**MC-38.3**

EPO	CM	EPS	MC
		CAPL shall maintain the minimum required trained personnel to fulfil core EMT functions, including source control roles, as per Appendix F of the OPEP.	Records verify the minimum required personnel are trained.
		EPS-38.4: During any oil spill response, EMT support personnel, including mutual aid personnel, joining the CAPL EMT will be provided with training in accordance with the Training and Exercise Procedure (Appendix G of the OPEP) before they join the EMT.	**MC-38.4** Training/induction records.
		EPS-38.5: CAPL shall maintain service agreements with oil spill response organisations and membership to mutual aid frameworks (as per Section 10.3.9.6) that have capabilities to support a response to an oil spill event.	**MC-38.5** Records verify that service agreements and memberships to mutual aid frameworks are in place.

8.16 Unplanned release—Loss of containment (hydrocarbon system)

8.16.1 Source of aspect

Activities identified as having the potential to result in a hydrocarbon release from the system are:

- a dropped object within the existing infrastructure (i.e. SCMS and Jansz DC-2 locations).

8.16.2 Scenario

A dropped object risk assessment (Ref. 428) was completed to understand the potential outcomes of a dropped object within the existing third-party subsea infrastructure (i.e. SCMS and Janz DC-2 locations). This report concluded that there are no credible scenarios in which dropped objects could interact with existing subsea infrastructure that would result in a hydrocarbon release. Specifically, offset distances from existing infrastructure, along with water depths and the installation methodology applied during installation activities, mean that a subsea loss of containment risk from existing infrastructure is not credible and has not been considered further.

8.17 Oil spill response—OWR

8.17.1 Aspect source

In the event an oil spill event, oiled wildlife response (OWR) is a support function that is implemented alongside other response options if applicable and commensurate to the scale and nature of the spill. (Section 9.3; Ref. 2).

OWR occurs after an oil spill event has occurred. OWR tactics and techniques are intended to mitigate adverse wildlife impacts by reducing the number of animals that come into contact with spilt oil, capturing and rehabilitating oiled fauna, and removing oiled carcasses to reduce secondary impacts.

8.17.2 Environmental impact and risk evaluation

Conducting OWR during a spill response may result in:

- potential adverse effects to marine fauna.

8.17.2.1 Consequence evaluation

8.17.2.1.1 Risk: potential adverse effects to marine fauna

The potential risks from implementing OWR will vary depending on the fauna and the tactics used. Values and sensitivities in the Hydrocarbon EMBA include various marine fauna (such as turtles and birds) that could become oiled during a spill event.

OWR preventative actions such as deterrence (hazing) may involve the use of visual, auditory, or sensory deterrents to keep un-oiled marine fauna away from the oil spill; and pre-emptive capture involves the physical removal of at-risk wildlife from the spill environment. Potential risks may include the physical disturbance, stress-induced physiological effects, or unintended injury or mortality.

OWR mitigative actions such as the cleaning of oiled wildlife may result in skin irritations, adverse effects to hydrophobic properties of bird plumage, and stress-induced physiological effects.

The worst-case consequence of implementing an OWR response has been evaluated as the temporary disturbance of a small proportion of a population of a protected marine fauna species, and/or the potential mortality of an individual, and as such has been ranked as Minor (5).

8.17.2.2 ALARP decision context justification

Oil spill response options, including OWR, are well understood and have been successfully applied during previous oil spill events. The potential risks associated with the implementation of an OWR response during an oil spill event are managed through established control measures prescribed by applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

It is acknowledged that some uncertainty regarding the specific location at which an OWR may be deployed and the types of OWR tactics that may be used will remain until an event occurs and spill-specific modelling and response planning can occur. However, stochastic oil spill modelling has been used to inform the spatial extent of the Hydrocarbon EMBA and identify areas of potential surface exposure, and this is considered an appropriate basis to inform response planning and environmental risk assessments. The control measures to manage the potential risks associated with OWR are linked to NEBA, tactical planning requirements, and monitoring plans.

No material information or concerns were raised regarding oil spill response by relevant persons during consultation in preparing this EP.

The potential risks from implementing an OWR response are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.17.2.3 Control measures

Table 8-80 details the control measures relevant to this aspect.

Table 8-80: Good practice control measures relevant to Oil spill response—OWR

CM	Description
CM-36: OPEP	Regulations 22(8) of the OPGGS(E)R requires that the implementation strategy must contain an OPEP. CAPL has developed an OPEP (Ref. 2) to support Level 2 or 3 oil spill response activities across all its assets.
CM-37a: OSM-BIP	Regulations 22(10) of the OPGGS(E)R requires that the implementation strategy must provide for monitoring of impacts to the environment from oil pollution and response activities. CAPL has elected to use the Joint Industry OSM Framework (Ref. 429) and supporting operational and scientific monitoring plans. CAPL have developed an OSM-BIP (Ref. 6) to describe how the OSM Framework aligns with their activities, oil spill risks, and internal management systems.

8.17.2.4 Likelihood and residual risk level summary

With the control measures in place, CAPL has assessed the likelihood and residual risk level as identified in Table 8-81.

Table 8-81: Likelihood and residual risk relevant to Oil spill response—OWR

Risk/receptor	Consequence	Likelihood	Residual risk
Potential adverse effects to oiled and/or unoiled fauna			
Marine fauna	Minor (5)	Remote (5)	Very low (9)

8.17.3 Demonstration of acceptability

Table 8-82 describes the demonstration of acceptability relevant to this aspect.

Table 8-82: Demonstration of acceptability relevant to Oil spill response—OWR

Comparison with acceptable level
The acceptable level for this aspect is **AL-23** (see Section 6.6 for definitions). Preventative control measures are implemented to reduce the likelihood of an oil spill event occurring (Section 8.15.4.3), and consequently also reduce the likelihood that an oil spill response, including OWR, would be required. As such, this preventative approach ensures the acceptable level AL-23 is met. In the event that OWR is required to be implemented, the above risk evaluation demonstrates that the predicted consequence is expected to be minor.
Principle of ESD
Precautionary Principle In accordance with Table 6-5, a consequence level of Minor (5) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required. *Intergenerational Principle* In accordance with Table 6-5, a consequence level of Minor (5) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required.

Biodiversity Principle If OWR is required to be implemented the predicted impacts are the temporary disturbance of a small proportion of a population of a protected marine fauna species, and/or the potential mortality of an individual. This is not considered to have the potential to affect biological diversity and ecological integrity, and therefore no further evaluation against the Biodiversity Principle is required.
Relevant environmental legislation and other requirements
No legislation or other requirements considered relevant for this aspect were identified.

Requirement	Demonstration
N/A	N/A

Internal context
These management processes or procedures were deemed relevant for this aspect: • OPEP (Ref. 2) • OSM-BIP (Ref. 6). Control measures related to the above management processes or procedures have been described for this aspect. As such, CAPL considers that risk management for this aspect is consistent with company policy, culture, and standards.
External context
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). No changes to this risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.

8.17.4 Environmental performance

Table 8-83 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-83: Environmental performance relevant to Oil spill response—OWR

EPO	CM	EPS	MC
EPO-38: No unplanned release of hydrocarbons to the environment attributable to the petroleum activity.	**CM-36: OPEP**	**EPS-36: OPEP** In the event of a Level 2 (or above) oil spill occurring, response activities are implemented in accordance with CAPL's Consolidated OPEP.	**MC-36** Records verify the OPEP has been activated and response activities implemented.
		OPEP Refer to the OPEP (Ref. 2) for EPOs, EPSs, and MC related to the OWR support function.	
	CM-37a: OSM-BIP	**EPS-37.1:** In the event of a Level 2 (or above) oil spill occurring, the OSM-BIP will be activated and: • operational and scientific monitoring programs are implemented once the specific initiation criteria are met • operational and scientific monitoring programs are implemented within the	**MC-37.1.1** Records verify the OSM-BIP has been activated. **MC-37.1.2** Records verify that once initiation criteria have been met, operational and scientific monitoring programs were initiated. **MC-37.1.3** Records verify that operational and

EPO	CM	EPS	MC
		timeframes outlined in the OSM-BIP • operational and scientific monitoring components are continued until respective termination criteria are met.	scientific monitoring programs were implemented within the timeframes outlined in the OSM-BIP.
			MC-37.1.4 If any OSM-BIP programs requiring vessels are activated, records demonstrate that CAPL EMT identified vessel availability through existing contracts within 12 hours of OSM-BIP component initiation activation.
			MC-37.1.5 If any OSM-BIP programs requiring aircraft are activated, records demonstrate that CAPL EMT identified aircraft availability through existing contracts within 12 hours of OSM-BIP component initiation activation.
			MC-37.1.6 Records show CAPL EMT mobilised a minimum of one identified, contracted vessel within 24 hours to Onslow, Dampier or Barrow Island (subject to Barrow Island quarantine requirements).
			MC-37.1.7 Records confirm that once termination criteria have been met, operational and scientific monitoring programs were ceased.

8.18 Cultural heritage—Intangible values

8.18.1 Aspect source

All activities generating environmental aspects described in Sections 8.1 to 8.17. have been identified as having the potential to interact with intangible cultural heritage values.

8.18.2 Environmental impact and risk evaluation

Offshore petroleum activities may result in a:

- Potential interference with Sea Country values.

8.18.2.1 Consequence evaluation

8.18.2.1.1 Risk: potential interference with Sea Country values

The Convention for the Safeguarding of Intangible Cultural Heritage describes intangible cultural heritage as the “practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage.” (Ref. 430).

Sea Country has been identified as a cultural value for First Nations people through consultation and literature reviews (Section 5.3.5.2.1). Sea Country values can include songlines, dreaming stories, and culturally important marine fauna.

Songlines are paths that track across Country and skies, representing Indigenous knowledge that has been collected, protected and transmitted (Ref. 94). Songlines are living tools that embed and mediate history, ecological knowledge, relationships, ancestral beings, and cultural belonging on Country (Ref. 94). Certain songlines may be referred to as ‘Dreaming Pathways’ because of the tracks forged by Creator Spirits during the Dreaming (Ref. 431). Kearney et al. (Ref. 95) describe that for saltwater peoples “stories and songlines locate, interpret and inscribe knowledges of both the Dreaming tracks, bodies and movements of ancestral beings that criss-cross over Sea Country and the permanent sites of ancestral inhabitation within the marine environment”. Fauna are also woven into the Dreaming, songlines and stories (Ref. 96).

Listening and talking with Country through songs, stories, songlines, dances and ceremonies are ways First Nations people use the knowledge to care for, navigate, and connect with Country (Ref. 432). Songlines rely on the continued health of Country, and people’s continued access and connection to it (Ref. 94). When Country is damaged or altered, so too are songlines and the knowledge they embody and enact (Ref. 94).

All the potential environmental impacts and risks from the petroleum activity evaluated in Sections 8.1 to 8.17 are considered lower-order impacts or risks in accordance with Table 6-3, and have had control measures identified to reduce and manage the impacts and/or risks to ALARP and acceptable levels. As such, it is anticipated that intangible cultural heritage values such as songlines and connection to Country would not be significantly adversely affected by the petroleum activity. However, in the event that the petroleum activity did interfere with Sea Country values, the worst-case consequence has been evaluated as Moderate (4).

8.18.2.2 ALARP decision context justification

Vessel operations are routinely undertaken by the offshore petroleum industry, both nationally and internationally. The potential risk associated with the interference with Sea Country values from these types of activities are managed through established control measures prescribed by applicable legislation and recognised as standard industry practice. These requirements are well understood and implemented by the petroleum industry, including by CAPL.

No material information or concerns were raised regarding interference with Sea Country values from the petroleum activity by relevant persons during consultation in preparing this EP.

The potential risks from an interference with Sea Country values are considered lower-order risks in accordance with Table 6-3. As such, CAPL applied ALARP Decision Context A for this aspect.

8.18.2.3 Control measures

Table 8-84 details the control measures relevant to this aspect.

Table 8-84: Good practice control measures relevant to Cultural heritage—Intangible values

CM	Description
CM-39: Ongoing Consultation (First Nations)	Regulation 22(15) of the OPGGS(E)R requires that the implementation strategy must provide for appropriate consultation with relevant interested persons or organisations. Section 10.3.4 describes how CAPL will continue to engage with First Nations people and/or representative bodies. This consultation relates to both ongoing consultation regarding the specific petroleum activity (Section 10.3.4.1 and 10.3.4.2) as well as broader engagement and relationship building (Section 10.3.4.3). Ongoing consultation and relationship building with First Nations people and/or representative bodies provides a continual improvement opportunity to support CAPLs understanding of cultural values or features that may be present within their areas of operation, and subsequently allow potential impacts and risks to be managed to an ALARP and acceptable level. If new information on cultural values or features within the OA or Hydrocarbon EMBA is identified during ongoing consultation or relationship building, any subsequent changes to activities or impacts/risks within the scope of the EP will undergo a Management of Change (MoC) evaluation as per Section 10.3.2.2.

8.18.2.4 Likelihood and residual risk level summary

With the application of the above control measures CAPL has assessed the likelihood and residual risk level as identified in Table 8-85.

Table 8-85: Likelihood and residual risk relevant to Cultural heritage—Intangible values

Risk/receptor	Consequence	Likelihood	Residual risk
Potential interference with Sea Country values			
Sea Country values	Moderate (4)	Unlikely (4)	Low (7)

8.18.3 Demonstration of acceptability

Table 8-86 describes the demonstration of acceptability relevant to this aspect.

Table 8-86: Demonstration of acceptability relevant to Cultural heritage—Intangible values

Comparison with acceptable level
The acceptable level for this aspect is **AL-07** (see Section 6.6 for definitions). The intent of adopting and implementing preventive control measures (Section 8.18.2.3) is to prevent the occurrence of a significantly adverse effect to Sea Country values. This preventative approach ensures that AL-07 is met.

In the event that interference with Sea Country values did occur, the above risk evaluation demonstrates that the predicted consequence is expected to be moderate.
Principle of ESD
Precautionary Principle In accordance with Table 6-5, a consequence level of Moderate (4) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Precautionary Principle is required. *Intergenerational Principle* In accordance with Table 6-5, a consequence level of Moderate (4) does not represent a threat of serious or irreversible environmental damage and therefore no further evaluation against the Intergenerational Principle is required. *Biodiversity Principle* N/A.
Relevant environmental legislation and other requirements
No legislation or other requirements considered relevant for this aspect were identified.

Requirement	Demonstration
N/A	N/A

Internal context
No management processes or procedures were deemed relevant for this aspect.
External context
Relevant persons consultation has been used to inform the impact and risk assessment process (see Sections 6.7.5 and 7). No changes to this risk evaluation (including control measures) were made in response to the relevant persons consultation undertaken during the preparation of this EP.

8.18.4 Environmental performance

Table 8-87 lists the EPOs, CMs, EPSs and MCs relevant to this aspect.

Table 8-87: Environmental performance relevant to Cultural heritage—Intangible values

EPO	CM	EPS	MC
EPO-09: No interference with First Nations cultural heritage values from planned activities associated with the petroleum activity to a greater extent than is necessary for the reasonable exercise of the rights and performance of duties.	**CM-39:** Ongoing Consultation (First Nations)	**EPS-39.1:** Ongoing consultation with First Nations people and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocols.	**MC-39.1** Relevant persons consultation records.
		EPS-39.2: If new information on First Nations cultural values or features within the OA or Hydrocarbon EMBA are identified during ongoing consultation, any subsequent changes to activities or potential impacts or risks within the scope of the EP will undergo an MoC evaluation.	**MC-39.21** Records verify that the MoC Process was undertaken in response to new information on First Nations cultural values or features within the OA or Hydrocarbon EMBA.

9 Oil spill response and monitoring

Regulations 22(9) and 22(10) of the OPGGS(E)R requires CAPL to provide for the response and monitoring of oil pollution from emergency events.

CAPL has developed the OPEP (Ref. 2) which details the decision-making framework and response techniques for an oil spill event, including the process for determining the appropriate level of oil spill response preparedness.

CAPL has elected to use the Joint Industry OSM Framework[143] (Ref. 429) and supporting operational monitoring plans (OMPs) and scientific monitoring plans (SMPs). Operational monitoring provides situational awareness of an oil spill to aid planning and decision-making for executing spill response or clean-up operations. Scientific monitoring is the principle tool for determining the extent, severity, and persistence of environmental impacts from an oil spill event and for informing resultant remediation activities. CAPL have developed the OSM-BIP (Ref. 6) to describe how the OSM Framework aligns with their activities, oil spill risks, and internal management systems.

9.1 Exposure values

NOPSEMA's information paper on the application of oil spill modelling in EPs (Ref. 18) provides recommended exposure values that should be applied for different purposes to meet the requirements of the OPGGS(E)R. Table 9-1 provides the exposure values adopted in this EP to inform oil spill response and operational and scientific monitoring arrangements. These exposure values are based on the recommended values in Table 1 of NOPSEMA's information paper (Ref. 18).

[143] The Joint Industry OSM Framework is available online at:
https://energyproducers.au/hubfs/Joint%20Industry%20OSM%20Framework%20Rev%20D%2012032021.pdf

Table 9-1: Exposure values to inform oil spill response and operational and scientific monitoring arrangements

Oil component	Exposure value	Purpose of exposure value[144]	
		Oil spill response	Operational and scientific monitoring
Shoreline oil	High (≥1,000 g/m^2)	It represents the concentration of shoreline oil that is likely to require intensive clean-up effort. Natural degradation alone is unlikely to result in a net environmental benefit when compared with active clean-up options (Ref. 163 as cited in Ref. 18).	It represents the concentration of shoreline oil that is of high priority for operational and scientific monitoring.
	Moderate (≥100 g/m^2)	It represents the concentration of shoreline oil that is likely to require clean-up effort on man-made structures, sandy or rocky beaches/shorelines, as well as more sensitive coastal habitats (Ref. 163 as cited in Ref. 18).	It represents the concentration of shoreline oil that is of priority for operational and scientific monitoring.
	Low (≥10 g/m^2)	Not applicable. At this concentration, available oi spill response options may have limited effectiveness, depending on the environment and hydrocarbon characteristics. Natural degradation may be the response option with the highest net environmental benefit.	It represents a lower concentration for defining the planning area for operational and scientific monitoring, within which further analysis can be done to inform monitoring priorities.
Surface oil (Floating oil)	High (≥50 g/m^2)	At this concentration, containment and recovery (e.g. booms and skimmers), and chemical treatment (e.g. dispersant application) oil spill response options are expected to be most effective.	It represents the concentration of surface oil that is of high priority for operational and scientific monitoring. At this concentration, oil transitions from appearing as a metallic sheen to continuous or discontinuous 'true oil' on the surface of the ocean (Ref. 164 as cited in Ref. 18).
	Moderate (≥10 g/m^2)	At this concentration, containment and recovery (e.g. booms and skimmers), and chemical treatment (e.g. dispersant application) oil spill response options may become effective (Ref. 165 as cited in Ref. 18), depending on the environment and hydrocarbon characteristics.	It represents the concentration of surface oil that is of priority for operational and scientific monitoring. At this concentration, hydrocarbons may appear as a metallic sheen (Ref. 164 as cited in Ref. 18).
	Low (≥1 g/m^2)	Not applicable. At this concentration, available oil spill response options may have limited effectiveness, depending on	It represents a lower concentration for defining the planning area for operational and scientific monitoring, within which further analysis can be done to inform monitoring priorities.

[144] Source: Table 1 from NOPSEMA's information paper on the application of oil spill modelling in EPs (Ref. 18).

Oil component	Exposure value	Purpose of exposure value[144]	
		Oil spill response	Operational and scientific monitoring
		the environment and hydrocarbon characteristics. Natural degradation may be the response option with the highest net environmental benefit.	At this concentration, hydrocarbons may appear as a silver to rainbow sheen under calm conditions (Ref. 164 as cited in Ref. 18).
Dissolved oil	High (≥300 ppb PAH)	A relevant consideration in informing the identification of protection priorities and selection of oil spill response options that provide the best net environmental benefit.	It represents the concentration of dissolved oil that is of high priority for operational and scientific monitoring.
	Moderate (≥50 ppb PAH)		It represents the concentration of dissolved oil that is of priority for operational and scientific monitoring.
	Low (≥10 ppb PAH)		It represents a lower concentration for defining the planning area for operational and scientific monitoring, within which further analysis can be done to inform monitoring priorities.
Entrained oil	High (≥1,000 ppb THC)	A relevant consideration in informing the identification of protection priorities and selection of oil spill response options (e.g. dispersant application) that provide the best net environmental benefit.	It represents the concentration of entrained oil that is of high priority for operational and scientific monitoring
	Moderate (≥100 ppb THC)		It represents the concentration of entrained oil that is of priority for operational and scientific monitoring
	Low (≥10 ppb THC)	Not applicable. Available oil spill response options are limited. Natural degradation may be the response option with the highest net environmental benefit.	It represents a lower concentration for defining the planning area for operational and scientific monitoring, within which further analysis can be done to inform monitoring priorities. It is based on exceedance of water quality guidelines (e.g. the Australian & New Zealand Guidelines; Ref. 89).

9.2 Response option selection

9.2.1 Strategic NEBA

CAPL has developed a series of *Strategic Net Environmental Benefit Analysis* (NEBAs) (Ref. 166) using generalised scenarios that reflect the oil spill risks associated with all CAPL offshore WA operations. Hydrocarbons associated with spill events from 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, Brunello, Chandon, Semele, and Jansz condensates, Wheatstone trunkline fluids, and Wheatstone flowline fluids
- Group 2—Including MDO, Gorgon, Geryon, Eurytion, Chrysaor, and Dionysus condensates, and Gorgon/Jansz mixed trunkline fluids
- Group 3/4—Including HFO and intermediate fuel oil (depending on blend).

These strategic 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. 166). After considering the benefits and drawbacks of each response option on the ecological, social, and economic receptors within the Hydrocarbon EMBA, the response options that were determined to minimise the impacts to the environment and people were pre-selected.

9.2.2 Protection prioritisation process

CAPL has developed a Protection Prioritisation Process (PPP) (Ref. 167) 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 Hydrocarbon EMBA (see Section 5.1). 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 Hydrocarbon 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. 167) ranks receptors (natural or anthropogenic value or resource that is potentially sensitivity to marine oil pollution) using a five-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. CAPL's PPP (Ref. 167) aligns with DTMI's protection priority process (Ref. 168) 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 as described in the PPP; (Ref. 167) considers all High (4) and Very High (5) ranked shoreline cells where contact at or above 100 g/m^2 exposure value (from stochastic modelling across all seasons) is predicted within 4-days (96 hours). As

described in the PPP (Ref. 167), the four-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.

No shoreline accumulation at or above the 100 g/m^2 exposure value was predicted to occur for the oil spill scenario. Therefore, no priority planning areas were identified.

9.3 Activity-specific response option selection

To select the appropriate response options for this EP, hydrocarbons applicable to the worst credible scenarios specific to this activity are:

- Group 2 –MDO.

The outcomes of the Strategic NEBA are outlined in Table 6-1 of the OPEP (Ref. 2). Taking into account 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:

- source control (SC)
- Monitoring, Evaluation, and Surveillance (MES)
- Shoreline Protection and Deflection (SPD)
- Shoreline Clean-up (SHC).

Note: SC for a vessel-based spill is the responsibility of the Vessel Master and implementation of the SOPEP. As such, SC is not discussed further in this section.

Offshore containment and recovery (CAR) would not be effective because of the hydrocarbon properties (Group 2).

Results from stochastic spill modelling predicted no shoreline oil accumulation above the low (≥10 g/m^2) exposure value (or higher exposure value) from the surface release of MDO spill event within the OA (Section 8.15.3). As such SHC and SPD are not proposed and not discussed further in this section.

This response option is carried out alongside OWR and Waste Management response tactics. CAPL does not consider OWR 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.

9.4 Oil spill response capability assessment

Based on the spill response arrangements that CAPL has in place across the business, the capability of these arrangements was determined. This process involved:

- identifying CAPL’s existing response arrangements and the equipment and personnel available to CAPL under these arrangements
- defining the response package for each response option, and identifying the critical components for each response package (i.e. equipment or personnel that are limited in number and cannot be purchased or accessed readily)

- determining the number of critical components available to CAPL under existing arrangements
- identify the number of response packages available to CAPL under existing arrangements
- defining the volume of hydrocarbons that could be recovered or treated per response package.

The outcome of this evaluation is included in Appendix C the OPEP (Ref. 2).

9.4.1 Activity-specific capability requirement assessment

To understand the spill response capability required for this petroleum 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. 166) and priority planning areas to understand the planned response to an event
2. Predict the average surface oil volume per day, and average volume of oil 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.

9.4.2 Planned response for vessel collision event

In accordance with the Strategic NEBA (Ref. 166), the response strategies proposed to be used for this spill scenario and response package calculations are described below.

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. 2) has documented the arrangements that CAPL have in place to implement all the required MES tactics; therefore, this technique is not discussed further.

9.5 Capability assessment against the OSM-BIP

Regulation 22(9) and 22(10) of the OPGGS(E)R requires CAPL to provide for monitoring of impacts to the environment from oil pollution and response activities that is appropriate to the nature and scale of the risk of environmental impacts of the activity; and is sufficient to inform any remediation activities.

For all CAPL activities, the Combined Operational and Scientific Monitoring (OSM) Planning Area presented in CAPL's OSM-BIP (Ref. 6), represents the predicted spatial extent of hydrocarbon exposure at the low exposure values for surface, in-water, and shoreline oil components that may occur as a result of CAPL's activities in the NWS.

For the petroleum activity within scope of this EP, an activity-specific OSM Exposure Area has been developed to predict the spatial extent of hydrocarbon exposure at the low exposure values for surface, in-water, and shoreline oil components.

The exposure values used to determine the Combined OSM Planning Area and activity-specific OSM Exposure Area are based on the recommended values in Table 1 of NOPSEMA's information paper (Ref. 18) and shown in Table 9-1.

The activity-specific OSM Exposure Area for this petroleum activity fits within the spatial extent of the Combined OSM Planning Area described in CAPL's OSM- (Ref. 6) and is described further in appendix g.

10 Implementation strategy

This section provides a description of the implementation strategy as required under regulation 22 of the OPGGS(E)R. The implementation strategy identifies the systems, practices, and procedures used to ensure the environmental impacts and risks of the petroleum activities are continuously reduced to ALARP and the EPOs and EPSs detailed in Section 8 are achieved.

CAPL, as operator, 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 EPOs and EPSs are achieved. The vessel contractors HSE documentation will be reviewed for alignment with the relevant requirements described in this EP prior to the commencement of the petroleum activity.

10.1 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. 169) 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 stakeholder engagement to meet the OE objectives and ensure safe operations of CAPL facilities and projects. The OEMS comprises the following key components (Figure 10-1):

- **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 10-1) 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 10-1) provides the verification and validation that the safeguards are in place and functioning as intended.



Figure 10-1: Overview of Chevron Corporation's OEMS

10.2 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.

10.2.1 Roles and accountability

CAPL leaders have the overall accountability for the implementation of the OEMS.

10.2.1.1 Chain of command (for the petroleum activity)

As required under regulation 22(3) of the OPGGS(E)R, a clear chain of command for implementing the petroleum activity is outlined in Figure 10-2.

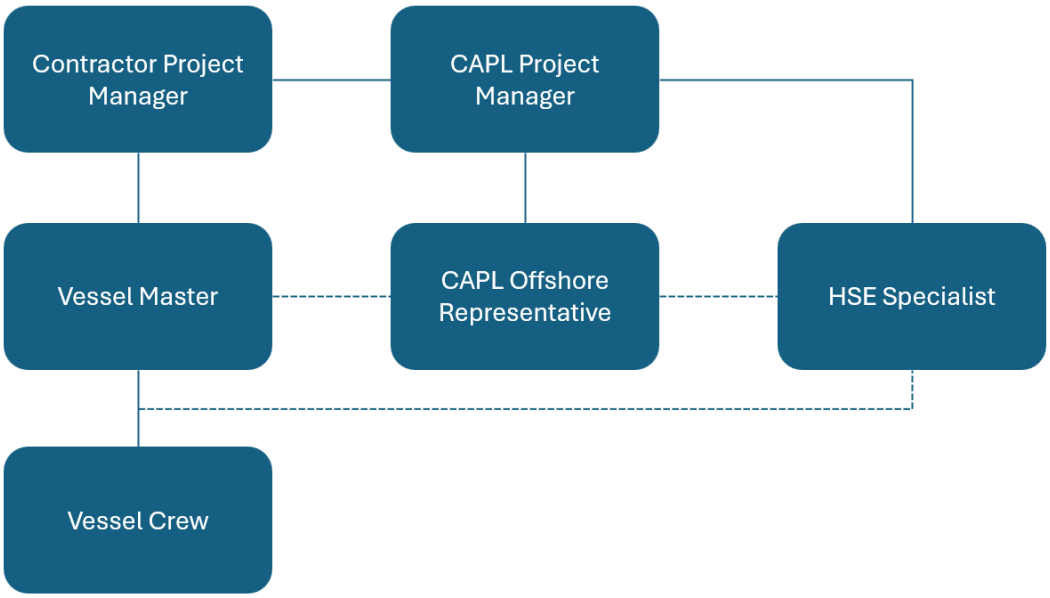


Figure 10-2: Chain of command of the petroleum activity

10.2.1.2 Roles and responsibilities (for the petroleum activity)

The roles and responsibilities of key CAPL and contractor personnel for implementing task-specific control measures as detailed in Section 8, are summarised in Table 10-1.

Table 10-1: Key roles and responsibilities—petroleum activity

Roles	Responsabilities
CAPL personnel	
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 10.2.1.3 • ongoing consultation is conducted in accordance with Section 10.3.4 • any MoC is conducted in accordance with Section 10.3.2.2, and notify the CAPL Offshore Representative and HSE Specialist of any scope changes, where relevant • environmental incident reporting is completed in accordance with Section 10.7.2 • routine environmental reporting is undertaken in accordance with Section 10.7.3.
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 10.2.1.3 • 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).

Roles	Responsabilities
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 Section 8 • 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 10.3.6.1 • seabird management procedure is implemented • UCH finds protocol is implemented • all incidents, including breaches of EPS, are reported to Project Manager.
HSE Specialist	Ensure that: • all CAPL personnel and third-party vessels or contractors are made aware of their requirements under this EP, and have completed inductions as per Section 10.2.1.3 • pre-mobilisation inspections of vessels are undertaken to confirm they comply with relevant legislative requirements and requirements under this EP • environmental impacts and risks are continually reduced to ALARP and acceptable levels by implementing this EP in accordance with Sections 8 and 10 • compliance with this EP is verified in accordance with Sections 10.3 and 10.4, including: – completion of environmental inspections – corrective actions identified during environmental inspections are closed out – collection of evidence against EPSs and regularly reviewing compliance with EPSs – preparing environmental performance reports – assisting with review, investigation, and reporting of environmental incidents (as required). • all changes to this EP are subject to a MoC assessment as described in Section 10.3.2.2 • this EP is reviewed in accordance with Section 10.8.
Contractor	
Vessel Master/s	Ensure that: • environmental impacts and risks are continually reduced to ALARP and acceptable levels by implementing this EP in accordance Sections 8 and 10 • all necessary vessel-related documentation (e.g. SOPEPs, certificates, etc.) are available in accordance with Sections 8 and 10 • all marine safety information notifications are issued in accordance with Sections 8 and 10 • vessel operations are conducted in accordance with the legislative requirements and this EP, including: – a Vessel Master (or delegate) is on duty at all times – waste management, refuelling, and emergency/oil spill response – cetacean interaction requirements in accordance with EPBC Regulations 2025

Roles	Responsabilities
	– any other additional marine fauna interaction requirements in accordance with this EP, including pre-start visual observations where relevant – marine fauna sightings are recorded are maintained in accordance with this EP – maintenance of equipment and records meet statutory requirements – all incidents are immediately reported to the CAPL Project Manager – all emissions and discharges are monitored and recorded in accordance with Sections 8 and 10. • any potential UCH discoveries are reported to the CAPL Project Manager.
Vessel crew	Ensure that: • vessel operations are being conducted in accordance with accepted vessel procedures • compliance with this EPs requirements as applicable to assigned role • all incidents or spills are immediately reported to the Vessel Master.
ROV/AUV operator/s	Ensure that: • any potential UCH discoveries are managed in accordance with this EP • any potential UCH discoveries are reported to the Vessel Master.

10.2.1.3 Training and competency (petroleum activity)

In accordance with regulation 22(4) of the OPGGS(E)R, each employee or contractor responsible for implementing task-specific control measures during operational activities must be aware of their specific responsibilities as detailed in this EP.

People who hold responsibilities relating to implementing this EP are hired by CAPL on the basis of their particular qualifications, experience, and competency. CAPL's training and competency system is used to identify corporate and role-specific training and competency requirements for CAPL personnel. The system is also used to ensure training and competency requirements are maintained and are up-to-date.

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/s. All marine personnel will be qualified in accordance with the International Convention on STCW.

CAPL's personnel with specific responsibilities under this EP (refer to Section 10.2.1.2) were included during the internal review of this EP and other personnel (e.g. contractor personnel) with role-specific responsibilities under this EP are made aware of these.

All personnel (including contractors) must attend inductions that are relevant to their role (Table 10-2). Records of attendance at inductions will be maintained as per Section 10.3.2.1.

Table 10-2: Training and competency for the petroleum activity

Required personnel	Scope
Induction	

Required personnel	Scope
All relevant personnel	Before commencing the petroleum activity, all relevant personnel, including contractors, must attend an induction that includes an overview of the requirements of this EP. This induction fosters environmental stewardship amongst all personnel and ensures that they are aware of the control measures implemented to minimise the potential impact on the environment. The induction includes: • awareness of Chevron Corporation's OE Policy 530 (appendix a) • an overview of environmental values and sensitivities within the OA, and the key potential environmental impacts and risks associated with the petroleum activity • overview of requirements of the Seabird Management Procedure • overview of requirements of the Inadvertent UCH Discovery Procedure • waste management and hazardous materials housekeeping requirements • incident reporting requirements (including definitions and reporting pathways) • incident response arrangements.
Marine fauna observers	
Bridge-watch crew	Before commencing the petroleum activity, all bridge-watch crew will be provided with a marine fauna observation specific induction. This induction will be facilitated by a CAPL or contractor person that has previously completed a MFO training course. The induction covers: • an overview of the marine megafauna that may be present within the OA • an overview of the potential impacts and risks to marine megafauna from the petroleum activity and the relevant control measures and EPSs including: – cetacean interaction requirements under Part 8 of the EPBC Regulations 2025 – any additional marine fauna interaction requirements in accordance with Section 8 and 10 of this EP, including pre-start visual observations where relevant. • marine fauna observation record requirements including: – date and time – approximate distance and direction from the vessel – type of megafauna observed; recorded at species group level (e.g. whale) at a minimum, and species-level (e.g. pygmy blue whale) if confidently able to detect – description of behaviour (if able to detect) – action taken by the vessel. • it is expected that the use of supporting materials (e.g. marine megafauna ID prompts) and/or equipment (e.g. binoculars) should be used as required during visual observation periods by the bridge-watch crew • communications protocol with Vessel Master and/or vessel crew • marine fauna observation records to be provided to CAPL HSE Specialist.

10.3 Focus area and OE expectations

The OE expectations are organised into six focus areas (Figure 10-3). 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 10-3: 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 10-3. Each of these focus areas and common expectations are described in further detail in the following subsections.

Table 10-3: Relevant focus areas and common expectations

Focus area or common expectation	Key processes
Focus area	
Workplace safety and health	• Australian *Operations Process: Control of Work Process* (Ref. 170) • Chevron Marine Standard (Ref. 171) • Australian *Hazardous Materials Management Procedure: Australian Standardised OE Procedure* (Ref. 8).
Process safety, reliability and integrity	• *OE Information Management: Australian Standardised OE Process* (Ref. 172) • *Management of Change for Facilities and Operations: Australian Standardised OE Process* (Ref. 173).
Environment	• *Environment Risk Management Process* (Ref. 138) • *Quarantine Procedure Marine Vessels* (Ref. 14).
Stakeholders	• Stakeholder Engagement: ABU Standardised OE Process (Ref. 174).
Common expectation	
Risk management	• *Australian* OE Risk Management Process (Ref. 175) • *Risk Management RiskMan Procedure* (Ref. 140)
Assurance	• *OE compliance and assurance standard* (Ref. 176) • *OE Corporate Standard Incident Investigation* (Ref. 177) • *OE Data Reporting Standard* (Ref. 178)
Contractor operational excellence management (COEM)	• *Contractor Operational Excellence Management: Australian OE Process* (Ref. 179)
Incident investigation and reporting (II&R)	• *Incident Investigation and Reporting (II&R) Execution Manual* (Ref. 180)
Emergency management	• OPEP (Ref. 2) • OSM-BIP (Ref. 6) • *Emergency Management: OE Execution Manual* (Ref. 181)

10.3.1 Workforce safety and health

10.3.1.1 Control of work

The CoW 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 and their business partners. The CoW process (Ref. 170) ensures activities are assessed and executed in a safe and consistent manner.

Standards and procedures relating to CoW relevant to this EP include the Work Authorisation (formerly permit to work [PTW] system). The Work Authorisation system, which includes SIMOPS and hazard analysis, is a way to identify, communicate, mitigate, and control hazards associated with work that have the potential to adversely affect HSE. As the potential consequence associated with each task increases, so does the level of controls and approval that are required.

10.3.1.2 Marine

The Chevron Marine Standard (Ref. 171) identifies the requirements and activities necessary to deliver safe, reliable, and efficient third-party marine operations. This process describes key roles and responsibilities for managing marine safety and establishes measurement and verification activities designed to promote a process of continual improvement.

The Chevron 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 Chevron 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 SOPEPs) are available and that the required standards are met for navigation equipment, lighting, waste systems, and other marine safety protocols including Marine Order 30 (Prevention of collisions)
- competency management—Vessels used by CAPL must be operated by competent personnel who meet applicable international and local regulations
- cargo handling—Cargo transport and handling operations on marine vessels must comply with handling procedures and align to standard marine industry practices
- complicated and/or heavy lifts—All lifting and installing of heavy equipment near offshore infrastructure must meet the detailed requirements
- hose management—Operations involving the transfer of bulk liquids using loading hoses must align to standard industry practice and safety of the environment
- vessel communication—Vessels must have in place communications procedures for operations close to installations, or other mobile units to ensure that safe positioning and communications are maintained at all times.

Vessels provide an activity-specific operational guideline, based on their use and specification, which must be accepted by CAPL.

10.3.1.3 Hazardous materials

CAPL's *Hazardous Materials Management Procedure* (Ref. 8) 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. Environmental assessments are undertaken using the Hazardous Material Environment Assessment Tool (HMEAT). The HMEAT process applies a structured, risk-based methodology that integrates both the inherent hazard properties of a chemical and the context in which it is used. This environmental assessment is guided by the methodology and classification system used by the OCNS and CHARM.

Hazardous materials with classifications that indicate a lower environmental hazard (e.g. CHARM Gold and Silver bands, or OCNS Group D and E products) are generally considered acceptable, provided they are technically suitable for the intended application and do not contain prohibited ingredients or trigger other environmental concerns. Hazardous materials with classifications that indicate higher environmental hazard (e.g. CHARM White, Blue, Orange or Purple bands, or OCNS Group A, B or C classifications), or products with substitution warnings, are subject to further assessment and justification through the HMEAT process. Hazardous materials not listed on OCNS or CHARM, are also subject to detailed environmental assessment via the HMEAT process.

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 10-4. The final assessment decision is based on the HMEAT Environmental Hazard Ranking, which incorporates the key elements of environmental risk—hazard (persistence, bioaccumulation and toxicity), exposure (dose and discharge characteristics), and receptor sensitivity. Overall, this approach is aligned with the intent of the OCNS Framework, which also uses toxicity, persistence, and bioaccumulation as the foundation of chemical classification, while also incorporating discharge context and substitution principles to support risk-based decision making.

Chemical selection is undertaken prior to use. 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 10-4: 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 DMPE, from Hinwood et al. (Ref. 182).
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 bioconcentration	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.

10.3.2 Process safety, reliability and integrity

10.3.2.1 information management

Under the OEMS, records (including compliance records to demonstrate environmental performance and compliance with commitments in this EP) will be retained in accordance with regulation 52 of the OPGGS(E)R.

The OE information management Process (Ref. 172) 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 the petroleum activity 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 certificates, plans and log book records (e.g. vessel).

10.3.2.2 Management of change

MoC expectations are to manage proposed changes to design, equipment, operations and products before they are implemented. In conjunction with the ERMP (Section 10.3.3.1) and Risk Management Process (Section 10.3.5), the MoC Process (Ref. 173) 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 this petroleum activity, the following may trigger a MoC:

- change to the activity scope (e.g. timing, vessel, equipment, etc.) that may result in new environmental aspects or changes to existing environmental aspects
-
- 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 addition, CAPL's *Description of the Environment – Operational and Scientific Monitoring Planning Area* (Appendix G of the OSM-BIP; Ref. 6) is reviewed annually. This review incorporates 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.). Where these revisions introduce the potential for any new or increased environmental impact or risk not already provided for in this EP, these will be assessed via the MoC process.

In accordance with regulations 38 and 39 of the OPGGS(E)R this EP must be resubmitted to NOPSEMA in the following circumstances:

- before commencing a new activity, or any significant 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.

10.3.3 Environment

The environment OE 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.

10.3.3.1 Environmental risk management

The ERMP (Ref. 138) provides a framework for CAPL to identify, assess, mitigate, and manage environmental risks, including environment-related community health and social risks, across the life-cycle of CAPL assets.

The objectives of the process are to:

- establish standardised methodologies for the data-driven assessment and management of environmental risks
- identify environmental safeguards and mitigation measures, and support prioritisation of their verification
- support assurance activities for environmental safeguards and mitigation measures
- maintain environmental information associated with the evaluation of environmental risks
- utilise the management system cycle process to identify improvement opportunities for the ERMP.

The environmental impact and risk process is summarised in Section 6. Additional impact and risk assessments may also be undertaken in triggered by the MoC Process (Section 10.3.2.2).

10.3.3.2 Quarantine

The Quarantine Procedure Marine Vessels (Ref. 14) 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 pre-mobilisation 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 IMPs. Regardless of the origin of the vessel or where it will be operating, all vessels must be free from IMPs when mobilised and the contractor must demonstrate the vessel meets low risk rating for biofouling.

As per the Quarantine Procedure (Ref. 14), CAPL undertakes a risk assessment before any vessel is mobilised to title areas to confirm the vessel meets the requirements for 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, internal seawater system and ballast water treatments and

management, application of anti-fouling 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. Only once a vessel has met the requirements of the Quarantine Procedure (Ref. 14), CAPL will issue a Vessel Mobilisation Certificate.

10.3.4 Stakeholders

Stakeholder engagement expectations are to manage social, political, and reputational risks to CAPL (and Chevron Corporation), 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 Process (Ref. 174) 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.

10.3.4.1 Ongoing consultation with relevant persons

In accordance with regulation 22(15) of the OPGGS(E)R, CAPL will undertake ongoing consultation for this petroleum activity with relevant authorities and other relevant interested persons or organisations for this petroleum activity as described in Table 10-5.

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 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 engagement tracking system.

Any objections or claims from ongoing consultation that have merit and have the potential to result in changes to the description of environment, environmental impact or risk assessment, or control measures, will be subject to CAPL's MoC Process, in accordance with Section 10.3.2.2.

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 7.6) and will assess the merits of the objections or claims of that relevant person in accordance with Section 7.10 and CAPL's MoC process (Section 10.3.2.2).

Table 10-5: 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 activities, or as otherwise agreed with AHO.	Once, prior to activities commencing.
AMSA	Provide information to enable promulgation of radio navigation warnings Notify AMSA's JRCC via rccaus@amsa.gov.au (phone: 1800 641 792 or +61 2 6230 6811).	At least 72 to 96 hours before commencing activities, or as otherwise agreed with AMSA.	Once, prior to activities commencing.
Relevant persons (that have requested ongoing notifications) including: • AFMA • WAFIC	CAPL will provide a pre-start notification confirming the start date of the petroleum activity.	At least two weeks before commencing activities.	Once, prior to activities commencing.
	CAPL will provide notification following completion of the petroleum activity.	Within two weeks of completion of activities.	Once post activity completion.
Potentially affected relevant persons and/or relevant persons that have requested emergency event notifications, including: • WAFIC • WAC • Vocus • DBCA's Karratha regional office • First Nations people and/or representative bodies	CAPL will provide an incident notification if an unplanned emergency event occurs that is likely to affect the functions, interests, or activities of the identified relevant person.	As soon as practicable within an emergency response.	Once, post unplanned emergency event.
Ongoing consultation			
Potentially affected relevant persons	CAPL to advise of any new or significant changes to activities or impacts/risks within the scope of the EP, following an evaluation as per Section 10.3.2.2, that may potentially impact marine users functions, interests, or activities.	Prior to new or significant changes to activities or impacts/risks occurring.	As required.
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.
First Nations people and/or representative bodies	CAPL to continue engagement with First Nations people and/or representative bodies regarding identifying and understanding the cultural	Ongoing.	Ongoing.

Relevant person	Notification or ongoing consultation requirement	Timing	Frequency
	values or features that may be present within the Hydrocarbon EMBA (refer to Section 10.3.4.3).		
	Any new information on cultural values or features within the Hydrocarbon EMBA, and subsequent changes to activities or impacts/risks within the scope of the EP, will undergo an MoC evaluation as per Section 10.3.2.2.	Ongoing.	Ongoing.
	CAPL to advise of any new or significant changes to activities or impacts/risks within the scope of the EP, following an evaluation as per Section 10.3.2.2, 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.
	If an unplanned emergency event occurs that is likely to affect the functions, interests, or activities of First Nations people and/or representative bodies, CAPL will commence engagement with the relevant person and/or representative bodies.	As soon as practicable within an emergency response.	Once, post unplanned emergency event.
DCCEEW	CAPL to advise of any new or significant changes to activities or impacts/risks within the scope of the EP, following an evaluation as per Section 10.3.2.2, that may potentially impact UCH (as protected by the UCH Act).	Prior to new or significant changes to activities or impacts/risks occurring.	As required.

10.3.4.2 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. 2).

Once oil spill trajectory modelling is completed, CAPL will start engaging with potentially affected relevant persons (those considered relevant from Table 7-3, and any additional relevant persons identified under Section 10.3.4.2), plus any others identified from the oil spill trajectory modelling. This engagement will include WAFIC and any potentially affected commercial fisheries as required. The process for reaching out to these relevant persons includes direct contact (phone or email) or indirect contact via the CAPL website.

In the event of other emergency events (e.g. potential reportable incident), CAPL will commence any emergency management as required (and in accordance with Section 10.3.9), and consultation with required departments or agencies will occur

as per regulatory requirements (e.g. refer to Table 10-13 for incident reporting requirements).

CAPL will also notify any relevant persons (as identified in Table 7-3, and any additional relevant persons identified under Section 10.3.4.1) that requested to be notified in the event of an oil spill or in the event of any other emergency event (Table 10-5).

10.3.4.3 Ongoing engagement with First Nations representative bodies

Through the consultation process in preparation of this EP (Section 7), several potential initiatives or scopes for ongoing engagement with First Nations representative bodies were identified, including consideration of:

- ranger programs
- capacity building for emergency response support and protection of Country
- support to assist with identifying and articulating the cultural values and features of Country, including Sea Country values.

These initiatives and/or scopes are being discussed and progressed with the respective representative bodies.

Where requested, formal engagement plans and/or consultation protocols are in development and once agreed to by CAPL and the relevant representative body, these will be implemented.

Table 10-6 provides a summary of the objectives, scope, and responsibilities of the engagement plans and/or consultation protocols drafted to date. Further information on ongoing consultation and relationship building with First Nations representative bodies is presented in Table 10-7.

Table 10-6: Summary of objectives, scope, and responsibilities in engagement plans and/or consultation protocols

Objectives	Scope	Responsibilities
• provide governance and strategic oversight to guide collaboration and communications • sets out general terms for allocation of resources and recovery of reasonable costs • establish a framework for ongoing consultation • outlines the principles for building relationships: – co-design and co-decide – transparency – walking together.	• consultation meetings • consultation funding • review of information relating to CAPL proposals • confidentiality • negotiation principles • dispute resolution • general correspondence.	CAPL responsibilities: • design and plan engagements in advance • engage in person and aim to provide information in plain English • provide access to internal subject matter experts as well as support for external and independent advice • meet reasonable costs and expenses. Joint responsibilities: • share plans and strategies with each other • plan and engage early and work together on issues • use the negotiations to build trust and goodwill and to negotiate in good faith • spend time together outside of the boardroom.

Table 10-7: First Nations representative bodies ongoing consultation and relationship building

First Nations representative body	Ongoing Consultation	Relationship Building
BTAC	• CAPL has executed an interim cost recovery agreement with BTAC for ongoing consultation and CAPL and BTAC have finalised a longer-term funding agreement • CAPL providing support to BTAC to initiate cultural mapping program.	• CAPL has provided and is implementing an agreed Engagement Plan. • cost recovery mechanisms in place for informal meetings with BTAC including on country meetings and events. • CAPL has invited BTAC to an on-country consultation on Barrow Island. • CAPL provided opportunity to participate in Chevron Community Spirit Grant program. • CAPL has provided support to BTAC to commence the first phase of a cultural mapping program. • invitation to participate in MFO training in September 2024 and 2025. • CAPL provided opportunities for oil spill training in Perth in 2024 and 2025. • invitation to participate in Gorgon Turtle Monitoring Program on Barrow Island in January 2025. • CAPL provided opportunities to participate in workshops and attend the 25th Biennial Conference on the Biology of Marine Mammals in Perth in November 2024. • CAPL provided the invitation to participate in 2026 Sea Country protection training, including training regarding ecosystems, water and sediment quality sampling, and benthic habitats and marine fauna.
MCH	• CAPL has provided an engagement plan and consultation protocol which includes cost recovery • CAPL working with MCH to forecast consultation requirements and schedule.	• CAPL has provided an Engagement Plan and Consultation Protocol which provides cost recovery for informal meetings with MCH including on country meetings to learn more about Country and Sea Country. • CAPL has provided an on-country consultation at Barrow Island and tour (2 nights). • invitation to participate in MFO training in September 2024 and 2025. • CAPL provided opportunities for oil spill training in Perth in 2024 and 2025. • on-country meetings in 2024. • invitation to participate in Gorgon Turtle Monitoring Program on Barrow Island in January 2025. • CAPL provided opportunities to participate in workshops and attend the 25th Biennial Conference on the Biology of Marine Mammals in Perth in November 2024.
NCG	• CAPL and NCG are developing a consultation protocol which provides cost recovery and agreed meeting schedule.	• invitation to participate in MFO training and oil spill training in August 2025. • CAPL provided opportunities for oil spill training in Perth. • CAPL has provided NCG a visit to Barrow Island including on-Country consultation and a tour.

First Nations representative body	Ongoing Consultation	Relationship Building
		• CAPL provided the invitation to participate in 2026 Sea Country protection training, including training regarding ecosystems, water and sediment quality sampling, and benthic habitats and marine fauna.
NTGAC	• CAPL has completed a workshop with the NTGAC board to design ongoing consultation • CAPL has provided an Engagement Plan to NTGAC which provides cost recovery for informal meetings with NTGAC including on country meetings and events • CAPL working with NTGAC to forecast consultation requirements and schedule for 2026.	• CAPL has offered funding support to NTGAC for a resource to assist with consultations and the development of the corporation. • CAPL invited NTGAC participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023). • CAPL provided opportunity to participate in Chevron Community Spirit Grant program. • invitation to participate in MFO training in September 2024 and 2025. • CAPL provided opportunities for oil spill training in Perth in 2024 and 2025. • CAPL provided opportunities to participate in workshops and attend the 25th Biennial Conference on the Biology of Marine Mammals in Perth in November 2024. • CAPL has participated in On-Country meetings with NTGAC representatives. • CAPL provided the invitation to participate in 2026 Sea Country protection training, including training regarding ecosystems, water and sediment quality sampling, and benthic habitats and marine fauna.
WAC	• CAPL have confirmed cost recovery for consultation meetings and have provided WAC a draft consultation protocol • CAPL working with WAC to forecast consultation requirements and schedule for 2026 • CAPL working with WAC to co-design ongoing consultation.	• CAPL invited WAC participants to attend the Roebuck Challenge Oil Spill Response Training in Broome (October 2023). • CAPL provided WAC Board and Elders opportunity to spend time on Barrow Island in 2023. • CAPL has provided WAC funding support to employ a Ranger Coordinator. • CAPL supported WAC with an expression of interest to participate in a joint venture with the Pilbara Development Commission on the Northern Native Seed Initiative. • CAPL provided Chevron Community Spirit Grant in 2025. • CAPL provided opportunities to participate in workshops and attend the 25th Biennial Conference on the Biology of Marine Mammals in Perth in November 2024. • invitation to participate in MFO training in September 2024 and 2025. • CAPL provided opportunities for oil spill training in Perth in 2025. • CAPL provided the invitation to participate in 2026 Sea Country protection training, including training regarding ecosystems, water and sediment quality sampling, and benthic habitats and marine fauna.

10.3.5 Risk management

The Risk Management Process (Ref. 175) assesses and identifies safeguards, which are the hardware and human actions designed to directly prevent or mitigate an incident or event and is generally aligned with the risk management requirements of ISO 14001:2026 Environmental Management System (Ref. 169) and ISO 31000:2018 Risk Management (Ref. 141).

The Risk Management Process (Ref. 175), ERMP (Ref. 138), and the MoC Process (Ref. 173) are the key systems CAPL uses to ensure, that in accordance with regulation 22(2)(a) of the OPGGS(E)R, the environmental impacts and risks of the petroleum activity continue to be identified and reduced to ALARP.

10.3.6 Assurance

Within the OEMS, assurance is a common expectation that supports the OE objective of each focus area. The *Compliance and Assurance Standard* (Ref. 176) enables CAPL to deliver assurance that safeguards are established and functioning. The Standard 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 potential noncompliance
- the minimum qualifications and organisational capability to execute this process.

The OE Assurance Priorities and Plan (Ref. 183) documents the CAPL integrated assurance system and associated assurance activities (Figure 10-4). This 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).

To support the implementation of the *Compliance and Assurance Standard* (Ref. 176), CAPL has developed an integrated assurance system (Figure 10-4), which integrates and leverages assurance activities across the various levels of CAPL business through to the corporate level—to provide confidence that safeguards are in place and functioning as intended. This integrated assurance system includes:

- **Level 1**—**Monitoring, testing and frontline assurance**—Ongoing, routine, planned verifications of safeguards specific for the asset/facility (e.g. inspections, preventive maintenance, emergency drills and exercises).
- **Level 2**—**OE assurance**—OE assurance activities (e.g. assessments, reviews, audits, inspections) that verify safeguards are in place and functioning, and validate that Level 1 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, Capital Projects, base business) or third parties. These assurance activities test effectiveness of the focus areas 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.

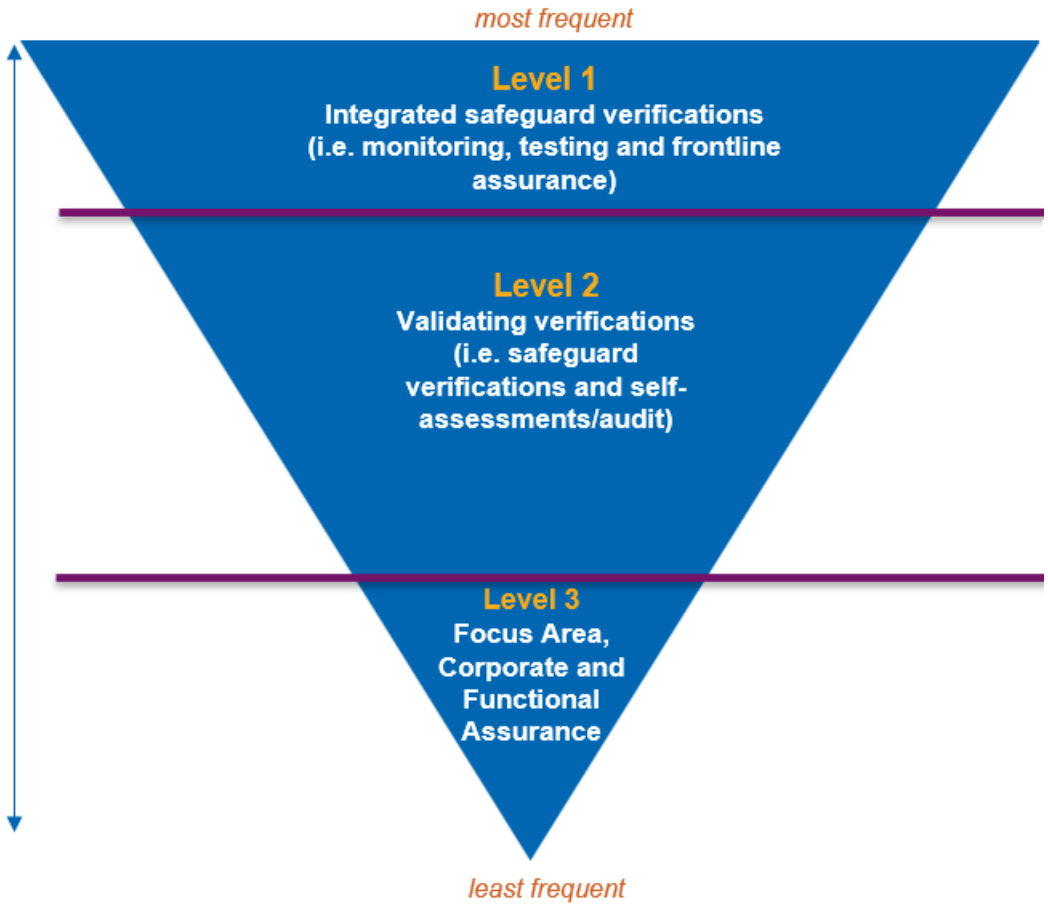


Figure 10-4: Integrated assurance system

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 EPOs and EPSs have been met, and the activity is 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.

Assurance Register

Prior to the commencement of the petroleum activity, an Assurance Register specific to the requirements of this EP will be developed. The Assurance Register will detail the commitments established in the EP, including those related to the EPOs, EPSs, implementation strategy (where relevant), and consultation (where relevant). Additionally, the Assurance Register includes details regarding evidence verification method and timing.

Assurance activities will be undertaken in accordance with the C*ompliance and assurance standard* (Ref. 176). 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 10.3.2.1.

Inspections

Inspection/audit activities are scheduled using a risk-based approach, taking into consideration the type and duration of the petroleum activity, values and sensitivities of the receiving environment, and the potential environmental impacts and risks.

During this petroleum activity, fortnightly Level 1 HSE inspections will be conducted. Level 1 HSE inspections check compliance against a selection of commitments across different aspects (such as waste, lighting, spill prevention, and general housekeeping) from the Assurance Register. These regular Level 1 HSE inspections help ensure that activities remain in compliance with the commitments established in this EP.

A Level 2 environmental compliance audit will be conducted at least once during each 12 month period of the petroleum activity to review compliance of the commitments established in the EP. These Level 2 audits are also used to inform the annual (and/or end of activity) compliance reviews and environmental performance reporting.

Compliance review

EPSs in the EP will undergo a compliance review and evidence will be gathered for each EPS to support the annual (and/or end of activity) environmental performance reporting. Environmental performance during the petroleum activity will be reviewed to ensure that EPSs and EPOs 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 petroleum activity described in this EP will be summarised in the environmental performance report submitted to NOPSEMA (Section 10.7.3).

10.3.6.1 Managing instances of potential non-conformance

The reporting, investigation, and tracking of non-conformances are managed via the OE Incident Investigation Standard (Ref. 177) and *OE Data Reporting Standard* (Ref. 178). These processes apply to instances where the requirements of this EP have not been met. These processes are used if audit findings identify that activities in the scope of this EP are not being implemented in accordance with the risk and impact control measures identified in Section 8.

Audit findings and corrective actions are recorded and tracked in a CAPL compliance assurance database for timely closure of actions. As per Section 10.3.6, any corrective action/s identified during environment inspections are required to be implemented as soon as practicable during the petroleum activity. Audit findings that identify a breach of an EPO or EPS will be reported in accordance with Section 10.7.2.

Any suggested changes to activities or control measures from audit findings or instances of potential noncompliance will be subject to the MoC Process in accordance with Section 10.3.2.2.

10.3.7 Contractor operational excellence management

The COEM Process (Ref. 179) is designed to ensure OE/HSE risks are managed effectively during contract execution. The COEM process seeks to establish clear accountabilities, ensure active engagement of contractors, and provide a consistent COEM program to help prevent serious incidents and fatalities and high-consequence events involving contractors. When CAPL appoints the primary contractor to control work using their management system, a gap analysis between the CAPL OEMS and the contractor's management system is undertaken to ensure the contractor's management system meets applicable OEMS requirements.

10.3.8 Incident investigation and reporting

II&R expectations are to identify, report, record and investigate incidents, analyse trends, correct deficiencies, and share and adopt relevant lessons learned.

The II&R *Execution Manual* (Ref. 180) defines the requirements to report, classify, record, and investigate incidents and near misses, including but not limited to injury, occupational illness, environmental impact, reliability, business disruption, and community concern.

The II&R process includes these requirements:

- training for employees and contractors to recognise and report events
- internal and external notification of events
- investigating incidents at the probable level of consequence, with the rigor of investigation based upon learning opportunity and incident severity
- allocating an incident management sponsor for selected investigations
- sharing alerts, lessons learned, and bulletins
- tracking recommended actions to closure
- analysing event trends.

Events that meet the required criteria are recorded in CAPL's 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 10.7.2.

10.3.9 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. SOPEPs are described in Sections 8.14.4 and 8.15.6, and requirement have not been duplicated here..

10.3.9.1 Emergency management arrangements

The emergency management arrangements outline a systematic approach for planning, responding to, and recovering from emergency events and are intended to provide a standardised management and response structure that details emergency management documentation, the 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 and part-time CAPL employees from across the workforce with event-specific or subject matter expertise.

The system used to organise CAPL's EMTs is based on the Incident Command System (ICS) 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, and the National Plan for Maritime Environmental Emergencies (National Plan; Ref. 184) and is consistent with the core aspects presented in the IMO equivalent courses.

The ERO comprises the groups listed in Table 10-8; this table also describes the major functions of teams during an emergency.

Figure 10-5 to Figure 10-7 show organisational charts for the EMTs. The Crisis Management Team (CMT), which focus on the business implications of incidents and events, are further described in the Crisis Management Plan (Ref. 185).

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, global, and industry plans and resources, CAPL has adopted a tiered approach in its response system. This tiered-response model scales the number of resources mobilised for a response, and the emergency team activated, according to the severity of the incident. This approach is consistent with the International Convention on Oil Pollution Preparedness, Response and Cooperation 1990. The response tiers and resources that may be mobilised for an oil spill incident within CAPL are further described within the OPEP (Ref. 2).

Table 10-8: Emergency management teams

Team	Description
Tier 1 (CAPL)	
ORTs	Trained responders at the installation who are responsible for on-scene tactical response operations during an incident. ORTs are led by an On-scene Commander (OC) who has incident control during smaller Level 1A incidents, which do not require further escalation to an incident management team. If the Installation Emergency Management Team (IEMT) is activated, the OC will come under the direction of the Operations Section Chief (OSC).
Installation Emergency Management Team (IEMT)	The IEMT is led by an Incident Commander (IC) and operates out of an on-site emergency command centre. The IEMT may be activated to take control of Level 1B incidents and coordinate local resources and ORTs.

Team	Description
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 IEMT 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 CMT	Comprises senior CAPL executives and ensures emergency response and crisis management operations are carried out consistent with The Chevron Way, Chevron Corporation policies, and the tenets of OE. The CMT stands up at the direction of the CAPL Crisis Manager for Level 3 incidents.
Tier 2 (Regional response)	
Chevron Corporation's Asia – Pacific Regional Response Team	An enterprise-level team able to support CAPL during the initial response (reactive phase) to a significant incident and help manage the transition to the ongoing response (proactive phase).
Tier 3 (Global response)	
Chevron Corporation's Functional Response Teams	Enterprise-level teams with specific technical expertise in selected command staff positions and unit positions in the Planning, Logistics, and Finance sections. Team members are trained to support the management of global- and regional-level (Tier 2 and 3) incidents but are available to support any response.
Chevron Corporation's Worldwide Emergency Response Team	An enterprise-level team of Chevron Corporation's most highly trained and experienced personnel capable of filling IMS command and general staff roles of a response organisation, including Deputy IC. Team members are trained to support the management of global-level (Tier 3) incidents but are available to support any response.
Chevron Corporation's Advisory and Resource Team	An enterprise-level initial assessment and support team available to advise during the initial stages of a significant event, assess incident potential, and help the local response team marshal additional resources.

10.3.9.2 Emergency management process

The *Emergency Management Execution Manual* (Ref. 181) is CAPL's system for emergency management. The manual 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 Execution Manual (Ref. 181) comprises these key elements:

- emergency scenarios, including worst case, have been identified; these scenarios are based on the findings from risk assessments of significant safety, health and environmental hazards and other sources (e.g. historical incidents)
- emergency response plans are developed and maintained to address emergency scenarios

- a reliability program is in place for inspection, testing and preventative maintenance of critical emergency response equipment and systems supporting emergency response plans
- an 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 Process (Ref. 186).

The OPEP (Ref. 2) acts as an operational document to ensure an appropriate response to the emergency events described in this EP. Smaller spills will be monitored, evaluated, and cleaned up as part of routine duties, where relevant and appropriate to the nature and scale of the spill, and will not require activation of the ORT or OPEP. Several emergency management subprocesses are outlined below that are integral to emergency preparedness and management.

10.3.9.3 Chain of command (for emergency response)

A well-delineated EMT chain of command has been established for emergency response (Figure 10-5 to Figure 10-7). As incidents grow or reduce in size or complexity, command may transfer several times. Within the response structure, command may transfer between OC at the tactical level. For a major incident, incident command may transfer to a designated Control Agency or to the PEMT, if required.

Although the identity of those filling command positions may change during 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 operation.

Throughout an incident, a formal handover will be conducted whenever any command or control position is transferred from one person to another.

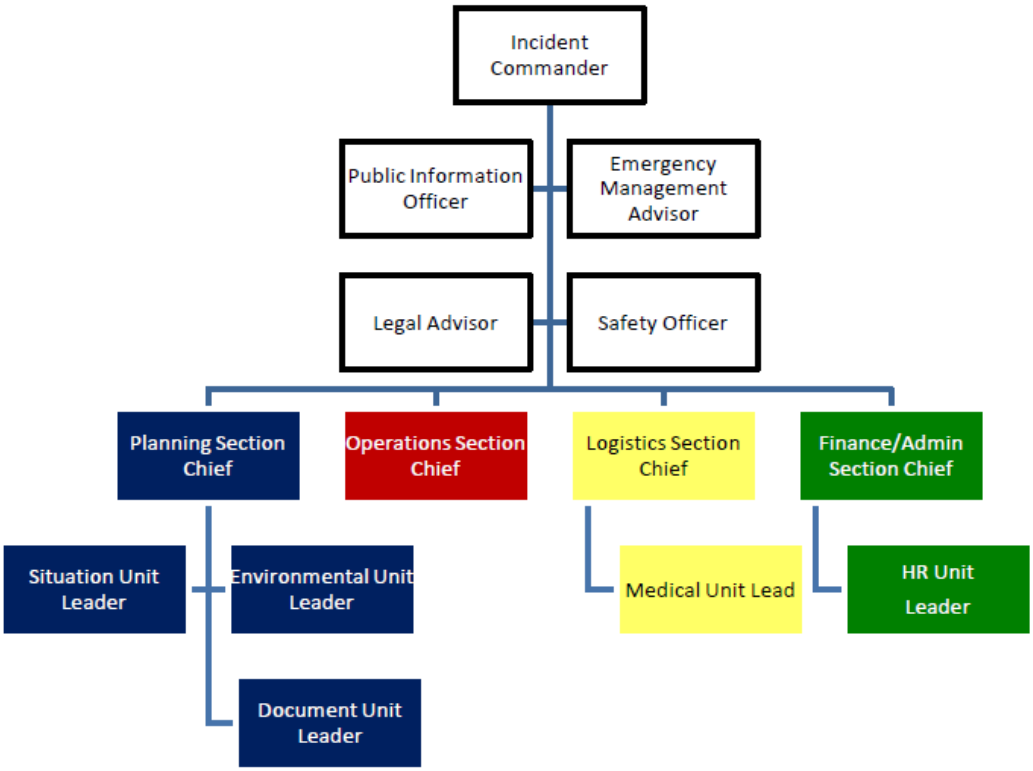


Figure 10-5: Basic IEMT organisation chart



Figure 10-6: Example expanded EMT organisation chart



Figure 10-7: Example expanded operations section organisation chart

10.3.9.4 Roles and responsibilities (for emergency response)

Table 10-9 provides additional information about the structure of these teams and the key individual roles and responsibilities during emergency response. Not all roles presented in Figure 10-5 to Figure 10-7 are described; these are presented as examples only and the final structure of the EMT would be shaped by the specific requirements of the incident. Further information on all Chevron EMT roles are provided in the Emergency Management Execution Manual (Ref. 181).

Table 10-9: Key roles and responsibilities—emergency response

Role	Responsibilities
ORT	
OC (Vessel Master / Person in Charge)	• safely and effectively organises and manages the ORT response operations • keeps the EMT informed regarding the nature and status of the incident and on-site tactical response operations.
Site Safety Officer	• ensures that appropriate actions are taken to protect the safety and health of ORT response personnel.
Task Leader	• safely carries out their assignment consistent with directions received from the OC, branch director, division, or group supervisor.
IEMT	
IEMT 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 IEMT 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.
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 IEMT.

Role	Responsibilities
Planning Section Chief	• focuses on the incident's potential using the compilation and display of information regarding the nature and status of an incident and emergency response operations • assists the IEMT IC in defining strategic objectives • assists the IEMT IC in providing information to the PEMT • 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.

10.3.9.5 Training and competency (for emergency response)

Competencies and training requirements for the ORT, EMT, and other personnel during implementation of the OPEP (Ref. 2) are detailed in Appendix G (Training and Exercise Procedure) of the OPEP. Competency and training records for personnel are maintained in CAPL's training and competency system.

Training and course information, including frequency and content, are also described in the Training and Exercise Procedure (Appendix G of the OPEP). Training is delivered via a mix of computer-based training or face-to-face, depending on the course, and all EMT positions have minimum training and competency requirements identified.

Oil spill response management training has been designed to align with the knowledge requirements outlined in AEP guidance on knowledge requirements for incident management teams (Ref. 190), specifically the general knowledge requirements for all EMT members and the EMT function specific knowledge requirements.

10.3.9.6 Oil spill response resourcing and capability

CAPL has multiple EMT resourcing arrangements in place to respond to a potential worst case oil spill scenario including internal EMT capacity, regional and global Chevron Corporation support teams and functional groups, oil spill response organisations (OSROs), and industry mutual aid agreements.

Appendix F of the OPEP (Ref. 2) outlines the PEMT Resourcing Assessment Plan for oil spill incidents and evaluates EMT capability requirements. It quantifies and justifies the core and support EMT capability requirements required for a generalised loss of well control oil spill scenario (based on 13 weeks) and summarises the assumptions used to develop the EMT capability needs assessment (such as allowances for redundancy, rostering, shift coverage and rotation).

The PEMT *Oil Spill Response Resource Assessment Tool* (Ref. 187) provides a time assessment of resources available to CAPL to fill the core and support positions identified in the PEMT Resourcing Assessment Plan (Appendix F of the OPEP; Ref. 2). Using activity-specific worst-case spill scenarios (i.e. the vessel collision scenario described in Section 8.15 of this EP), the tool can demonstrate that sufficient capability is in place.

The PEMT *Oil Spill Response Resource Assessment Tool* (Ref. 187) quantifies the core and support EMT capability requirements specific to the worst credible

scenario described in this EP and demonstrates that at the time of writing, CAPL maintains access to personnel to fill these roles.

CAPL resources

CAPL maintains a PEMT with a 24/7 call out roster available to be stood up at any time if required. This includes on-call positions sourced from a pool of trained personnel. The PEMT duty roster enables the formation of the PEMT within two hours of notification. Further information on the PEMT is contained in the Emergency Management Execution Manual (Ref. 181).

Current numbers of qualified EMT personnel, including those trained in accordance with the training requirements outlined in the Training and Exercise Procedure (Appendix G of the OPEP; Ref. 2), are reflected in the PEMT *Oil Spill Response Resource Assessment Tool* (Ref. 187). In addition, CAPL currently has 'all hazards' personnel, and this capability would be able to be inducted and/or trained in the oil spill response functions before entering the EMT (as outlined in the Training and Exercise Procedure (Appendix G of the OPEP; Ref. 2), as the response transitions from a rapidly evolving reactive response phase to a more proactive, steady-state, project phase response.

Regional and global teams

As per the *Emergency Response Teams and Resources Procedure* (Ref. 188) the Chevron Centre for Emergency Preparedness and Response (CEPR) maintains a global mutual-aid capability, available on a 24/7 basis to provide enterprise-level support for major incidents and events. This capability includes pre-identified, trained, and fit-for-duty response teams capable of filling IMS positions, access to industry owned response cooperatives, and access to internal experts and key external vendors. It includes the following services:

- Advisory and Resource Team (ART)
- World-Wide Emergency Response Team (WWERT)
- Function Teams (FTs)
- Regional Response Teams (RRTs).

A description of these services (ART, WWERT, FTs, and RRTs) is provided within the PEMT Resourcing Assessment Plan (Appendix F of the OPEP; Ref. 2).

Oil spill response organisations

CAPL maintains contractual arrangements with OSROs which include providing technical specialists to supplement the PEMT, as detailed in the OPEP (Ref. 2). Arrangements are maintained with:

- AMOSC
- OSRL.

A description of these arrangements with AMOSC and OSRL is provided within the PEMT Resourcing Assessment Plan (Appendix F of the OPEP; Ref. 2).

10.3.9.7 Oil spill exercise schedule

The Emergency Management 5 Year Training and Exercise Schedule (Ref. 189) describes the schedule of training and exercise required for all emergency events. The training and exercise program incorporates CAPL's oil spill exercise schedule for oil spill training, drills, and exercises, including OWR and OSM-BIP

implementation. As CAPL'S response arrangements are common among its assets, and resource capabilities are shared, the testing and exercise schedule has been developed to test the various response options. The focus changes for each exercise to ensure any unique aspects of that location (e.g. resources at risk, first-strike equipment) are tested.

The objective is to test and maintain the capability to respond to emergency events. The exercises aim to test:

- notification, activation, and mobilisation of the ORT and EMT
- efficiency and effectiveness of equipment deployment
- efficiency and effectiveness of communication systems.

The testing schedule is a live document that is subject to change. The 5-year training and exercise schedule (Ref. 189) outlines the proposed testing arrangements to be completed, including the exercise types (Table 10-10) and proposed level of response to be tested (Table 10-11) that may be used to meet the defined objectives.

Table 10-10: Exercise types

Type	Details
Notification exercise	• tests the procedures to notify and activate the EMTs, support organisations, and regulators.
Tabletop exercise	• normally involves interactive discussions of a simulated scenario among members of an EMT; personnel or equipment are not mobilised.
Drill	• conducts field activities such as equipment deployment, shoreline assessment, monitoring etc.
Functional exercise	• activates at least one EMT to establish command, control, and coordination of a serious emergency event • often more complex as it simulates several different aspects of an oil spill incident and may involve third parties.

Table 10-11: Exercise levels

Level	Details
Level 1—ORT	• may be held in conjunction with a Level 2 EMT exercise • designed to evaluate the ability of ORTs to implement CAPL's Emergency Management System as it applies to ORTs • ORTs may conduct exercises that do not include the Emergency Response Team (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 • 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 • designed to evaluate the EMT's ability to notify and activate team members, and implement the CAPL's Emergency Management System as it applies to incident escalation.
Oiled wildlife	• exercises may include the participation of an ORT and may be held in conjunction with a Level 2 or 3 EMT exercise

Level	Details
	• designed to evaluate the Oiled Wildlife Branch's ability to notify and activate OWR teams and implement a response in line with CAPL and DBCA oiled wildlife plans and manuals.
OSM-BIP	• exercises may be held in conjunction with a Level 2 or 3 EMT exercise, or conducted as a standalone exercise • designed to evaluate the EMT's ability to notify and activate OSM-BIP team members and external service providers and test the arrangements and capability in place for operational and scientific monitoring.

The training and exercise program outlines the process for evaluating training, drills, and exercises against defined objectives, and incorporating lessons learned. An after-action report is generated for all Level 2 (and above) exercises, which is used during spill exercises to assess the effectiveness of the exercise against its objectives and to record recommendations. Relevant actions are then assigned to the responsible party where they are tracked to completion using internal processes.

Response arrangements as detailed in the OPEP (Ref. 2) must be tested:

- when they are introduced
- when they are significantly amended
- not later than 12 months after the most recent test
- if a new location for the activity is added to this EP after the response arrangements have been tested, and before the next test is conducted: test the response arrangements in relation to the new location as soon as practicable after it is added to this EP.

10.4 Adaptive management framework for pygmy blue whales

An adaptive management framework has been applied to ensure the control measures identified and implemented during the petroleum activity are effective in managing the potential risks of underwater sound emissions on pygmy blue whales such that they are not inconsistent with the *Conservation Management Plan for the Blue Whale* (Ref. 42).

Control measure **CM-17** has been developed for vessels that are transiting or on standby within the OA. This control requires adoption of Extended Caution Zones, which have been defined based on the results of animat modelling[145] (see Section 8.6). Table 10-12 describes the Extended Caution Zones for respective vessel types and activities.

Control measures **CM-18a** and **CM-18b** have been developed for vessels using DP to hold station (see Section 8.6) and requires adoption of a Pre Start-up Observation Period for pygmy blue whales within the Potential Behavioural Disturbance Zone. For **CM-18a** and **CM-18b**, Figure 10-8 shows the process followed by bridge-watch on the vessel and Table 10-12 describes the relevant Potential Behavioural Effect Zones. The Potential Behavioural Effect Zones are based on the results of animat modelling presented in Section 8.6.

In the event that new and/or additional data becomes available (e.g. vessel source levels and/or received levels in-field), these control measures and associated

[145] Note: As described in Table 8-27 the animat modelling was based on vessels holding station on DP (not transiting or on standby) and is considered highly conservative for use as an Extended Caution Zone.

zones may be reviewed and revised in accordance with the MoC process (Section 10.3.2.2).

Table 10-12: Caution zones and potential behaviour effect zones based on vessel and activity type

Vessel and activity[146]	Caution zone[147]	Potential Behavioural Effect Zone[147]
Pipelay installation (e.g. PLV, AHT, CSV)	1.21 km	1.21 km
Subsea installation (e.g. HCV, HTV, LCV, DPTV)	0.62 km	0.62 km
Pre-commissioning (e.g. MSV)	0.62 km	0.62 km
Contingency IMR (e.g. MSV, IMR)	0.54 km	0.54 km

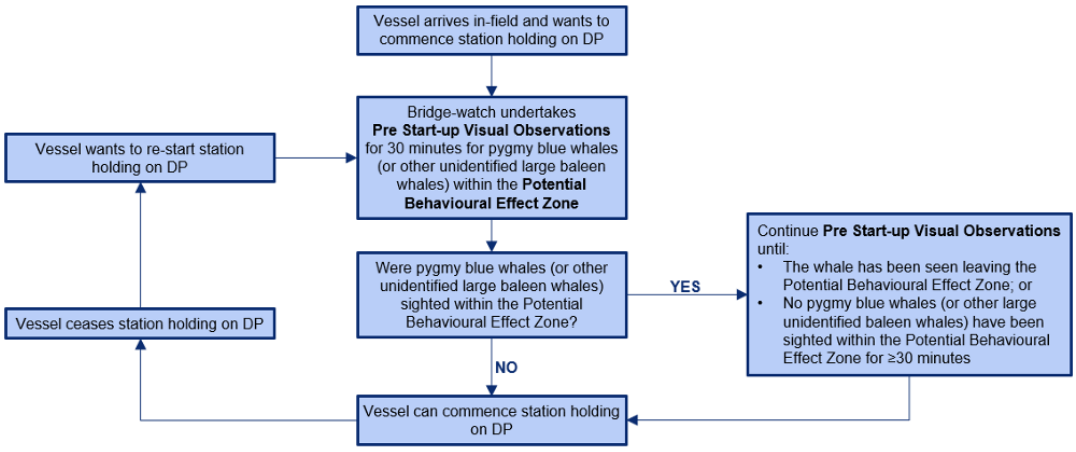


Figure 10-8: Pre start-up visual observations action flow chart for commencing station holding on DP

10.5 Management framework for acoustic (SBP)

Control measures **CM-20a** and **CM-20b** have been developed for vessels undertaking SBP surveys (see Section 8.7) and requires the use of a Pre Start-up Observation Period. For **CM-20a** and **CM-20b**, Figure 10-9 shows the process followed by bridge-watch on the vessel and the relevant Potential Behavioural Effect Zone is defined as 280 m. This distance is based on the largest predicted radius (rounded to nearest ten metres) from spherical modelling of various types of SBP.

In the event that new and/or additional data becomes available (e.g. SBP source levels), these control measures may be reviewed and revised in accordance with the MoC process (Section 10.3.2.2).

[146] The source levels used for acoustic and animat modelling are shown in Table 8-24. The acoustic and animat modelling was based on the presence of the maximum number of vessels anticipated for each campaign; and as such the use of these results is a conservative representation of caution zone/predicted behavioural effect zone.

[147] The visible distance to the horizon varies based on observer height and weather conditions. If the defined caution zone/potential behavioural effect zone distances are not visible, then observations are to extend to the field-of-view of the bridge-watch.

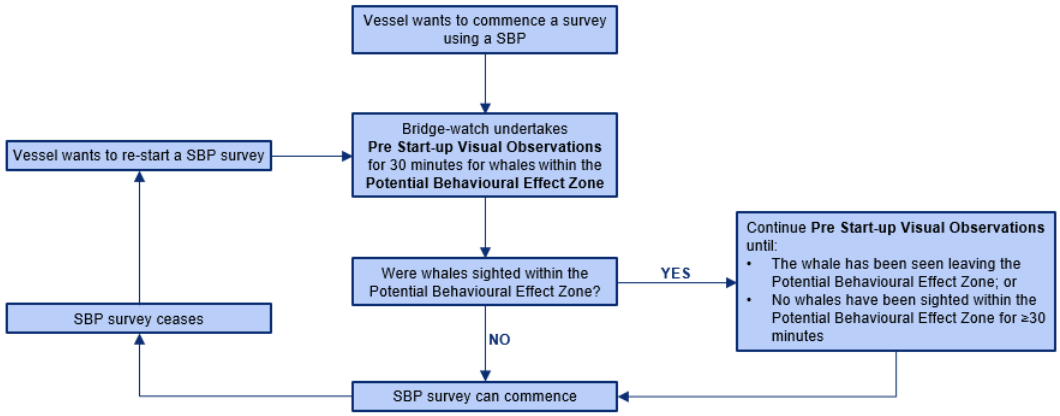


Figure 10-9: Pre start-up visual observations action flow chart for commencing SBP surveys

10.6 Seabird management procedure

The *National Light Pollution Guidelines for Wildlife* (Ref. 15) includes a toolbox of mitigation options for consideration to assist in the management of potential impacts from artificial light emissions to seabirds (Table 8 of Appendix G; Ref. 15) and migratory shorebirds (Table 11 of Appendix H; Ref. 15). One of the actions in the toolboxes is a seabird management plan that covers appropriate management of birds stranded on vessels.

CAPL's *Seabird Management Procedure* (Ref. 310) describes the requirements for the handling and management of seabirds and shorebirds in offshore areas. The *Seabird Management Procedure* includes:

- a list of key bird species and BIAs that may be present in the offshore areas associated with CAPL's assets and activities
- steps for interacting with stranded birds on vessels (e.g. passive treatment and release)
- implementation of precautions to manage the safety risk of human exposure to avian influenza (e.g. avoid interaction with symptomatic birds; and the use of appropriate personal protective equipment where handling a bird is necessary)
- fauna interaction records and reporting requirements.

The *Seabird Management Procedure* (Ref. 310) will be provided to the Vessel Contractor and available aboard the vessels during the petroleum activity. Relevant vessel crew will be made aware of the Procedure through the induction (Table 10-2). This induction will include the requirement for to report seabird/shorebird strandings to the CAPL HSE Specialist (via the Vessel Master).

10.7 Environmental monitoring and reporting

10.7.1 Environmental monitoring

Regulation 22(6) of OPGGS(E)R requires that the implementation strategy provides for sufficient monitoring of, and maintaining a quantitative record of, emissions and discharges such that this record can be used to assess whether the EPOs and EPSs in the EP are being met.

CAPL and vessel contractors will monitor and record emissions and discharges as detailed in Section 8 to ensure that this record can be used to assess whether the EPOs and EPSs in this EP are being met.

If an emergency condition resulting in a Level 2 or 3 spill event occurs, CAPL will implement the OSM-BIP (Ref. 6), which is identified as a control measure in Sections 8.15 and 8.17. The OSM-BIP describes a program of monitoring, and is the principal tool for determining the extent, severity, and persistence of environmental impacts from an oil spill event and the emergency response activities to be undertaken by CAPL.

10.7.2 Incident reporting

The OPGGS(E)R requires environmental incident reporting for the petroleum activity described in this EP, as summarised in Table 10-13. Additional incident reporting as required by other legislation or guidelines are also included in Table 10-13.

Table 10-13: Incident reporting

Recordable Incident reporting – regulation 50	
Under the OPGGS(E)R a "**recordable incident**, for an activity for which there is an environment plan in force, means a breach of an environmental performance outcome for the activity, or an environmental performance standard relating to the activity, that is not a reportable incident." Therefore, recordable incidents are breaches of the EPOs and/or EPSs described in Section 8.	
Reporting requirements	**Report to / Timing**
Written report that must include: • a record of all recordable incidents that occurred during the calendar month • all material facts and circumstances concerning the recordable incidents • any actions taken to avoid or mitigate any adverse environmental impacts Any corrective actions already taken, or proposed to be taken, to stop, control, or remedy the incident and to prevent a repeat of similar incidents.	Submit written report to **NOPSEMA** by no later than the 15th of each month. As identified in NOPSEMA's guidance note for the Notification, Reporting and Recording Requirements for Incidents (Ref. 191), if no recordable incidents have occurred during any particular month, a recordable incident report is not required.
Reportable incident reporting—Regulations 47, 48, and 49	
Under the OPGGS(E)R a "**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." In alignment with Chevron Corporation's Integrated Risk Priorization Matrix (Table 6-2) reportable incidents under this EP include those unplanned events (not planned activities) that have been risk assessed within Section 8 as having a consequence level of Moderate (4) or above. In accordance with this definition, the potential reportable incidents identified under this EP are: • introduction of an IMP (Section 8.12) • unplanned release—loss of containment (vessel collision, Section 8.15). 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. For example, other incidents that may be considered reportable incidents include: • death or injury to individual(s) from an EPBC Act listed species.	
Reporting requirements	**Report to and timing**
Verbal notification that must include:	Report verbally to **NOPSEMA** as soon as practicable and no later than two hours after the first occurrence of the incident or the time

• All material facts and circumstances concerning the reportable incident known at the time • Any actions taken to avoid or mitigate any adverse environmental impacts • Any corrective actions already taken, or is proposed to be taken, to stop, control or remedy the reportable incident.	the titleholder becomes aware of the reportable incident. Phone:1300 674 472 Or alternatively: +61 8 6188 8990
Written record of the notification containing the same details as the verbal notification. The titleholder is not required to include in the record anything that was not included in the notification.	As soon as practicable after verbal notification, a written notification must be provided to: • **NOPSEMA**: submissions@nopsema.gov.au • **NOPTA**: info@nopta.gov.au • **WA DMPE**: petroleum.environment@dmpe.wa.gov.au
A **written report** must include: • All material facts and circumstances concerning the reportable incident • Any actions taken to avoid or mitigate any adverse environmental impacts • Any corrective actions already taken, or that may be taken, to stop, control or remedy the reportable incident • Any corrective actions already taken, or that may be taken, to prevent a recurrence of similar incidents.	Written report to be provided to **NOPSEMA** as soon as practicable and not later than three days following the incident: • NOPSEMA: submissions@nopsema.gov.au Within seven days of providing a written report of a reportable incident to NOPSEMA, the titleholder must also provide a copy of the report to: • **NOPTA**: info@nopta.gov.au • **WA DMPE**: petroleum.environment@dmpe.wa.gov.au
Additional reporting requirements	
Reporting requirements	**Report to**
An unplanned event (such as an oil spill) which occurs within, or is likely to affect any AMP (Ref. 153). The notification should include: • Titleholder details • Time and location of the incident • Proposed response arrangements and locations as per the OPEP (e.g. dispersant, containment, etc.) • Contact details for the response.	Report verbally to the DNP (24-hour) Marine Park Compliance Duty Officer as soon as practicable, and also provide a follow-up email. Phone: 0419 293 465 Email: marine.compliance@environment.gov.au
Death or injury to individual(s) from an EPBC Act listed species as a result of the petroleum activity.	Report injury to or mortality of EPBC Act listed threatened or migratory species within seven business days of observation to DCCEEW or equivalent: • Phone: 1800 920 528 • Email: EPBC.Permits@environment.gov.au
Vessel collision with marine mammals (whales).	Report as soon as practicable: • https://data.marinemammals.gov.au/
Presence of any suspected IMP or disease within 24 hours.	DPIRD: • FishWatch 24-hour hotline: 1800 815 507 • Email: biosecurity@fish.wa.gov.au
	Reported as soon as practicable:

Marine oil pollution incidents that are or have the potential to impact land or water within Western Australian State jurisdiction.	petroleum.environment@dmpe.wa.gov.au
	Report verbally to the DTMI MEER Duty Officer within two hours, and if requested provide a follow-up email with a POLREP attached. Phone: 08 9480 9924

10.7.3 Routine environmental reporting

Regulation 51 of the OPGGS(E)R requires environmental performance reporting for the petroleum activity described in this EP, as summarised in Table 10-14. Routine notifications required by regulation 54 of the OPGGS(E)R, and additional notifications as required by other legislation are also included in Table 10-14.

Table 10-14: Routine external reporting or notification requirements

Reporting requirement	Description	Reporting to	Timing
Environmental performance reporting – regulation 51			
Environmental performance reporting	A report detailing environmental performance of the petroleum activity detailed in this EP. As per regulation 22(7) the interval between reports must not be more than 12 months.	NOPSEMA submissions@nopsema.gov.au Phone: +1300-674-472.	Annually from the date of EP acceptance (Ref. 191).
Notification of start and end of activity – regulation 54			
Notification of start of activity	CAPL must complete Form FM1405 and submit to NOPSEMA at least 10 days before activity commencement.	NOPSEMA submissions@nopsema.gov.au or: https://securefile.nopsema.gov.au/filedrop/submissions	Once prior to activity commencement.
Notification of conclusion of activity	CAPL must complete Form FM1405 and submit to NOPSEMA within 10 days of activity completion.	NOPSEMA submissions@nopsema.gov.au or: https://securefile.nopsema.gov.au/filedrop/submissions.	Once following completion of activity.
Additional notification requirements			
Discovery of certain UCH	In accordance with section 40 of the UCH Act, CAPL must provide written notification setting out: • A description of the article • A description of the place where the article is situated that is sufficient to enable the article to be located.	Electronic form available via the Australasian Underwater Cultural Heritage Database: http://www.environment.gov.au/shipwreck/public/forms/notification.do;jsessionid=08546DC0F8BB76EEA72FCE054D9139F1?mode=add	Within 21 days of the discovery.

10.8 Environment plan review

If required, any revisions and/or resubmission of this EP to NOPSEMA, in accordance with Division 5 of the OPGGS(E)R, will be undertaken in accordance with the OEMS, and particularly the MoC process (SEE Section 10.3.2.2).

11 Acronyms and abbreviations

Table 11-1 defines the acronyms and abbreviations used in this document.

Table 11-1: Acronyms and abbreviations

Acronym / Abbreviation	Definition
ABARES	Australian Bureau of Agricultural and Resource Economics
ABF	Australian Border Force
ABU	Australian Business Unit
ACCU	Australian carbon credit units
ACMA	Australian Communications and Media Authority
AEP	Australian Energy Producers
AF	Assessment factor
AFMA	Australian Fisheries Management Authority
AHO	Australian Hydrographic Office
AHT	Anchor Handling Tug
AIMS	Australian Institute of Marine Science
AINJ	Auditory injury
AIS	Automatic identification system
ALARP	As low as reasonably practicable
AMP	Australian Marine Park
AMSA	Australian Maritime Safety Authority
AMSIS	Australian Marine Spatial Information System
ANZG	Australian and New Zealand Guidelines
AR6	Sixth Assessment Report
AR7	Seventh Assessment Report
AUV	Autonomous underwater vehicles
BCH	Benthic communities and habitats
BFM	Backfill Fields Manifold
BIA	Biologically Important Areas
BoM	Bureau of Meteorology
BP	Boiling point
BTAC	Buurabalayji Thalanyji Aboriginal Corporation
BTEX	Benzene, toluene, ethylbenzene and xylenes
BWMS	Ballast Water Management System
C&D	Chrysaor and Dionysus
CALM Act	*Conservation and Land Management Act 1984 (WA)*
CAPL	Chevron Australia Pty Ltd
CER	Clean Energy Regulator
CDU	Chemical Distribution Unit
CHARM	Chemical Hazard and Risk Management

Acronym / Abbreviation	Definition
CII	Carbon Intensity Indicator
CM	Control measure
CO	Carbon monoxide
COLREGS	Convention on the International Regulations for Preventing Collisions at Sea
CoW	Control of Work
CO_2	Carbon Dioxide
CSV	Construction Support Vessel
Cth	Commonwealth
DAFF	Department of Agriculture, Fisheries and Forestry
DBCA	Department of Biodiversity, Conservation and Attractions
DC	Drilling Centre
DCCEEW	Department of Climate Change, Environment, Energy and Water
DEED	Department of Energy and Economic Diversification
DGV	Default guideline values
DISR	Department of Industry, Science and Resources
DMPE	Department of Mines, Petroleum and Exploration
DNP	Director of National Parks
DoD	Department of Defence
DP	Dynamic positioning
DPIRD	Department of Primary Industries and Regional Development
DPLH	Department of Planning, Lands and Heritage
DPTV	Dynamically positioned transportation vessel
DTMI	Department of Transport and Major Infrastructure
DWER	Department of Water and Environment
DWH	Deepwater Horizon
ECCI	Exmouth Chamber of Commerce and Industry
EEDI	Energy Efficiency Design Index
EEXI	Energy Efficiency Existing Ship Index
EEZ	Exclusive economic zone
EFL	Electrical flying leads
EIAPP	Engine International Air Pollution Prevention
EMBA	Environment that may be affected
EMT	Emergency management team
ENGO	Environmental non–government organisation
EP	Environmental Plan
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act* 1999 (Cth)

Acronym / Abbreviation	Definition
EPO	Environmental performance outcome
EPS	Environmental performance standard
$ER_{95\%}$	95th percentile exposure ranges
ERAM	Environmental Risk Assessment Management Procedure
ERMP	Environment Risk Management Process
ESD	Ecologically sustainable development
FCG	Flooding, cleaning, gauging
FCS	Field Control Station
F-Pil	Flatback turtle Pilbara
G&E	Geryon and Eurytion
GDC	Gascoyne Development Commission
GFP	Gorgon Foundation Project
GHG	Greenhouse gas
GRP	Glass fibre reinforced polyester
GS3	Gorgon Stage 3
GT	Gross tonnage
GTP	Gas Treatment Plant
HCTS	Habitat critical to survival
HCV	Heavy Construction Vessel
HF	High frequency
HLV	Heavy lift vessel
HSE	Health, safety and environment
HTV	Heavy transport vessel
HV	High voltage
H-WA	Hawksbill turtle WA
IAPP	International Air Pollution Prevention
IChEMS	Industrial Chemicals Environmental Management Standard
IEE	International Energy Efficiency
IMCRA	Integrated Marine and Coastal Regionalisation of Australia
IMP	Invasive marine pests
IMR	Inspection, maintenance, and repair
IOPP	International Oil Pollution Prevention
IPCC	Intergovernmental Panel on Climate Change
ISPP	International Sewage Pollution Prevention
ISQG	Interim Sediment Quality Guideline
IUCN	International Union for Conservation of Nature
JASCO	JASCO Applied Sciences
JASMINE	JASCO Animal Simulation Model Including Noise Exposure

Acronym / Abbreviation	Definition
J-IC	Jansz-Io Compression
JRCC	Joint Rescue Coordination Centre
KDCCI	Karratha and Districts Chamber of Commerce and Industry
KEF	Key ecological feature
LBL	Long baseline
LCV	Light Construction Vessel
LF	Low frequency
LGM	Last glacial maximum
LNG	Liquefied natural gas
LoR	Limits of reporting
LV	Low voltage
MARPOL	International Convention for the Prevention of Pollution from Ships
MARS	Maritime Arrivals Reporting System
MBES	Multibeam echo sounder
MC	Measurement criteria
MCH	Mardathoonera Cultural Heritage
MDO	Marine diesel oil
MEER	Maritime Environmental Emergency Response
MEG	Mono ethylene glycol
MFO	Marine Fauna Observers
MNES	Matters of national environmental significance
MODU	Mobile offshore drilling unit
MoU	Memorandum of Understanding
MSS	Marine Seismic Survey
MSV	Multi-purpose Support Vessel
MTWA	Marine Tourism Western Australia
NCG	Nhuwala Claimant Group
NDC	Nationally Determined Contributions
NEPM	National Environment Protection Measure
NGER	National Greenhouse and Energy Reporting
NGER Act	*National Greenhouse and Energy Reporting Act 2007*
NII	Non-intrusive inspection
NOAA	National Oceanic and Atmospheric Administration
NOPSEMA	National Offshore Petroleum Safety and Environment Management Authority
NOPTA	National Offshore Petroleum Titles Administrator
NO_2	Nitrogen dioxide
NOx	Nitrous oxides
NT	Northern Territory

Acronym / Abbreviation	Definition
NTGAC	Nganhurra Thanardi Garrbu Aboriginal Corporation
NWMR	North-west Marine Region
NWS	North West Shelf
NWSSRP	North-west Shoals to Shore Research Program
NWSTF	North West Slope Trawl Fishery
O_3	Ozone
OA	Operational Area
OCCI	Onslow Chamber of Commerce and Industry
OCNS	Offshore Chemical Notification Scheme
OE	Operational Excellence
OEMS	Operational Excellence Management System
OEUK	Offshore Energies Unite Kingdom
OFL	Optical flying leads
OFOV FME	Orientation field-of-view full moon equivalents
OPEP	Oil Pollution Emergency Plan
OPGGS Act	*Offshore Petroleum and Greenhouse Gas Storage Act 2006* (Cth)
OPGGS(E)R	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (Cth)
OPP	Offshore Project Proposal
OSM-BIP	Operational and Scientific Monitoring Bridging Implementation Plan
OSPAR	Oslo and Paris Conventions
OSRL	Oil Spill Response Limited
OVIS	Offshore Vessel Information System
OWS	Oily water separator
P&A	Plug and abandonment
PAH	Polycyclic aromatic hydrocarbons
PAR	Pre-arrival reporting
PFOS	Perfluorooctanesulfonic acid
PK-PK	Peak-peak pressure levels
PLEM	Pipeline end manifold
PLET	Pipeline end termination
PLONOR	Pose little or no risk
PLV	Pipelay vessel
PM_{10}	particulate matter 10 micrometers or less in diameter
PMST	Protected Matters Search Tool
PNECs	Predicted No Effect Concentrations
PSV	Pipe Supply Vessels
PTS	Pipeline Termination Structure
RNTBC	Registered Native Title Body Corporate

Acronym / Abbreviation	Definition
ROV	Remotely operated vehicles
SBP	Sub-bottom profiler
SBTF	Southern Bluefin Tuna Fishery
SCMS	Subsea Compression Manifold Structure
SCSt	Subsea compression station
SDS	Safety Data Sheets
SEEMP	Ship Energy Efficiency Management Plan
SEL_{24h}	Sound exposure level for 24 hours
SIMAP	Spill Impact Mapping and Analysis Program
SIMOPS	Simultaneous operations
SMC	Safeguard Mechanism credit units
SNA	Safe navigation area
SO_2	Sulfur dioxide
SOLAS	Safety of Life at Sea
SOPEP	Shipboard Oil Pollution Emergency Plan
SPL	Sound pressure level
SSD	Species sensitivity distributions
SSS	Side scan sonar
STCW	Standards of Training, Certification and Watchkeeping for Seafarers
STFL	Steel tube flying leads
TC	Tropical cyclones
TEC	Threatened ecological communities
THC	Total hydrocarbons
TN	Total nitrogen
TP	Total phosphorus
TRH	Total recoverable hydrocarbons
TTS	Temporary threshold shift
UCH	Underwater cultural heritage
UCH Act	*Underwater Cultural Heritage Act 2018*
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USBL	Ultra-short baseline
UTA	Umbilical termination assembly
UV	Ultraviolet
VHF	Very-high frequency
VLF	Very low frequency
WA	Western Australia
WAC	Wirrawandi Aboriginal Corporation

Acronym / Abbreviation	Definition
WAFIC	Western Australian Fishing Industry Council
WAMSI	Western Australian Marine Science Institute
WET	Whole effluent toxicity
WGI AR6	Working Group I contribution to the Sixth Assessment Report
WGII AR6	Working Group II contribution to the Sixth Assessment Report
WTBF	Western Tuna and Billfish Fishery
XT	Christmas tree

12 References

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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.



Balaji Krishnamurthy
President – Australia

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appendix b Concordance with the gorgon backfill fields development offshore project proposal

As described in Section 2, the petroleum activity covered by this EP forms part of the offshore project described in the NOPSEMA-accepted *Gorgon Gas Development: Backfill Fields Offshore Project Proposal (OPP)* (Ref. 3). The OPP describes the scope of the Gorgon Backfill Fields Development and associated activities at the concept stage. It includes a comprehensive assessment of anticipated environmental impacts and risks and establishes an overarching framework for environmental management and performance in relation to those environmental impacts and risks.

As the OPP is developed during the early phase project development, further refinement of activity descriptions and associated environmental impacts and risks is expected to occur through subsequent EPs as technical definition progresses, while remaining within the scope of the offshore project and not significantly changing the overall environmental impact and risk profile assessed in the accepted OPP (Ref. 146). Table B-1 details how the activities described in this EP are within the scope of the Gorgon Backfill Fields Development OPP.

The OPP defined suitable high-level EPOs for the Backfill Fields Development. These EPOs have been cascaded to the relevant activities and aspects covered under this EP. Table B-2 compares the EPOs from the Gorgon Backfill Fields Development OPP with those proposed in this EP, and documents any refinements or modifications. While some EPOs have been adjusted to reflect the scope of the petroleum activity covered by this EP, the EPOs, EPSs, and control measures defined in this EP are consistent with the intent of the EPOs in the in the OPP and will deliver an equivalent, or improved, level of environmental performance to that provided in the Gorgon Backfill Fields Development OPP.

Table B-1: Concordance table between the OPP's activities and those included in this EP

Component	Backfill Fields Development OPP	G&E pipelay, subsea installation and pre-commissioning EP (this EP)
Location	The scope of the Gorgon Backfill Fields Development OPP covered the development of seven gas fields (Chandon, Chrysaor, Dionysus, Eurytion, Geryon, Semele and West Tryal Rocks) located in Commonwealth waters off the north-west coast of WA; refer to Sections 1.1 and 4.1.2 of the OPP (Ref. 3).	The scope of the G&E subsea installation and pre-commissioning EP (this EP) is associated with the Geryon and Eurytion gas fields; refer to Sections 2 and 4 of this EP. These gas fields and locations are within the scope of the accepted OPP.
	The 'Development Area' was defined as the area within which all petroleum activities associated with the Backfill Field Development would occur; refer to Section 4.1.3 and Figure 4-2 of the OPP (Ref. 3).	The Operational Area is the area within which the petroleum activity covered by this EP will be undertaken; refer to Section 4.1.1 and Figure 4-1 of this EP. The Operational Area is within the spatial extent of the Development Area within the accepted OPP.
Timing	Section 4.1.4 of the OPP (Ref. 3) states that the earliest that activities are likely to commence is late-2026.	This petroleum activity is indicatively scheduled to commence from 2027. The activity timing described in this EP is within scope of the accepted OPP.
Activity	Section 4.3.3 of the OPP (Ref. 3) describes installation, pre-	The activities covered by this EP include installation and pre-

Component	Backfill Fields Development OPP	G&E pipelay, subsea installation and pre-commissioning EP (this EP)
	commissioning and commissioning activities that may be undertaken to support the Backfill Fields Development.	commissioning; refer to Section 4 of this EP. These activities are within the scope of activities covered by the accepted OPP. Note: While the OPP assessed a subsea nitrogen release volume of ~25,000 m^3, the risk assessment undertaken for the larger nitrogen release volume assessed under this EP (750,000 m^3) determined that the potential environmental impacts and risks are commensurate with those assessed in the OPP and that the overall risk profile has not changed. In addition, any nitrogen reaching the sea surface and subsequently released to atmosphere would remain within the boundaries assessed in the OPP.
EMBA	The EMBA by the Development has been defined as an area where a change to environmental receptors may potentially occur as a result planned activities or unplanned events associated to the Gorgon Backfill Fields Development; refer to Section 6.1 and Figures 6-1 and 6-2 of the OPP (Ref. 3).	The Hydrocarbon EMBA for this EP is described in Section 5.1 and shown in Figure 5-1. The Hydrocarbon EMBA for this EP is within the spatial extent of the Hydrocarbon EMBA within the accepted OPP.

Table B-2: Concordance table between the OPP's activities and those included in this EP

Gorgon Backfill Fields OPP EPO	EPO/ EPS in EP/ Application in EP	Refinement and/or modifications in this EP
Physical presence—Vessels, infrastructure and/or equipment		
EPO-33: No interference with other lawful marine users from planned activities associated with the Development to a greater extent than is necessary for the reasonable exercise of the rights and performance of duties.	**EPO-33:** No interference with other lawful marine users from planned activities associated with the petroleum activity to a greater extent than is necessary for the reasonable exercise of the rights and performance of duties.	Modified to refer to the petroleum activity instead of the entire Development.
Physical presence—Seabed disturbance		
EPO-01: Planned seabed disturbance within the Development Area will not cause lasting changes to water quality (total suspended solids). Water quality will return to ambient state within seven days following the cessation of the disturbance.	**EPO-01:** Planned seabed disturbance within the OA will not cause lasting changes to water quality (total suspended solids). Water quality will return to ambient state within seven days following the cessation of the disturbance.	Modified to refer to the OA instead of the entire Development Area.
EPO-02: Undertake seabed surveys of proposed wells and subsea infrastructure locations prior to final field layout design to ensure that: • infrastructure design footprints will be positioned to minimise disturbance to key ecological features • any emergent seabed features or other obstacles are avoided wherever practicable within technical and safety constraints.	Surveys have been conducted of proposed subsea infrastructure locations prior to final field layout design. As no KEFs and no complex BCH were identified within the OA, CAPL considers the surveys appropriate to inform indicative well locations, such that they avoid any emergent seabed features or other obstacles wherever practicable within technical and safety constraints.	N/A
EPO-03: No planned seabed disturbance from the Development to any previously undisturbed exposed hard substrate within the 'ancient coastline at 125 m depth contour' key ecological feature.	Not relevant to the scope of this petroleum activity. The OA is located outside of the ancient coastline at 125 m depth contour' key ecological feature. Consequently, this EPO does not apply.	N/A
EPO-04: Long-term direct disturbance from the Development is limited to 18.85 km^2 within the Development Area.	**EPO-04:** Long-term direct disturbance from the Gorgon Backfill Fields Development is limited to 18.85 km^2 within the Gorgon Backfill Development Area. **EPS-06:** Planned seabed disturbance from the petroleum activity associated with G&E infrastructure will be within the spatial extents of	While the EPO from the OPP has been adopted, an EPS has been developed to further refine and reduce the seabed disturbance footprint to what is required for the petroleum activity.

Gorgon Backfill Fields OPP EPO	EPO/ EPS in EP/ Application in EP	Refinement and/or modifications in this EP
	either the 'long-term disturbance area' or the 'short-term disturbance area' as defined in the Gorgon Backfill Fields Development OPP.	
EPO-05: Short-term direct disturbance from the Development is limited to 0.98 km^2 within the Development Area.	**EPO-05:** Short-term direct disturbance from the Gorgon Backfill Fields Development is limited to 0.98 km^2 within the Gorgon Backfill Development Area. **EPS-06:** Planned seabed disturbance from the petroleum activity associated with G&E infrastructure will be within the spatial extents of either the 'long-term disturbance area' or the 'short-term disturbance area' as defined in the Gorgon Backfill Fields Development OPP.	While the EPO from the OPP has been adopted, an EPS has been developed to further refine and reduce the seabed disturbance footprint to what is required for the petroleum activity.
EPO-06: Decommissioning of subsea infrastructure will not be inconsistent with obligations under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Cth) and/or other relevant legislation in place at the time.	Not relevant to the scope of this petroleum activity. Decommissioning activities are outside of scope of this EP. Consequently, this EPO does not apply.	N/A.
EPO-07: Undertake an underwater cultural heritage assessment of proposed wells and subsea infrastructure locations prior to final field layout design to identify and report any suspected underwater cultural heritage and to ensure these areas are avoided (unless a permit under section 23 of the *Underwater Cultural Heritage Act 2018* (Cth) is granted).	A desktop UCH assessment of the OA was undertaken prior to final field layout design, and no known tangible UCH was identified in the OA (Section 5.6.1).	N/A.
EPO-08: No adverse impacts to declared underwater cultural heritage without a permit from planned activities associated with the Development.	**EPO-08:** No adverse impacts to declared UCH without a permit from planned activities associated with the petroleum activity.	Modified to refer to the petroleum activity instead of the entire Development.
Planned emissions—Air		
EPO-10: Planned air emissions within the Development Area will not cause lasting changes to air quality. Air quality will return to ambient state within seven days following the cessation of the emission.	**EPO-10**: Planned air emissions within the OA will not cause lasting changes to air quality. Air quality will return to ambient state within seven days following the cessation of the emission.	Modified to refer to the OA instead of the entire Development
Planned emissions—GHG		

Gorgon Backfill Fields OPP EPO	EPO/ EPS in EP/ Application in EP	Refinement and/or modifications in this EP
EPO-11: Manage GHG emissions from the 'Gorgon Operations Facility' in accordance with requirements under the Commonwealth Safeguard Mechanism and from the 'Gorgon GTP' in accordance with requirements under any in-force State or Commonwealth approval conditions for the Gorgon Gas Development.	**EPO-11:** GHG emissions are managed in accordance with requirements under the Commonwealth NGER and Safeguard Mechanism Schemes.	Modified to be broader in application than just the registered Gorgon Operations Facility as NGER reporting obligations are the responsibility of the company with operational control. Modified to remove reference to the Gorgon GTP as they are Barrow Island emissions and not within scope of the EP (Section 8.4.2).
EPO-12: Net GHG emissions associated with the transport and third-party end use of products from the Development do not represent a significant proportion of cumulative global GHG emissions and would be managed under the laws of the respective customer countries', which reflect among other things the countries' GHG emissions reduction ambitions and international commitments.	Not relevant to the scope of this petroleum activity. Emissions from transport and third-party end use of products and not within scope of the EP (Section 8.4.2).	N/A.
Planned emissions—Artificial light		
EPO-13: Artificial light emissions from planned Development activities do not prevent light sensitive marine fauna[148] from undertaking biological important behaviours[149].	**EPO-13:** Artificial light emissions from planned petroleum activities do not prevent light sensitive marine fauna[148] from undertaking biological important behaviours[149].	Modified to refer to the petroleum activity instead of the entire Development
EPO-14: Artificial light within or adjacent to habitat critical to the survival of marine turtles[150] will be managed such that marine turtles are not displaced from these habitats.	Not relevant to the scope of this petroleum activity. The predicted artificial light exposure areas from artificial light emissions did not extend into habitat critical to the survival of marine turtles[150].	N/A.
EPO-15: Manage artificial light from offshore sources to ensure biologically important behaviours of: • nesting adults and emerging/dispersing hatchlings of the flatback turtle Pilbara stock (F-Pil) can continue	Not relevant to the scope of this petroleum activity. The OA is located ~75 km from Montebello Island. Given that artificial light exposure area is expected at distances of up to ~6.30 and 11.58 km from the HCV and multivessel scenarios, respectively, no	N/A.

[148] Where light sensitive marine fauna includes marine turtles, seabirds and migratory shorebirds.

[149] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 311).

[150] Where habitat critical to the survival of marine turtle species is defined in Table 6 of the *Recovery Plan for Marine Turtles in Australia* (Ref. 264).

Gorgon Backfill Fields OPP EPO	EPO/ EPS in EP/ Application in EP	Refinement and/or modifications in this EP
• nesting adults and dispersing hatchlings of the hawksbill turtle WA (H-WA) can continue.	light spill onto coastal or nearshore areas is expected. Therefore, adult nesting turtles and hatchlings are not expected to be exposed to artificial light emissions from the petroleum activity. Consequently, this EPO does not apply.	
EPO-16: Implement an adaptive management approach (CM-17[151]) for artificial light emissions from the Development such that it can be demonstrated that risks have been reduced to as low as reasonably practicable and can be managed to meet acceptable levels. The outcomes of this adaptive management approach will be incorporated into Environment Plans for the petroleum activities associated with this Development.	The intent of **EPO-16** is met through the EP EPSs (EPS-13, EPS-14) which include mitigation measures to ensure potential risks from artificial light emissions are reduced to ALARP.	N/A.
Planned emissions—Underwater sound (non-impulsive / impulsive)		
EPO-17: Sound emissions from planned Development activities will be managed such that EPBC Act listed species continue undertaking biological important behaviours[152].	**EPO-17:** Sound emissions from planned petroleum activities will be managed such that EPBC Act listed species continue undertaking biological important behaviours[152].	Modified to refer to the petroleum activity instead of the entire Development.
EPO-18: Sound emissions from planned Development activities will be managed to prevent TTS or AUD-INJ onset to EPBC Act listed species.	**EPO-18:** Sound emissions from planned petroleum activities will be managed to prevent TTS or AINJ onset to EPBC Act listed species.	Modified to refer to the petroleum activity instead of the entire Development.
EPO-19: Any blue whale continues to utilise the biologically important area without injury[153], and is not displaced from a foraging area[154] [155].	**EPO-19:** Any blue whale continues to utilise the biologically important area without injury[153], and is not displaced from a foraging area[154, 155].	No change.

[151] In accordance with regulation 56 of the OPGGS(E)R, as this information has been previously supplied and is publicly available, the CM-17 has not been repeated here. The NOPSEMA-accepted Gorgon gas development backfill fields offshore project proposal is available online at: https://docs.nopsema.gov.au/A1265361

[152] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 311)

[153] For the purpose of Action A.2.3 from the *Conservation Management Plan for the Blue Whale* (Ref. 42) 'injury to blue whales' is considered both PTS and TTS and any other form of physical harm arising from anthropogenic sources of underwater sound (Ref. 319).

[154] For the purpose of Action A.2.3 from the *Conservation Management Plan for the Blue Whale* (Ref. 42) 'displaced from a foraging area' applies in relation to BIAs (Ref. 319); and these BIAs correspond to 'Foraging Area', 'Possible Foraging Area', and 'Known Foraging Area' as illustrated in Figure 1 of the *Conservation Management Plan for the Blue Whale* (Ref. 42; Ref. 319). There are no Foraging Area BIAs within or adjacent to the DA.

[155] In accordance with Australian Government guidance, activities outside designated Foraging Areas should adopt adaptive management approaches in the event that indicators (e.g. aggregation in a particular area) of whale foraging are evident to ensure that impacts are not unacceptable (e.g. no injury or biologically significant disturbance) (Ref. 319). EPO-17 incorporates foraging as one of the biologically important behaviours of marine fauna, and EPO-23 applies adaptive management.

Gorgon Backfill Fields OPP EPO	EPO/ EPS in EP/ Application in EP	Refinement and/or modifications in this EP
EPO-20: Any marine turtle is not displaced from identified habitat critical to the survival of the species[156].	Not relevant to the scope of this petroleum activity. The predicted ensonified areas from non-impulsive/ impulsive sound sources did not extend into HCTS[156] of marine turtle species.	N/A.
EPO-21: Any marine turtle continues to undertake biologically important behaviour within biologically important areas.	Not relevant to the scope of this petroleum activity. The predicted ensonified areas from non-impulsive/ impulsive sound sources did not extend into BIAs of marine turtle species.	N/A.
EPO-22: Undertake underwater sound assessments based on acoustic modelling (or equivalent, as appropriate to the nature and scale of the sound source) and predictions of ensonified areas that consider effect criteria based on contemporary guidance as available at the time. These assessments will be incorporated into Environment Plans for the petroleum activities associated with this Development.	Underwater sound modelling (or equivalent) was conducted for the activities identified in this petroleum activity and the predicted ensonified areas informed the risk assessment (Sections 8.6.2 and 8.7.2).	N/A.
EPO-23: Implement an adaptive management approach (CM-20, CM-21) for underwater sound emissions from the Development such that it can be demonstrated that risks have been reduced to as low as reasonably practicable and can be managed to meet acceptable levels. The outcomes of this adaptive management approach will be incorporated into Environment Plans for the petroleum activities associated with this Development.	The intent of **EPO-23** is met through the EP EPSs (**EPS-17, EPS-18, EPS-19, EPS-20**) which include mitigation measures to ensure potential risks from non-impulsive/impulsive underwater sound are reduced to ALARP.	EP EPSs included mitigation measures to ensure potential risks from underwater sound emissions are reduced to ALARP.
Planned discharges—Vessel operations		
EPO-24: Planned discharges from general MODU and vessels operations within the Development Area will not cause lasting changes to water quality. Water quality will return to ambient state within seven days following the cessation of the discharge.	**EPO-24:** Planned discharges from general MODU and vessels operations within the OA will not cause lasting changes to water quality. Water quality will return to ambient state within seven days following the cessation of the discharge.	Modified to refer to the petroleum activity instead of the entire Development, and remove reference to a MODU (as not relevant to the scope of this EP).
EPO-25: Planned discharges from general MODU and vessels operations within the Development Area will not cause lasting	**EPO-25:** Planned discharges from general MODU and vessels operations within the OA will not cause	Modified to refer to the petroleum activity instead of the entire Development, and

[156] Where habitat critical to the survival of marine turtle species is defined in Table 6 of the *Recovery Plan for Marine Turtles in Australia* (Ref. 264).

Gorgon Backfill Fields OPP EPO	EPO/ EPS in EP/ Application in EP	Refinement and/or modifications in this EP
changes to marine fauna behaviour. Predator-prey dynamics will return to ambient state within seven days following the cessation of the discharge.	lasting changes to marine fauna behaviour. Predator-prey dynamics will return to ambient state within seven days following the cessation of the discharge.	remove reference to a MODU (as not relevant to the scope of this EP).
Planned discharges—Subsea operations		
EPO-26: Planned discharges from subsea operations within the Development Area will not cause lasting changes to water quality. Water quality will return to ambient state within seven days following the cessation of the discharge.	**EPO-26:** Planned discharges from subsea operations within the OA will not cause lasting changes to water quality. Water quality will return to ambient state within seven days following the cessation of the discharge.	Modified to refer to the OA instead of the entire Development.
EPO-27: Undertake hydrotest dispersion modelling (or equivalent) at sites representative of the deep water and shallow water environments within the Development Area. These assessments will be incorporated into Environment Plans for the petroleum activities associated with this Development.	Hydrotest dispersion modelling (or equivalent) was conducted for the activities identified in this petroleum activity and the predicted exposure area informed the risk assessment (Section 8.9.2).	N/A.
Not identified.	**EPO-39:** Planned discharges from subsea operations within the OA will only cause localised changes to BCH (i.e. within the vicinity of the subsea discharge).	The Gorgon Backfill Fields Development OPP did not identify potential impacts and risks to BCH. However, treated water dispersion modelling undertaken for this EP (See Section 8.9.2) indicates that the discharge plume may interact with the seabed following release. Consequently, an additional EPO has bewen included in the EP
Planned discharges—Drilling operations		
EPO-28: Planned discharges from drilling operations within the Development Area will not cause lasting changes to water quality. Water quality will return to ambient state within seven days following the cessation of the discharge.	Not relevant to the scope of this petroleum activity. Planned discharges from drilling operations are outside of scope of this EP. Consequently, these EPOs do not apply.	N/A.
EPO-29: Planned discharges from drilling operations within the Development Area will only cause localised changes to sediment quality (i.e. within the vicinity of the drill centres).		
EPO-30: Undertake drill cuttings dispersion modelling (or equivalent) at sites representative of the deep water and shallow water environments within the Development Area. These		

Gorgon Backfill Fields OPP EPO	EPO/ EPS in EP/ Application in EP	Refinement and/or modifications in this EP
assessments will be incorporated into Environment Plans for the petroleum activities associated with this Development.		
EPO-31: Planned discharges from drilling operations within the Development Area will only cause localised changes to benthic habitats and communities (i.e. within the vicinity of the drill centres).		
EPO-32: Planned discharges from drilling operations within the Development Area will not cause toxicity effects to benthic habitats or marine fauna.		
Unplanned disturbance—Fauna interaction		
EPO-34: No death or injury of an EPBC Act listed threatened, migratory, or cetacean species from Development activities within the Development Area.	**EPO-34:** No death or injury of an EPBC Act listed threatened, migratory, or cetacean species from the petroleum activity within the OA.	Modified to refer to the petroleum activity instead of the entire Development
Unplanned disturbance—Seabed disturbance		
EPO-36: No unplanned release of solid objects to the environment attributable to the Development.	**EPO-36:** No unplanned release of solid objects to the environment attributable to the petroleum activity.	Modified to refer to the petroleum activity instead of the entire Development. Note: The aspect in Gorgon Backfill Field Development was “Unplanned release—Solid objects”. This has been separated into two aspects within this EP: “Unplanned disturbance—Seabed disturbance” and “Unplanned release—Solid waste” to facilitate separating potential risks and control measures for the different aspect sources (e.g. dropped objects versus garbage from vessels).
Non-indigenous species—Introduction of invasive marine pests		
EPO-35: No introduction and establishment of an invasive marine pest attributable to the Development.	**EPO-35**: No introduction of an invasive marine pest attributable to the petroleum activity.	Modified to refer to the petroleum activity instead of the entire Development, and to align with NOPSEMA’s updated information paper on marine pest biosecurity (Ref. 433).
Unplanned release—Solid waste		

Gorgon Backfill Fields OPP EPO	EPO/ EPS in EP/ Application in EP	Refinement and/or modifications in this EP
EPO-36: No unplanned release of solid objects to the environment attributable to the Development.	**EPO-36:** No unplanned release of solid objects to the environment attributable to the petroleum activity.	Modified to refer to the petroleum activity instead of the entire Development. Note: The aspect in Gorgon Backfill Field Development was “Unplanned release—Solid objects”. This has been separated into two aspects within this EP: “Unplanned disturbance—Seabed disturbance” and “Unplanned release—Solid waste” to facilitate separating potential risks and control measures for the different aspect sources (e.g. dropped objects versus garbage from vessels).
Unplanned release—Leaks and spills		
EPO-37: No unplanned release of hydrocarbons or chemicals to the environment attributable to the Development.	**EPO-37**: No unplanned release of hydrocarbons or chemicals to the environment attributable to the petroleum activity.	Modified to refer to the petroleum activity instead of the entire Development.
Unplanned release—Vessel collision		
EPO-38: No unplanned release of hydrocarbons to the environment attributable to the Development.	**EPO-38:** No unplanned release of hydrocarbons to the environment attributable to the petroleum activity.	Modified to refer to the petroleum activity instead of the entire Development.
Unplanned release—Hydrocarbon system (condensate)		
EPO-38: No unplanned release of hydrocarbons to the environment attributable to the Development.	Not relevant to the scope of this petroleum activity. A dropped object risk assessment (Ref. 428) was completed to evaluate the potential for hydrocarbon loss of containment associated with third-party subsea infrastructure. The assessment determined that no credible scenarios exist whereby dropped objects could interact with existing subsea infrastructure and result in a hydrocarbon release (Section 8.16).	N/A.
Cultural heritage—Intangible values		
EPO-09: No interference with First Nations cultural heritage values from planned activities associated with the Development to a	**EPO-09:** No interference with First Nations cultural heritage values from planned activities associated with the petroleum activity to a greater extent than	Modified to refer to the petroleum activity instead of the entire Development.

Gorgon Backfill Fields OPP EPO	EPO/ EPS in EP/ Application in EP	Refinement and/or modifications in this EP
greater extent than is necessary for the reasonable exercise of the rights and performance of duties.	is necessary for the reasonable exercise of the rights and performance of duties.	Note: Intangible cultural heritage values are assessed as a standalone aspect in this EP, rather than being addressed under each aspect as in the Gorgon Backfill Fields Development OPP. Accordingly, this EPO has been relocated to the relevant EP aspect.

appendix c Recovery plans, conservation advices, threat abatement plans, and wildlife conservation plans made under the EPBC Act

The relevant requirements of the recovery plans, conservation advices, threat abatement plans, and wildlife conservation plans made under the EPBC act and where these have been considered within the EP are summarised in the following tables

Recovery Plans

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Blue Whale Conservation Management Plan (Ref. 42)	**Potential presence: OA and Hydrocarbon EMBA**	
Objectives		
Recovery objective: The long-term recovery objective for blue whales is to minimise anthropogenic threats to allow for their conservation status to improve so that they can be removed from the EPBC Act threatened species list.	✓	Sections 6.6 and 8
Interim recovery objective 1: The conservation status of blue whale populations is assessed using efficient and robust methodology.	—	
Interim recovery objective 2: The spatial and temporal distribution, identification of biologically important areas, and population structure of blue whales in Australian waters is described.	—	
Interim recovery objective 3: Current levels of legal and management protection for blue whales are maintained or improved and an appropriate adaptive management regime is in place.	—	
Interim recovery objective 4: Anthropogenic threats are demonstrably minimised.	✓	Section 8
Threats		
Whaling	—	
Climate variability and change	✓	Section 8.4.
Noise interference (Seismic surveys; Acute and chronic industrial noise; Shipping noise; Aircraft noise)	✓	Sections 8.6 and 8.7

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Habitat modification (Commercial fisheries and aquaculture development; Marine debris; Infrastructure/coastal developments; Acute and chronic chemical discharge)	✓	Sections 8.13, 8.14 and 8.15
Vessel disturbance (Vessel collissions; whale watching)	✓	Section 8.10
Overharvesting of prey	—	
Actions		
Action Area A.1: Maintain and improve legal and management protection.		
Action A.1.1: Continue or improve existing legislative management actions as identified in Section 2 of this Plan.	—	
Action A.1.2: Maintain the currency of management advice and actions.	—	
Action Area A.2: Assessing and addressing anthropogenic noise.		
Action A.2.1: Investigating the baseline acoustic behaviour of blue whales.	—	
Action A.2.2: Assessing the effect of anthropogenic noise on blue whale behaviour.	✓	Sections 8.6 and 8.7
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.	✓	Sections 8.6 and 8.7
Action A.2.4: EPBC Act Policy Statement 2.1—Interaction between offshore seismic exploration and whales is applied to all seismic surveys.	—	
Action A.2.5: Ensuring behavioural impacts are considered when developing and updating policy documents on the management of cetaceans and anthropogenic noise.	—	
Action Area A.3: Understanding impacts of climate variability and change.		
Action A.3.1: Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica.	✓	Section 8.4.
Action Area A.4: Minimising vessel collisions.		
Action A.4.1: Develop a national vessel strike strategy that investigates the risk of vessel strike on blue whales and also identifies potential mitigation measures.	—	
Action A.4.2: Ensure all vessel strike incidents are reported in the National Ship Strike Database.	✓	Section 10.7.2

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
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.	✓	Section 8.10
National Recovery Plan for the Southern Right Whale (Ref. 37)	**Potential presence: Hydrocarbon EMBA**	
Objectives		
Long-term vision: The long-term vision for the recovery of the southern right whale is that the population has increased in size to a level that the conservation status has improved, and the species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria.	✓	Sections 6.6 and 8
Interim objective 1: Current levels of Commonwealth and State legislative and management protection for southern right whales are implemented, maintained, or improved, so threats continue to be managed and reduced over the life of the plan.	—	
Interim objective 2: Anthropogenic threats are managed consistent with ecologically sustainable development principles to facilitate recovery of southern right whales.	✓	Section 8
Interim objective 3: Population dynamics, including demographics, distribution, residency, and coastal movement across the species range are monitored and quantified using robust, standardised, best-practice methodology to assess population recovery.	—	
Interim objective 4: The population structure of southern right whales in Australian waters is clearly characterised, including the level of interchange of individuals among coastal reproductive areas, to evaluate the degree to which the western and eastern populations are separate populations and inform the degree of connectivity with other southern right whale populations (e.g. New Zealand).	—	
Interim objective 5: Capability of First Nation Australians, research, citizen science, and general community groups is improved to assist in addressing recovery actions of southern right whales in Australia.	—	
Threats		
Anthropogenic climate change and climate variability	✓	Section 8.4.
Entanglement (Active fishing or aquaculture equipment; Marine debris)	—	
Habitat degradation (Infrastructure/coastal development; Infrastructure/offshore development)	—	
Anthropogenic underwater noise (Industrial noise; Seismic surveys; Vessel noise; Aircraft noise)	—	
Collision (Vessel strike)	—	
Disturbance from vessels and water activities (Boat-based whale watching; Recreational vessels and waterborne activities)	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Whaling	—	
Prey depletion (Climate change; Overfishing; Seismic survey)	✓	Section 8.4
Pollution (Chronic chemical pollution; Acute chemical pollution; Electromagnetic field disturbance)	✓	Section 8.15
Actions		
Action Area A1: Maintain, implement, and improve efficacy of current legislative and management protection for southern right whales.		
Action A1.1: Maintain, implement, and improve efficacy of existing legislation and management arrangements (e.g. Managements Plans and Guidelines) as listed under section 1.2.	—	
Action A1.2: Maintain functional utility of management advice and actions through clear communication among stakeholders, and periodic review.	—	
Action Area A2: Address habitat degradation impacts from coastal and offshore marine infrastructure developments within the species' range.		
Action A2.1: Coastal and offshore development actions are assessed according to principles of ecological sustainable development to ensure the risk of injury, auditory impairment and/or disturbance to southern right whales is minimised.	—	
Action A2.2: Baseline surveys and monitoring undertaken during activity implementation are conducted in accordance with best practice standards and guidelines to ensure standardised datasets are obtained and suitable to inform environmental management decision making that can reduce the risk of threats to southern right whales.	—	
Action A2.3: Current information on species' occurrence, particularly in HCTS, BIAs, and historic high use areas, are used to inform planning, assessment, and decision-making on marine infrastructure development actions.	—	
Action Area A3: Understand impacts of climate variability and anthropogenic climate change on the species biology and population recovery.		
Action A3.1: Continue to meet Australia's international commitments to address causes of climate change, including greenhouse gas emissions.	✓	Section 8.4
Action A3.2: Continue to contribute via CCAMLR to the sustainable management of the krill fishery in Antarctica to mediate potential reduction in prey resources due to climate change.	—	
Action A3.3: Support international collaborations in understanding the responses of southern right whales to climate variability and change through ongoing commitments to the IWC and CCAMLR.	—	
Action A3.4: Increase understanding of the effects of anthropogenic climate change on environmental conditions, including the impacts on prey availability in high latitude foraging areas and links with southern right whale foraging ecology, health, and population demographics (e.g. reproductive success).	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Action Area A4: Manage and mitigate the threat of entanglements from commercial active or discarded fishing gear throughout the species' range in Australian waters		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Action Area A5: Assess, manage, and mitigate impacts from anthropogenic underwater noise.		
Action A5.1: Improve baseline understanding of southern right whale acoustic communication to better inform potential impacts from anthropogenic underwater noise.	—	
Action A5.2: Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that it does not prevent any southern right whale from utilising the area or cause auditory impairment.	—	
Action A5.3: Actions within and adjacent to southern right whale BIAs and HCTS should demonstrate that the risk of behavioural disturbance is minimised.	—	
Action A5.4: Ensure environmental assessments associated with underwater noise generating activities include consideration of national policy (e.g., EPBC Act Policy Statement 2.1) and guidelines related to managing anthropogenic underwater noise and implement appropriate mitigation measures to reduce risks to southern right whales to the lowest possible level.	—	
Action A5.5: Quantify risks of anthropogenic underwater noise to southern right whales, including studies aimed to measure physiological effects, behavioural disturbance, and changes to acoustic communication (e.g., masking of vocalisations) to whales.	—	
Action A5.6: Prioritise government/industry funding opportunities to support research to identify short and long-term responses of southern right whales to underwater noise.	—	
Action A.5.7: Improve understanding and characterisation of marine soundscapes, including the application of new technologies for data processing, within southern right whale BIAs to facilitate quantification of anthropogenic noise in the marine soundscape.	—	
Action Area A6: Manage, minimise, and mitigate the threat of vessel strike.		
Action A6.1: Assess risk of vessel strike to southern right whales in BIAs.	—	
Action A6.2: Improve understanding of the behavioural response of southern right whales in close vicinity to vessels (e.g. type, number, distance) in BIAs to inform risk assessments of vessel strike.	—	
Action A6.3: Ensure environmental impact assessments and associated plans consider and quantify the risk of vessel strike and associated potential cumulative risks in BIAs and HCTS.	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Action A6.4: Undertake a review of the National Strategy for Reducing Vessel Strike on Cetaceans and other Marine Megafauna 2017, and update if necessary.	—	
Action A6.5: Ensure all vessel strike incidents are reported in the National Ship Strike Database managed through the Australian Marine Mammal Centre, Australian Antarctic Division.	—	
Recovery Plan for Marine Turtles in Australia (Ref. 264)	**Potential presence: OA and Hydrocarbon EMBA**	
Objectives		
Long-term recovery objective: 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.	✓	Sections 6.6 and 8
Interim recovery objective 1: Current levels of legal and management protection for marine turtles are maintained or improved both domestically and throughout the migratory range of Australia's marine turtles.	—	
Interim recovery objective 2: The management of marine turtles is supported.	—	
Interim recovery objective 3: Anthropogenic threats are demonstrably minimised.	✓	Section 8
Interim recovery objective 4: Trends at index beaches, and population demographics at important foraging grounds are described.	—	
Threats		
Climate change and variability	✓	Section 8.4
Marine debris (entanglement; ingestion)	✓	Sections 8.13
Chemical and terrestrial discharge (Acute chemical and terrestrial discharge; Chronic chemical and terrestrial discharge)	✓	Sections 8.14 and 8.15
International take	—	
Terrestrial predation	—	
Fisheries bycatch	—	
Light pollution	✓	Section 8.5
Habitat modification (Infrastructure/coastal development; dredging and trawling)	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Indigenous take	—	
Vessel disturbance	✓	Section 8.10
Noise interference (Acute noise; Chronic noise)	✓	Sections 8.6 and 8.7
Recreational activities	—	
Diseases and pathogens	—	
Actions		
Action Area A1: Maintain and improve efficacy of legal and management protection.		
Action A1.1: Align the threat status of marine turtles in range jurisdictions through the operation of the Intergovernmental Memorandum of Understanding: agreement on a common assessment method for listing of threatened species and ecological communities.	—	
Action A1.2: Maintain, implement and improve efficacy of existing management arrangements as listed at Sections 2 and 4.3 (of this Recovery Plan).	—	
Action A1.3: Maintain and improve biological information, including spatial information, used to inform robust decision making.	—	
Action A1.4: Develop and implement nationwide significant impact guidelines for marine turtles.	—	
Action A1.5: Manage anthropogenic activities to ensure marine turtles are not displaced from identified habitat critical to the survival as per Section 3.3 Table 6 (of this Recovery Plan).	—	
Action A1.6: Manage anthropogenic activities in Biologically Important Areas to ensure that biologically important behaviour can continue.	—	
Action A1.7: Develop robust criteria for the identification of habitat critical to the survival of each stock for foraging, migration, mating and hatchling dispersal	—	
Action Area A2: Adaptively manage turtle stocks to reduce risk and build resilience to climate change and variability.		
Action A2.1: Continue to meet Australia's international commitments to address the causes of climate change.	✓	Section 8.4
Action A2.2: Identify and protect areas for range expansion and identify areas of refugia.	—	
Action A2.3: Identify, test and implement climate based adaptation measures.	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Action A2.4: Increase understanding of the evolutionary capacity of marine turtles to adapt to a changing environment.	—	
Action Area A3: Reduce the impacts from marine debris.		
Action A3.1: Maintain and expand international and domestic partnership arrangements for the source reduction, collection and management of marine debris.	—	
Action A3.2: Compare marine debris hotspots with important foraging areas, post hatchling dispersal and adult migratory pathways to identify high priority areas for mitigation to reduce turtle/debris interactions.	—	
Action A3.3: Genetic samples are taken from animals caught in ghost nets.	—	
Action A3.4: Describe and quantify the impact of ingestion of debris on marine turtles, particularly those life phases using the open ocean.	—	
Action A3.5: Support the implementation of the EPBC Act Threat Abatement Plan for the impacts of marine debris on vertebrate marine life	—	
Action Area A4: Minimise chemical and terrestrial discharge.		
Action A4.1: Implement best practice industrial, urban and agricultural runoff and storm water management for new and existing developments in coastal catchments to minimise impacts to marine turtle health and habitats.	—	
Action A4.2: Ensure spill risk strategies and response programs adequately include management for marine turtles and their habitats, particularly in reference to ‘slow to recover habitats’, e.g. nesting habitat, seagrass meadows or coral reefs.	✓	Sections 8.15
Action A4.3: Quantify the impacts of decreased water quality on stock viability.	—	
Action A4.4: Quantify the accumulation and effects of anthropogenic toxins in marine turtles, their foraging habitats and subsequent stock viability.	—	
Action Area A5: Address international take within and outside Australia’s jurisdiction.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Action Area A6: Reduce impacts from terrestrial predation.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Action Area A7: Reduce international and domestic fisheries bycatch.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Action Area A8: Minimise light pollution.		
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 as per Section 3.3 Table 6 [of this Recovery Plan].	✓	Section 8.5
Action A8.2: Develop and implement best practice light management guidelines for existing and future developments adjacent to marine turtle nesting beaches.	—	
Action A8.3: Identify the cumulative impact on turtles from multiple sources of onshore and offshore light pollution.	✓	Section 8.5
Action Area A9: Address the impacts of coastal development/infrastructure and dredging and trawling.		
Action A9.1: Manage infrastructure, coastal development, dredging and trawling to ensure ongoing biologically important behaviours for marine turtle stocks continues.	—	
Action A9.2: Use up-to-date information regarding nesting, internesting and foraging habitat to inform future development proposals and approval decisions.	—	
Action A9.3: Assess the impact of trawling on the benthic environment in marine turtle foraging habitat and determine whether it is likely to have an impact on stock viability	—	
Action Area A10: Maintain and improve sustainable Indigenous management of marine turtles.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Sawfish and River Sharks Multispecies Recovery Plan (Ref. 68)	**Potential presence: OA and Hydrocarbon EMBA**	
Objectives		
The **primary objective** of this recovery plan is to assist the recovery of sawfish and river sharks in Australian waters with a view to: • Improving the population status leading to the removal of the sawfish and river shark species from the threatened species list of the EPBC Act • Ensuring that anthropogenic activities do not hinder recovery in the near future, or impact on the conservation status of the species in the future.	✓	Sections 6.6 and 8
Threats		
Fishing activities	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Habitat degradation and modification	✓	Sections 8.14 and 8.15
Other potential threats to the species include: • Collection of animals for display in public aquaria • Marine debris	✓	Section 8.13
Actions		
Specific objective 1: Reduce and, where possible, eliminate adverse impacts of commercial fishing on sawfish and river shark species.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Specific objective 2: Reduce and, where possible, eliminate adverse impacts of recreational fishing on sawfish and river shark species.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Specific objective 3: Reduce and, where possible, eliminate adverse impacts of Indigenous fishing on sawfish and river shark species.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Specific objective 4: Reduce and, where possible, eliminate the impact of illegal, unregulated and unreported fishing on sawfish and river shark species.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Specific objective 5: Reduce and, where possible, eliminate adverse impacts of habitat degradation and modification on sawfish and river shark species.		
Action 5a: Ensure all future developments will not significantly impact upon sawfish and river shark habitats critical to the survival of the species, or impede upon the migration of individual sawfish or river sharks.	—	
Action 5b: Determine the effect of river and estuarine barriers on the movements of sawfish and river sharks and undertake an audit of barriers to establish whether removal or modification is feasible to allow for the riverine migration of sawfish and river sharks.	—	
Action 5c: Identify risks to important sawfish and river shark habitat and measures needed to reduce those risks.	—	
Action 5d: Implement measures to reduce adverse impacts of habitat degradation and/or modification.	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Specific objective 6: Reduce and, where possible, eliminate any adverse impacts of marine debris on sawfish and river shark species noting the linkages with the Threat Abatement Plan for the Impact of Marine Debris on Vertebrate Marine Life.		
Action 6a: Assess the impacts of marine debris including ghost nets, fishing gear and plastics on sawfish and river shark species.	—	
Action 6b: Partner with marine debris organisations to support initiatives that reduce marine debris likely to impact on sawfish and river sharks.	—	
Specific objective 7: Reduce and, where possible, eliminate any adverse impacts of collection for public aquaria on sawfish and river shark species.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Specific objective 8: Improve the information base to allow the development of a quantitative framework to assess the recovery of, and inform management options for, sawfish and river shark species.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Specific objective 9: Develop research programs to assist conservation of sawfish and river shark species.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Specific objective 10: Improve community understanding and awareness in relation to sawfish and river shark conservation and management.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Recovery Plan for the Grey Nurse Shark (Ref. 69)	**Potential presence: OA and Hydrocarbon EMBA**	
Objectives		
The **overarching objective** of this recovery plan is to assist the recovery of the grey nurse shark in the wild, throughout its range in Australian waters, with a view to: • improving the population status, leading to future removal of the grey nurse shark from the threatened species list of the EPBC Act • ensuring that anthropogenic activities do not hinder the recovery of the grey nurse shark in the near future, or impact on the conservation status of the species in the future.	✓	Sections 6.6 and 8
Threats		
Mortality related to incidental (accidental and/or illegal) capture by commercial and recreational fisheries	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Mortality related to shark control activities such as beach meshing or drumlining	—	
Other potential threats to the species include: • Ecotourism • Collection for public aquaria • Pollution and disease and ecosystem effects as a result of habitat modification • Climate change—including changes in sea temperature and ocean acidification	✓	Sections 8.4, 8.14 and 8.15
Actions		
Objective 1: Develop and apply quantitative monitoring of the population status (distribution and abundance) and potential recovery of the grey nurse shark in Australian waters.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 2: Quantify and reduce the impact of commercial fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 3: Quantify and reduce the impact of recreational fishing on the grey nurse shark through incidental (accidental and/or illegal) take, throughout its range.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 4: Where practicable, minimise the impact of shark control activities on the grey nurse shark.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 5: Investigate and manage the impact of ecotourism on the grey nurse shark.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 6: Manage the impact of aquarium collection on the grey nurse shark.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 7: Improve understanding of the threat of pollution and disease to the grey nurse shark.		
Action 7.1: Review and assess the potential threat of introduced species, pathogens and pollutants. Work undertaken under this action should be linked to Action 4.4 on grey nurse shark post-mortem data recording and sampling.	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Objective 8: Continue to identify and protect habitat critical to the survival of the grey nurse shark and reduce the impact of threatening processes within these areas.		
Action 8.1: Continue research to locate habitat critical to the survival of the grey nurse shark, including pupping, nursery and foraging areas.	—	
Action 8.2: Review the level and spatial extent of protection measures at key aggregation sites to ensure appropriate levels of protection, and a consistent approach to the designation and implementation of protective measures, are applied.	—	
Action 8.3: Use BIAs to help inform the development of appropriate conservation measures, including through the application of advice in the marine bioregional plans on the types of actions which are likely to have a significant impact on the species and updating such conservation measures as new information becomes available.	—	
Action 8.4: Update and refine information on existing BIAs identified as part of the marine bioregional plans, and seek to identify new BIAs as information from research and other processes becomes available (link to Action 8.1).	—	
Action 8.5: Monitor grey nurse shark occupancy and utilisation of key aggregation sites.	—	
Objective 9: Continue to develop and implement research programs to support the conservation of the grey nurse shark.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 10: Promote community education and awareness in relation to grey nurse shark conservation and management.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Recovery Plan for the White Shark (Ref. 70)	**Potential presence: OA and Hydrocarbon EMBA**	
Objectives		
The **overarching objective** of this recovery plan is to assist the recovery of the white shark in the wild throughout its range in Australian waters with a view to: • Improving the population status, leading to future removal of the white shark from the threatened species list of the EPBC Act • Ensuring that anthropogenic activities do not hinder recovery in the near future, or impact on the conservation status of the species in the future.	✓	Sections 6.6 and 8

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Threats		
Mortality related to being caught accidentally (bycatch) or illegally (targeted) by commercial and recreational fisheries, including issues of post release mortality.	—	
Mortality related to shark control activities such as beach meshing or drumlining (east coast population).	—	
Other potential threats to the species include: • Illegal trade in white shark products • Ecosystem effects as a result of habitat modification and climate change (including changes in sea temperature, ocean currents and acidification) • Ecotourism, including cage diving.	✓	Sections 8.4, 8.14 and 8.15
Actions		
Objective 1: Develop and apply quantitative measures to assess population trends and any recovery of the white shark in Australian waters and monitor population trends.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 2: Quantify and minimise the impact of commercial fishing, including aquaculture, on the white shark through incidental (illegal and/or accidental) take, throughout its range in Australian waters.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 3: Quantify and minimise the impact of recreational fishing on the white shark through incidental (illegal and/or accidental) take, throughout its range in Australian waters.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 4: Where practicable minimise the impact of shark control activities on the white shark		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 5: Investigate and manage (and where necessary reduce) the impact of tourism on the white shark.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 6: Quantify and minimise the impact of international trade in white shark products through implementation of CITES provisions.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 7: Continue to identify and protect habitat critical to the survival of the white shark and minimise the impact of threatening processes within these areas.		

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Action 7.1: Continue research to locate habitat critical to the survival of the white shark, including pupping, nursery and foraging areas. Develop and apply a suite of criteria to characterise and identify habitats critical to the survival of the white shark.	—	
Action 7.2: Update and refine information on existing BIAs identified as part of DSEWPaC's Marine Bioregional Plans, and seek to identify new BIAs as information from research and other processes becomes available (Link to Action 7.1).	—	
Action 7.3: Monitor white shark occupancy and utilisation of BIAs, particularly habitats critical to the survival of the species.	—	
Action 7.4: Use BIA maps to help inform the development of appropriate conservation measures, including through the application of advice in DSEWPaC's Marine Bioregional Plans on the types of actions that are likely to have a significant impact on the species. Update such conservation measures as new information becomes available.	—	
Objective 8: Continue to develop and implement relevant research programs to support the conservation of the white shark.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 9: Promote community education and awareness in relation to white shark conservation and management.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 10: Encourage the development of regional partnerships to enhance the conservation and management of the white shark across national and international jurisdictions.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
National Recovery Plan for Albatrosses and Petrels (Ref. 266)	**Potential presence: OA and Hydrocarbon EMBA**	
Objectives		
Long-term vision: The populations of albatross and petrel species breeding and/or foraging in Australia's jurisdiction have increased to such a size that each species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria.	✓	Sections 6.6 and 8
The **objective of the recovery plan** is: To improve the conservation status of albatrosses and petrels so that these species are on a trajectory towards no longer being threatened in Australia's jurisdiction.	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Threats		
Terrestrial threats		
N/A (Not relevant threats from an offshore petroleum activity).	—	
Marine threats		
Fisheries interactions and bycatch (Longline fishing operations; Trawl fishing operations; Gillnet fishing operations)	—	
Deliberate take	—	
Marine pollution (Fuel and oil spills; chemical contaminants; marine debris)	✓	Sections 8.13, 8.14 and 8.15
Competition with fisheries for prey species	—	
Dependence of fisheries discards	—	
Marine infrastructure interactions (threats from interactions with offshore installations and ships, including artificial lighting.)	✓	Section 8.5
Climate variability and change	✓	Section 8.4
Actions		
Action Area A1: Ongoing protection of albatross and petrel species breeding sites and habitats in Australia's jurisdiction.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Action Area A2: Prevent introduction of alien species to breeding islands in Australia's jurisdiction.		
Action 3a: Effective pre-arrival quarantine measures are in place and implemented for any visits to breeding islands.	—	
Action 3b: Monitoring is occurring at breeding islands for presence of introduced species.	—	
Action Area A3: Identify whether competition with native species is causing population declines.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Action Area A4: Identify diseases likely to have a population-level effect on breeding populations.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Action Area A5: Avoid or minimise incidental catch (or bycatch) of seabirds during fishing operations in Australia's jurisdiction.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Action Area A6: Advocate for effective international measures for conserving albatrosses and petrels.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Action Area A7: Minimise the effects of marine debris, plastics and pollution.		
Action 5b: Undertake, as feasible, monitoring of breeding colonies for marine debris, plastics and marine pollution impacts including, as a priority: – incidence of oiled birds at nest – levels of marine debris egestion and entanglement at nest – effect of plastics and marine pollution – develop baseline measures of levels of heavy metals and persistent organic pollutants.	—	
Action 5c: Risk based response strategies for marine pollution incidents are developed.	✓	Section 8.14 and 8.15
National Recovery Plan for the Australian Fairy Tern (Ref. 73)	**Potential presence: OA and Hydrocarbon EMBA**	
Objectives		
Long-term vision: The Australian Fairy Tern population has increased in size to such an extent that the species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria.	✓	Sections 6.6 and 8
Recovery plan objective: By 2030, sustain a positive population trend (compared to 2020 baseline counts) in the number of mature individuals of the Australian Fairy Tern in both the eastern and western populations. This will be achieved by implementing the actions set out in this Recovery Plan that minimise threats while protecting the species' habitat throughout its range, adequately monitoring the species, generating new knowledge to guide recovery and increasing public awareness.	—	
Threats		
Habitat degradation and loss of breeding habitat	—	
Disturbance	—	
Invasive species	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Native wildlife	—	
Climate variability and change	✓	Section 8.4
Water management and increased salinity	—	
Pollution	✓	Sections 8.14 and 8.15
Hybridisation	—	
Actions		
Strategy 1: Manage and protect known Australian fairy tern breeding populations at the landscape scale.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy 2: Develop and apply techniques to measure changes in population trend(s) in order to measure the efficacy of recovery actions.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy 3: Reduce, or eliminate threats at breeding, non-breeding and foraging sites.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy 4: Undertake research and monitoring to improve understanding of breeding, non-breeding and foraging attributes in order to better target management actions and habitat restoration.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy 5: Engage community stakeholders in Australian fairy tern conservation.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy 6: Coordinate, review and report on recovery progress.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
National Recovery Plan for the Australian Painted Snipe (Ref. 267)	**Potential presence: Hydrocarbon EMBA**	
Objectives		
Long-term vision: The Australian painted snipe population has increased in size to such an extent that the species no longer qualifies for listing as threatened under any of the EPBC Act listing criteria.	✓	Sections 6.6 and 8

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Recovery plan objective: By 2032, sustain a positive population trend (compared to 2020 baseline counts) in the number of mature individuals of the Australian painted snipe. This will be achieved by implementing the actions set out in this Recovery Plan that minimise threats while protecting the species' habitat throughout its range, generating new knowledge to guide recovery and increasing public awareness.	—	
Threats		
Changes to water regimes and structural changes to wetlands	—	
Drainage of wetlands and fragmentation of waterways	—	
Deterioration of water quality	—	
Invasive plants	—	
Climate variability and change	✓	Section 8.4
Livestock overgrazing	—	
Invasive animals (Predation; Invasive herbivores)	—	
Human disturbance	—	
Fire	—	
Low genetic diversity	—	
Actions		
Strategy 1: Manage and protect known Australian painted snipe habitat at the landscape scale.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy 2: Develop and apply techniques to measure changes in population trajectory in order to measure the success of recovery actions.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy 3: Reduce, or eliminate threats at breeding and non-breeding habitats.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy 4: Undertake research to improve knowledge of the habitat requirements, biology and behaviour of Australian painted snipe.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	

Recovery plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Strategy 5: Engage community stakeholders to improve awareness of the conservation of Australian painted snipe.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy 6: Coordinate, review and report on recovery progress.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	

Conservation Advices

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Conservation Advice for fin whale (Ref. 268)	**Potential presence: OA and Hydrocarbon EMBA**	
Threats		
Climate and oceanographic variability and change.	✓	Section 8.4
Anthropogenic noise and acoustic disturbance.	✓	Sections 8.6 and 8.7
Habitat degradation including coastal development, port expansion and aquaculture.	—	
Pollution (persistent toxic pollutants).	✓	Sections 8.14 and 8.15
Fisheries catch, entanglement and bycatch.	—	
Vessel strike.	✓	Section 8.10
Resource depletion due to fisheries (potential threat).	—	
Resumption of commercial whaling (potential threat).	—	
Actions		

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Maintain and improve existing legal and management protection:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Understanding impacts of climate variability and change:		
Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica.	✓	Section 8.4
Assessing and addressing anthropogenic noise:		
Once the spatial and temporal distribution (including biologically important areas) of fin whales is further defined, an assessment of the impacts of increasing anthropogenic noise (including seismic surveys, port expansion, and coastal development) should be undertaken on this species.	—	
If required, additional management measures should be developed and implemented to ensure the ongoing recovery of fin whales.	—	
Minimising vessel collisions:		
Develop a national vessel strike strategy that investigates the risk of vessel strikes on fin whales and also identifies potential mitigation measures.	—	
Ensure all vessel strike incidents are reported in the National Vessel Strike Database.	✓	Section 10.7.2
Conservation Advice for sei whale (Ref. 269)	**Potential presence: OA and Hydrocarbon EMBA**	
Threats		
Climate and oceanographic variability and change.	✓	Section 8.4
Anthropogenic noise and acoustic disturbance.	✓	Sections 8.6 and 8.7
Habitat degradation including pollution (increasing port expansion and coastal development).	—	
Pollution (persistent toxic pollutants).	✓	Sections 8.14 and 8.15
Vessel strike.	✓	Section 8.10
Prey depletion due to fisheries (potential threat).	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Resumption of commercial whaling (potential threat).	—	
Actions		
Maintain and improve existing legal and management protection:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Understanding impacts of climate variability and change:		
Continue to meet Australia's international commitments to reduce greenhouse gas emissions and regulate the krill fishery in Antarctica.	✓	Section 8.4
Assessing and addressing anthropogenic noise:		
Once the spatial and temporal distribution (including biologically important areas) of sei whales is further defined an assessment of the impacts of increasing anthropogenic noise (including from seismic surveys, port expansion, and coastal development) should be undertaken on this species.	—	
If required, additional management measures should be developed and implemented to ensure the ongoing recovery of sei whales.	—	
Minimising vessel collisions:		
Develop a national vessel strike strategy that investigates the risk of vessel strikes on sei whales and also identifies potential mitigation measures.	—	
Ensure all vessel strike incidents are reported in the National Vessel Strike Database.	✓	Section 10.7.2
Conservation Advice for Australian humpback dolphin (Ref. 270)	**Potential presence: OA and Hydrocarbon EMBA**	
Objectives		
Primary conservation objective: To manage anthropogenic threats to the Australian humpback dolphin so that the conservation status of the species can improve, and the species can be removed from the EPBC Act threatened species list.	✓	Section 8
Threats		
Fisheries interactions – Active fishing gear (i.e. bycatch and entanglement).	—	
Habitat loss and degradation—Climate variability and change (i.e. increased likelihood of extreme weather events and changes in oceanographic conditions [e.g. sea surface temperature, pH and salinity])	✓	Sections 8.4

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Habitat loss and degradation—Coastal development	—	
Habitat loss and degradation—Marine pollution	✓	Sections 8.14 and 8.15
Queensland Shark Control Program.	—	
Vessel interactions - Vessel strike.	✓	Section 8.10
Disease.	—	
Anthropogenic underwater noise—Industrial noise	✓	Sections 8.6 and 8.7
Anthropogenic underwater noise—Vessel noise	✓	Section 8.6
Anthropogenic noise—Seismic	—	
Provisioning	—	
Information and research priorities		
General:		
Determine a national abundance estimate for Australian humpback dolphins.	—	
Improve the understanding (at national, regional, and local scales) of habitat use, dispersal, movement (temporary and permanent emigration) and genetic connectivity of Australian humpback dolphins throughout their range, understand related impacts and mitigate risks.	—	
Improve the understanding of how different types of coastal development and anthropogenic activity impacts the long-term population status of Australian humpback dolphins.	—	
At a spatial and temporal scale, identify and assess current, projected, and cumulative threats to Australian humpback dolphins throughout their range, understand related impacts and mitigate risks.	—	
Map cumulative threats and identify risk hotspots for the Australian humpback dolphin.	—	
Provide access to standardised national Australian humpback dolphin data in order to assess distribution, abundance and related data and underpin conservation and management. Data should be held in a centralised, accessible data repository and made widely available to interested stakeholders.	—	
Continue to identify, update and map Biologically Important Areas and Habitat Critical to the Survival for Australian humpback dolphins.	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Continue to implement and update National Guidelines and Policy Statements so that the current levels of legal and management protection for the Australian humpback dolphin are maintained or improved (see links to relevant implementation documents).	—	
Identify the source of scarring on individual Australian humpback dolphins to quantify the incidence of vessel strike, entanglement, predation, or non-conspecific socialising.	—	
Review current methods to mitigate threats to Australian humpback dolphins and apply an adaptive management approach.	—	
Fisheries interactions:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Underwater anthropogenic noise		
Ensure behavioural impacts are considered when developing and updating policy documents on the management of inshore dolphins and underwater anthropogenic noise	—	
Further understand what noise levels cause physiological damage and subsequent mortality to Australian humpback dolphins	—	
Further understand how the acoustic propagation of anthropogenic activities overlaps with Australian humpback hearing thresholds	—	
Further understand the impact noise pollution from increasing vessel traffic and coastal construction on dolphin distribution and behaviour.	—	
Vessel interactions		
Ensure all vessel strike incidents are reported in the National Ship Strike Database.	✓	Section 10.7.2
Ensure the risk of vessel strike on Australian humpback dolphins is considered when assessing actions that increase vessel traffic on areas Australian humpback dolphins occur and, if required, appropriate mitigation measures are implemented.	✓	Section 8.10
Health		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for Australian snubfin dolphin (Ref. 271)	**Potential presence: OA and Hydrocarbon EMBA**	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Primary conservation objective		
To manage anthropogenic threats to the Australian snubfin dolphin so that the conservation status of the species can improve, and the species can be removed from the EPBC Act threatened species list.	✓	Section 8
Threats		
Fisheries interactions – Active fishing gear (i.e., bycatch and entanglement).	—	
Habitat loss and degradation—Climate variability and change (i.e. increased likelihood of extreme weather events and changes in oceanographic conditions [e.g. sea surface temperature, pH and salinity])	✓	Section 8.4
Habitat loss and degradation—Coastal development and infrastructure	—	
Habitat loss and degradation—Marine pollution	✓	Sections 8.14 and 8.15
Anthropogenic underwater noise—Industrial noise	✓	Sections 8.6 and 8.7
Anthropogenic underwater noise—Vessel noise	✓	Section 8.6
Anthropogenic noise—Seismic	—	
Vessel interactions—Vessel strike	✓	Section 8.10
Disease	—	
Queensland Shark Control Program	—	
Provisioning	—	
Information and research priorities		
General:		
Determine a national abundance estimate for Australian snubfin dolphins.	—	
Improve the understanding (at national, regional, and local scales) of habitat use, dispersal, movement (temporary and permanent emigration) and genetic connectivity of Australian snubfin dolphins to aid conservation and management at appropriate geographic scales.	—	
Improve the understanding of how different types of coastal development and anthropogenic activity impacts the long-term population status of Australian snubfin dolphins.	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
At a spatial and temporal scale, identify and assess current and projected threats to Australian snubfin dolphins throughout their range, understand related impacts and mitigate risks.	—	
Map cumulative threats and identify risk hotspots for the Australian snubfin dolphin.	—	
Provide access to standardised national Australian snubfin dolphin data in order to assess distribution, abundance and related data and underpin conservation and management. Data should be held in a centralised, accessible data repository and made widely available to interested stakeholders.	—	
Continue to identify, update and map Biologically Important Areas and Habitat Critical to the Survival for Australian snubfin dolphins.	—	
Continue to implement and update National Guidelines and Policy Statements so that the current levels of legal and management protection for the Australian snubfin dolphin are maintained or improved (see links to relevant implementation documents).	—	
Identify the source of scarring on individual Australian snubfin dolphins to quantify the incidence of vessel strike, entanglement, predation, or non-conspecific socialising.	—	
Review current methods to mitigate threats to Australian snubfin dolphins and apply an adaptive management approach.	—	
Fisheries interactions:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Underwater anthropogenic noise:		
Ensure behavioural impacts are considered when developing and updating policy documents on the management of inshore dolphins and underwater anthropogenic noise.	—	
Further understand what noise levels cause physiological damage and subsequent mortality to snubfin dolphins.	—	
Further understand how the acoustic propagation of anthropogenic activities overlaps with snubfin dolphin hearing thresholds.	—	
Further understand the impact of noise pollution from increasing vessel traffic and coastal construction on dolphin distribution and behaviour.	—	
Vessel interactions:		
Ensure all vessel strike incidents are reported in the National Ship Strike Database.	✓	Section 10.7.2

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Ensure the risk of vessel strike on Australian snubfin dolphins is considered when assessing actions that increase vessel traffic on areas Australian snubfin dolphins occur and, if required, appropriate mitigation measures are implemented.	✓	Section 8.10
Health:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Queensland Shark Control Program:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for leatherback turtle (Ref. 367)	**Potential presence: OA and Hydrocarbon EMBA**	
Threats		
Incidental capture in commercial fisheries.	—	
Harvest of eggs and meat.	—	
Ingestion of marine debris.	✓	Section 8.13
Boat strike.	✓	Section 8.10
Predation on eggs by wild dogs, pigs and monitor lizards.	—	
Degradation of foraging areas.	✓	Section 8.15
Changes to breeding sites.	—	
Priority actions		
Habitat Loss, Disturbance and Modification:		
Identify and protect migratory corridors between nesting beaches and common foraging areas to facilitate colonization.	—	
Investigate formal conservation arrangements, such as the development of conservation agreements and covenants with the fishing community.	—	
Animal Predation:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Information:		

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for leaf-scaled sea snake (Ref. 284)	**Potential presence: Hydrocarbon EMBA**	
Threats		
Degradation of reef habitat (primarily as a result of coral bleaching)	✓	Sections 8.4 and 8.15.
Unsustainable and illegal fishing practices	—	
Priority actions		
Habitat Loss, Disturbance and Modification:		
Identify remnant populations of high conservation priority.	—	
Monitor known populations to identify key threats.	—	
Ensure there is no disturbance in areas where the leaf-scaled sea snake occurs, excluding necessary actions to manage the conservation of the species.	—	
Monitor changes to sea water temperatures and sea levels.	—	
Conservation Information:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Enable Recovery of Additional Populations:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for short-nosed sea snake (Ref. 285)	**Potential presence: Hydrocarbon EMBA**	
Threats		
Degradation of reef habitat (primarily as a result of coral bleaching)	✓	Sections 8.4 and 8.15.
Incidental catch and death in commercial prawn trawling fisheries	—	
Unsustainable and illegal fishing practices	—	
Priority actions		

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Habitat Loss, Disturbance and Modification:		
Identify remnant populations of high conservation priority.	—	
Monitor known populations to identify key threats.	—	
Ensure there is no anthropogenic disturbance in areas where the short-nosed sea snake occurs, excluding necessary actions to manage the conservation of the species.	—	
Monitor changes to sea water temperatures and sea levels.	—	
Conservation Information:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Enable Recovery of Additional Populations:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for dwarf sawfish (Ref. 308)	**Potential presence: OA and Hydrocarbon EMBA**	
Threats		
Caught as bycatch in commercial and recreational net fishing.	—	
Illegal, unreported and unregulated fishing.	—	
Habitat degradation (due to increasing development in northern Australia).	—	
Actions		
Fishing pressure:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Habitat loss, disturbance and modification:		
Identify populations and areas of high conservation priority	—	
Conservation Information:		
N/A (not a relevant action area for an offshore petroleum activity).	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Conservation Advice for green sawfish (Ref. 309)	**Potential presence: OA and Hydrocarbon EMBA**	
Threats		
Incidental capture as bycatch and byproduct in gillnet and trawl fisheries.	—	
Illegal capture for fins and rostra.	—	
Habitat degradation through coastal development.	—	
Actions		
Habitat loss, disturbance and modification:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Information:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Improve understanding of species biology, ecology and threats:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Improve, develop and implement threat abatement and mitigation measures:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for largetooth sawfish (Ref. 272)	**Potential presence: OA and Hydrocarbon EMBA**	
Objectives		
Primary conservation objective: The primary objectives are to: • prevent further decline of any largetooth sawfish subpopulations (e.g. population units that are isolated from others via reproductive philopatry) • ensure the recovery of the largetooth sawfish across its Australian range.	—	
Threats		
Climate change.	✓	Section 8.4

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Mortality in Australian commercial fisheries.	—	
Habitat loss and degradation (water resource development, coastal development and alterations to river courses).	—	
Minor or poorly understood threats		
Recreational line fishing.	—	
Queensland Shark Control Program.	—	
Illegal, unreported and unregulated fishing.	—	
International Fishing.	—	
First Nations fishing.	—	
Collection for display in public aquaria.	—	
Pollution and mining operations.	✓	Section 8.15
Crocodile predation.	—	
Foreign fleets in Australian waters (historic threat).	—	
Actions		
Commercial fisheries		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Water resource development and alteration		
Ensure that proposed developments will not have a significant impact upon largetooth sawfish habitats, including recruitment or migration ability. Consider cumulative impacts of all current and proposed developments across the species' range. This may include limiting water abstraction where it is likely to adversely impact the species, especially during years with below-average rainfall/river-flow volume.	—	
Determine the effect of existing river and estuarine barriers to the movements of largetooth sawfish. Undertake an audit of existing barriers and, where possible, remove or modify barriers for the purpose of improving connectivity of largetooth sawfish habitat or alleviating threats to the species	—	
Ensure ecosystem and environmental monitoring, and modelling of freshwater environmental flows and water quality, is designed to answer key questions on sawfish habitat use, survival and recovery	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Climate change and severe weather impacts		
Foster resilience to climate change by protecting important habitats for all largetooth sawfish life stages and restoring habitats that may buffer against climate change impacts.	—	
Survey and monitoring		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Information and research		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for whale shark (Ref. 273)	**Potential presence: OA and Hydrocarbon EMBA**	
Threats		
Boat strike from large vessels	✓	Section 8.10
Habitat disruption from mineral exploration, production and transportation	✓	Section 8.10
Disturbance from domestic tourism operations.	—	
Marine debris.	✓	Section 8.13
Climate change.	✓	Section 8.4
Conservation actions		
Conservation and Management Actions:		
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 (as set out in the Conservation Values Atlas, DotE, 2014).	✓	Section 8.10
Management of all domestic tourism industry interactions with whale sharks in accordance with the Western Australian 'Whale Shark Management with particular reference to Ningaloo Reef' Wildlife Management Program No. 57.	—	
Continued advocacy of threat mitigation actions for whale sharks in international fora including, but not limited to, regional fishery management organisations.	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Support for the development of eco-tourism industries in areas where traditional hunting of whale sharks occurs.	—	
Survey and Monitoring Priorities		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Information and Research Priorities		
Develop greater scientific certainty around migration, habitat use, emerging threats, and population trends in Australian waters.	—	
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.	✓	Sections 8.5, 8.6 and 8.7.
Conduct further research into the impacts of boat strike on whale sharks to determine the significance of the threat. Consider possible mitigation actions (collision avoidance systems) if required.	—	
Assess environmental variables that determine whale shark presence. These can then be used to provide advice to shipping to help avoid boat strike (Lewison et al., 2015).	—	
Consider the implications of climate change on whale shark distribution in Australian waters (possibly through the Range Extension Database Mapping Project [REDMAP]).	—	
Conservation Advice for Abbott's Booby (Ref. 274)	**Potential presence: Hydrocarbon EMBA**	
Objectives		
Long-term objective: To reduce anthropogenic threats to allow the conservation status of Papasula abbotti (Abbott's Booby) to improve so that it can be removed from the threatened species list of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).	✓	Sections 6.6 and 8
Short-term objective 1: The extent and quality of habitat critical to the survival of Abbott's Booby is maintained or improved.		
Short-term objective 2: Anthropogenic threats to Abbott's Booby are demonstrably reduced	—	
Short-term objective 3: The current levels of legislative protection for Abbott's Booby are maintained or improved.	—	
Short-term objective 4: The recovery of Abbott's Booby is adequately supported by monitoring and research.	—	
Threats		
Vegetation clearing	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Climate change	✓	Section 8.4
Introduction of a new disease	—	
Invasive weeds	—	
Yellow crazy ants–habitat modification	—	
Fisheries–prey depletion	—	
Marine debris–plastics	—	
Actions		
Vegetation clearance		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Climate Change		
Develop and implement a response plan to enhance the adaptation of Abbott's Booby to climate change.	—	
Introduction of a new disease		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Invasive weeds		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Maintain or improve current policies and legislative protection		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Monitoring to support adaptive management		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Research to assist management and understand threats		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Support and improve collaboration amongst stakeholders responsible for land management on Christmas Island.		

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for Australian painted snipe (Ref. 275)	**Potential presence: Hydrocarbon EMBA**	
Threats		
Loss and degradation of wetlands	—	
Other potential threats to the species include: • Grazing • Climate change • Predation by feral animals • Coastal port and infrastructure development • Shale oil mining • Replacement of native wetland vegetation by invasive weeds	—	
Priority actions		
Habitat loss, disturbance and modification:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Invasive weeds:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Trampling, browsing or grazing		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Animal Predation or Competition		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Fire		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Information		

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for curlew sandpiper (Ref. 276)	**Potential presence: OA and Hydrocarbon EMBA**	
Primary conservation objective		
Minimise further loss of habitat critical to the survival of curlew sandpiper throughout Australia (including habitat predicted to become habitat critical in the future because of climate change).	—	
Prevent further declines in curlew sandpiper populations by working with relevant range states to address threats in the East Asian-Australasian Flyway.	—	
Threats		
Habitat loss, fragmentation, and degradation (residential and commercial development, industrial aquaculture, invasion of mudflats and coastal saltmarshes by mangroves and cordgrass, downstream effects of large dams)	—	
Anthropogenic disturbance (disturbance at feeding and roosting sites)	—	
Climate change (increased frequency and length of droughts, sea level rise, in Arctic breeding areas)	✓	Section 8.4
Exploitation (hunting)	—	
Pollution (chronic and acute pollution)	✓	Sections 8.14 and 8.15
Actions		
Habitat loss, disturbance and modifications impacts:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Invasive species impacts		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Climate change and severe weather impacts:		
Develop and implement a climate change adaptation plan for the species.	—	
Identify and protect inland wetlands and coastal drought refuges in Australia.	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Quantify and predict changes to important habitat because of climate change and identify potential shifts in the breeding and non-breeding distribution of the species.	—	
Quantify the significance of sea level rise on curlew sandpiper feeding and roosting habitat within Australia.	—	
Human disturbance:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Hunting		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Stakeholder engagement/community engagement		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring priorities		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for far eastern curlew (Ref. 277)	**Potential presence: OA and Hydrocarbon EMBA**	
Primary conservation objective		
Minimise further loss of habitat critical to the survival of far eastern curlew throughout Australia (including habitat predicted to become habitat critical in the future because of climate change).	—	
Prevent further declines in far eastern curlew populations within the Australian jurisdiction by working with relevant Range States to address threats in the East Asian Australasian Flyway.	—	
Threats		
Habitat loss, fragmentation, and degradation (residential and commercial development, industrial aquaculture, invasion of mudflats and coastal saltmarshes by mangroves and cordgrass, downstream effects of large dams).	—	
Anthropogenic disturbance (disturbance at feeding and roosting sites).	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Climate change (sea level rise, at breeding locations).	✓	Section 8.4
Exploitation (hunting, deliberate poisoning, fisheries related mortality).	—	
Pollution (chronic and acute pollution).	—	Sections 8.14 and 8.15
Actions		
Habitat loss, disturbance and modifications impacts:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Climate change and severe weather impacts:		
Develop and implement a climate change adaptation plan for the species.	—	
Quantify and predict changes to important habitat because of climate change and identify potential shifts in the breeding and non-breeding distribution of the species.	—	
Quantify the significance of sea level rise on far eastern curlew's feeding and roosting habitat within Australia.	—	
Hunting		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Disturbance at feeding and roosting sites:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Stakeholder engagement/community engagement:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for golden bosun (Ref. 278)	**Potential presence: OA and Hydrocarbon EMBA**	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Primary conservation objective		
By 2034, the golden bosun will maintain its AOO and EOO, and the population size will have increased towards the carrying capacity of the available habitat. The subspecies will be sustained in habitat where threats are managed effectively.	—	
Threats		
Exotic invasive species, problematic native species, pathogens and disease (disease [animal pathogens], invasive species).	—	
Climate change and severe weather (storms flooding and marine heatwaves).	✓	Section 8.4
Human Disturbance (land clearing).	—	
Actions		
Disease:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Domestic and invasive species:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Habitat loss, disturbance and modifications:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Climate change and severe weather:		
Trial revegetation techniques and artificial nests to improve nest site quality against heat stress and impacts from extreme storm events (see information and research priorities).	—	
Ex situ recovery actions:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Stakeholder engagement/community engagement:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring priorities		
N/A (not a relevant action area for an offshore petroleum activity).	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Information and research priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for little tern (Ref. 279)	**Potential presence: Hydrocarbon EMBA**	
Primary conservation objective		
Retain breeding colonies across the species' range by managing threats to the extent possible, including by facilitating breeding site re-positioning if needed, and achieve a stable or increasing population trend in both subpopulations.	—	
Increase breeding success in existing breeding colonies in all range states through appropriate management of threats.	—	
Threats		
Anthropogenic disturbance (human disturbance at nesting sites [including offleash dogs], off-road vehicles).	—	
Habitat loss and degradation (industrial and urban development, altered hydrological regimes, beach wrack harvesting, invasive weeds).	—	
Predation (introduced species, silver gulls and other native species).	—	
Climate change (sea level rise, extreme natural events).	✓	Section 8.4
Hybridisation (fairy tern).	—	
Actions		
Human disturbance at nesting sites and off-road vehicles:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Habitat loss and degradation:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Predation by introduced species:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Altered hydrological regimes and sea level rise:		
N/A (not a relevant action area for an offshore petroleum activity).	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Stakeholder engagement/community engagement:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for Northern Siberian bar-tailed godwit (Yakutian bar-tailed Godwit) (Ref. 280)	**Potential presence: Hydrocarbon EMBA**	
Primary conservation objective		
Minimise further loss of habitat critical to the survival of Yakutian bar-tailed godwit throughout Australia (including habitat predicted to become habitat critical in the future because of climate change).	—	
Prevent further declines in Yakutian bar-tailed godwit populations by working with relevant Range States to address threats in the East Asian-Australasian Flyway.	—	
Threats		
Habitat loss, fragmentation, and degradation (residential and commercial development, industrial aquaculture, invasion of mudflats and coastal saltmarshes by mangroves and cordgrass).	—	
Anthropogenic disturbance (disturbance at feeding and roosting sites).	—	
Climate change (sea level rise, Arctic breeding areas).	✓	Section 8.4
Exploitation (hunting).	—	
Pollution (chronic and acute pollution).	✓	Section 8.15
Actions		
Habitat loss, disturbance and modifications impacts:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Invasive species impacts:		
N/A (not a relevant action area for an offshore petroleum activity).	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Climate change and severe weather impacts:		
Develop and implement a climate change adaptation plan for the species.	—	
Quantify and predict changes to important habitat because of climate change and identify potential shifts in the breeding and non-breeding distribution of the species.	—	
Quantify the significance of sea level rise on Yakutian bar-tailed godwit's feeding and roosting habitat within Australia.	—	
Human disturbance:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Hunting:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Stakeholder engagement/community engagement:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for red knot (Ref. 281)	**Potential presence: OA and Hydrocarbon EMBA**	
Primary conservation objective		
Minimise further loss of habitat critical to the survival of red knot throughout Australia (including habitat predicted to become habitat critical in the future because of climate change).	—	
Prevent further declines in red knot populations within the Australian jurisdiction by working with relevant Range States to address threats in the East Asian-Australasian Flyway.	—	
Threats		

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Habitat loss, fragmentation, and degradation (residential and commercial development, industrial aquaculture, invasion of mudflats and coastal saltmarshes by mangroves and cordgrass, downstream effects of large dams).	—	
Anthropogenic disturbance (disturbance at feeding and roosting sites).	—	
Climate change (sea level rise, Arctic breeding areas).	✓	Section 8.4
Exploitation (hunting).	—	
Pollution (chronic and acute pollution).	✓	Sections 8.14 and 8.15
Actions		
Habitat loss, disturbance and modifications impacts:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Climate change and severe weather impacts:		
Develop and implement a climate change adaptation plan for the species.	—	
Quantify and predict changes to important habitat because of climate change and identify potential shifts in the breeding and non-breeding distribution of the species.	—	
Quantify the significance of sea level rise on red knot's feeding and roosting habitat within Australia.	—	
Hunting:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Disturbance at feeding and roosting sites:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Stakeholder engagement/community engagement:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities:		

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for red-tailed tropicbird (Indian Ocean) (Ref. 282)	**Potential presence: OA and Hydrocarbon EMBA**	
Primary conservation objective		
A stable or increasing population trend within Australian territory is maintained to the extent that the subspecies is no longer eligible to be listed under the EPBC Act.	—	
Threats		
Predation (egg and nestling predation by introduced species, nestling injury or death caused by ants).	—	
Climate change (climate driven change in resource availability, extreme natural events).	✓	Section 8.4
Actions		
Nest predation by introduced species:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Nestling injury or death caused by ants:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Stakeholder engagement/community engagement:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for sharp-tailed sandpiper (Ref. 283)	**Potential presence: OA and Hydrocarbon EMBA**	
Primary conservation objective		

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Minimise further loss of habitat critical to the survival of sharp-tailed sandpiper throughout Australia (including habitat predicted to become habitat critical to survival in the future because of climate change).	—	
Prevent further declines in sharp-tailed sandpiper populations by working with Range States to address threats in the East Asian - Australasian Flyway.	—	
Threats		
Habitat loss, degradation, and fragmentation (residential and commercial development, industrial aquaculture, clearing for large-scale agriculture, downstream effects of large dams).	—	
Climate change (increased frequency or length of droughts, sea level rise).	✓	Section 8.4
Invasive species (invasion of mudflats and coastal saltmarshes by mangroves and cordgrass).	—	
Pollution (chronic and acute pollution).	✓	Sections 8.14 and 8.15
Exploitation (hunting, fishing bycatch).	—	
Actions		
Habitat loss caused by residential, commercial, and aquaculture development:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Invasive species impacts:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Climate change and severe weather impacts:		
Develop and implement a climate change adaptation plan for the species.	—	
Quantify and predict changes to important habitat because of climate change and identify potential shifts in the breeding and non-breeding distribution of the species.	—	
Quantify the significance of sea level rise on sharp-tailed sandpiper feeding and roosting habitat within Australia.	—	
Human disturbance:		
N/A (not a relevant action area for an offshore petroleum activity).	—	

Conservation Advice	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Hunting:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Stakeholder engagement/community engagement:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Information and research priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Conservation Advice for soft-plumaged petrel (Ref. 285)	**Potential presence: Hydrocarbon EMBA**	
Threats		
Accidental introduction of predators (potential threat).	—	
Actions		
Habitat loss, disturbance and modification:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Predation:		
N/A (not a relevant action area for an offshore petroleum activity).	—	
Survey and monitoring priorities:		
N/A (not a relevant action area for an offshore petroleum activity).	—	

Threat Abatement Plans

Threat Abatement Plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (Ref. 368)	**Potential presence: OA**	
Threats		
Marine debris	✓	Section 8.13
Objectives and Actions		
Objective 1: Contribute to long-term prevention of the incidence of marine debris.		
Action 1.01: Establish a threat abatement plan (TAP) team to coordinate actions for the life of the TAP	—	
Action 1.02: Limit the amount of single use plastic material lost to the environment in Australia.	—	
Action 1.03: Encourage development of a circular economy in Australia.	—	
Action 1.04: Encourage innovation in recovery and waste treatment technologies.	—	
Action 1.05: Improve management of abandoned, lost and discarded fishing gear.	—	
Action 1.06: Improve shipping waste management.	—	
Objective 2: Understand the scale of impacts from marine plastic and microplastic on key species, ecological communities and locations.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 3: Remove existing marine debris.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 4: Monitor the quantities, origins, types and hazardous chemical contaminants of marine debris, and assess the effectiveness of management arrangements for reducing marine debris.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 5: Increase public understanding of the causes and impacts of harmful marine debris, including microplastic and hazardous chemical contaminants, to bring about behaviour change.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	

Wildlife Conservation Plans

Wildlife Conservation Plans	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Wildlife Conservation Plan for Seabirds **(Ref. 74)**	**Potential presence: OA and Hydrocarbon EMBA**	
Threats		
Habitat loss (Coastal development; Habitat modification)	—	
Climate variability and change (Climate change; El Niño Southern Oscillation; Storms and cyclones)	✓	Section 8.4.
Geological processes (Volcanism; Earthquake, tsunami and landslips)	—	
Invasive species	—	
Native wildlife	—	
Fisheries interactions and by-catch	—	
Prey depletion	—	
Resource extraction	—	
Renewable energy	—	
Anthropogenic disturbance	—	
Hunting	—	
Transport (Shipping; Aircraft)	✓	Section 8.10
Drones	—	
Pollution (Marine debris; Light pollution; Chronic pollution; Acute pollution; Heavy metals)	✓	Sections 8.5, 8.13, 8.14 and 8.15
Aquaculture	—	
Disease	—	
Objectives and Actions		
Objective 1: International cooperation and collaboration continue to support the survival of seabirds and their habitats outside Australian jurisdiction.		

Wildlife Conservation Plans	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 2: Seabirds and their habitats are identified, protected and managed in Australia.		
Action 2a: Identify important habitats for all seabirds during critical life stages.	—	
Action 2b: Complete a review and update the conservation status of all seabirds in Australia.	—	
Action 2c: Develop a national seabird breeding colony register.	—	
Action 2d: Ensure all areas of important habitat for seabirds are considered appropriately and consistently in the development assessment process.	—	
Action 2e: Manage the effects of anthropogenic disturbance to seabird breeding and roosting areas.	—	
Action 2f: Manage invasive species at important seabird habitats.	—	
Action 2g: Implement actions under Australia's NPOA-Seabirds and Longline Threat Abatement Plan.	—	
Action 2h: Enhance contingency plans to prevent and/or respond to environmental emergencies that have an impact on seabirds and their habitats.	—	
Action 2i: Restore lost or degraded seabird breeding and roosting habitats.	—	
Objective 3: The long-term survival of seabirds and their habitats is achieved through supporting priority research programs, coordinated monitoring, on-ground management and conservation.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 4: Increase the awareness of the importance of conserving seabirds and their habitats through community education and capacity building to support monitoring and on-ground management.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Wildlife Conservation Plan for Migratory Shorebirds (Ref. 265)	**Potential presence: OA and Hydrocarbon EMBA**	
Threats		
Habitat loss (Infrastructure/coastal development in Australia; Infrastructure/coastal development in staging and stop-over areas)	—	

Wildlife Conservation Plans	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Habitat modification (Chronic pollution; Acute pollution; Invasive species; Altered hydrological regimes)	✓	Sections 8.14 and 8.15
Anthropogenic disturbance (e.g. aircraft over-flights, industrial operations and construction, artificial lighting, and recreational activities such as fishing, off-road driving on beaches, unleashed dogs and jet-skiing)	✓	Sections 8.5 and 8.10
Climate variability and change	✓	Section 8.4.
Harvesting of shorebird prey	—	
Fisheries by-catch	—	
Hunting	—	
Objectives and Actions		
Objective 1: Protection of important habitats for migratory shorebirds has occurred throughout the EAAF.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 2: Wetland habitats in Australia, on which migratory shorebirds depend, are protected and conserved.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Objective 3: Anthropogenic threats to migratory shorebirds in Australia are minimised or, where possible, eliminated.		
Action 3a: Develop and implement a community education and awareness program to reduce the effects of recreational disturbance on migratory shorebirds.	—	
Action 3b: Investigate the impacts of climate change on migratory shorebird habitat and populations in Australia.	—	
Action 3c: Investigate the significance of cumulative impacts on migratory shorebird habitat and populations in Australia.	—	
Action 3d: Investigate the impacts of hunting and shorebird prey harvesting on migratory shorebirds in Australia and the EAAF.	—	
Action 3e: Develop guidelines for wetland rehabilitation and the creation of artificial wetlands to support populations of migratory shorebirds.	—	
Action 3f: Ensure all areas important to migratory shorebirds in Australia continue to be considered in development assessment processes.	—	

Wildlife Conservation Plans	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Objective 4: Knowledge gaps in migratory shorebird ecology in Australia are identified and addressed to inform decision makers, land managers and the public.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	

Australian Marine Park Management Plans

Management plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
North-west Marine Parks Network Management Plan (Ref. 131)	**Potential presence: Hydrocarbon EMBA**	
Objectives		
The objectives of this plan are to provide for: a. the protection and conservation of biodiversity and other natural, cultural and heritage values of marine parks in the North-west Network; and b. ecologically sustainable use and enjoyment of the natural resources within marine parks in the North west Network, where this is consistent with objective (a).	✓	Sections 6.6 and 8
Pressures		
Climate change	✓	Section 8.4
Changes in hydrology	—	
Extraction of living resources	—	
Habitat modification	—	
Invasive species	✓	Section 8.12
Marine pollution (including emission of noise or light, marine debris, and discharge of oil, chemicals or waste)	✓	Section 8.15
Actions		
Communication, education and awareness program.		

Management plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Tourism and visitor experience program.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Indigenous engagement program.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Marine science program.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Assessments and authorisations program.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Park protection and management program.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Compliance program.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Prescriptions for Mining Operations—Multiple Use Zone		
Prescription 4.2.9.1, 4.2.9.2, 4.2.9.3, 4.2.9.4, 4.2.9.5, 4.2.9.6, 4.2.9.7, and *4.2.9.9:*		
N/A (No planned petroleum, activity within an AMP).	—	
Prescription 4.2.9.8: Notwithstanding Section 4.2.9.1, actions required to respond to oil pollution incidents, including environmental monitoring and remediation, in connection with mining operations authorised under the OPGGS Act, may be conducted in all zones without an authorisation issued by the Director, provided that the actions are taken in accordance with an EP that has been accepted by NOPSEMA, and the Director is notified in the event of oil pollution within a marine park, or where an oil spill response action must be taken within a marine park, so far as reasonably practicable, prior to response action being taken.	✓	Sections 8.15 and 10.7.2

Marine Bioregional Plans

Marine bioregional plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Marine Bioregional Plan for the NWMR (Ref. 21)		
Objectives		
Consistent with the objectives of the EPBC Act, and in the context of the principles for ESD as defined in the Act, the plan sets the following objectives for the region: • Conserving biodiversity and maintaining ecosystem health • Ensuring the recovery and protection of threatened species • Improving understanding of the region's biodiversity and ecosystems and the pressures they face.	✓	Sections 6.6 and 8
Pressures		
Sea level rise (Climate change)	✓	Section 8.4.
Changes in sea temperature (Climate change; Urban development)		
Changes in oceanography (Climate change)		
Ocean acidification (Climate change)		
Changes in terrestrial sand temperature (Climate change)		
Chemical pollution/contaminants (Shipping; Vessels [other]; Aquaculture operations; Renewable energy operations; Urban development (urban and/or industrial infrastructure); Agricultural activities; Onshore and offshore mining operations)	✓	Sections 8.14 and 8.15
Nutrient pollution (Aquaculture operations; Agricultural activities; Urban development)	—	
Changes in turbidity (Dredging [spoil dumping]; Land-based activities; Onshore and offshore mining operations; Climate change [changes in rainfall, storm frequency])	—	
Marine debris (Land-based activities; Fishing boats; Shipping; Vessels [other]; Oil rigs; Aquaculture infrastructure; Renewable energy infrastructure; Urban development)	✓	Sections 8.13
Noise pollution (Seismic exploration; Urban development; Defence/surveillance activities; Shipping; Vessels [other]; Aquaculture infrastructure; Renewable energy infrastructure; Onshore and offshore mining operations; Onshore and offshore construction)	✓	Sections 8.6 and 8.7
Light pollution (Oil and gas infrastructure; Fishing boats; Vessels [other]; Land-based activities; Onshore and offshore activities; Renewable energy infrastructure; Onshore and offshore mining operations)	✓	Section 8.5

Marine bioregional plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Physical habitat modification (Fishing gear [active and derelict]; Dredging [and/or dredge spoil]; Shipping [anchorage]; Defence/surveillance activities; Telecommunications cables; Offshore construction and installation of infrastructure; Onshore and offshore construction; Offshore mining operations; Ship grounding; Tourism [diving, snorkelling]; Climate change [changes in storm frequency etc.]; Urban/coastal development)	—	
Human presence at sensitive sites (Aquaculture operations; Seismic exploration operations; Tourism; Recreational and charter fishing; Research; Defence/surveillance activities; Aircraft)	—	
Nuisance species (Aquaculture operations)	—	
Extraction of living resources (Commercial fishing [domestic or non-domestic]; Recreational and charter fishing; Illegal, unreported and unregulated fishing [domestic or non-domestic]; Indigenous harvest; Commercial fishing—prey depletion; Commercial, recreational and charter fishing—fisheries discards)	—	
Bycatch (Commercial fishing; Recreational and charter fishing; Illegal, unreported and unregulated fishing [domestic or non-domestic])	—	
Oil pollution (Shipping; Vessels [other]; Oil rigs; Onshore and offshore mining operations)	✓	Section 8.15
Collision with vessels (Shipping; Fishing; Tourism)	—	
Collision/entanglement with infrastructure (Aquaculture infrastructure; Renewable energy infrastructure; Oil and gas infrastructure)	✓	Section 8.10
Disease (Aquaculture operations; Fishing; Shipping; Tourism)	—	
Invasive species (Shipping; Fishing vessels; Vessels [other]; Illegal, unreported and unregulated fishing and illegal immigration vessels; Aquaculture operations; Tourism; Land-based activities)	✓	Section 8.12
Changes in hydrological regimes (Land-based activities; Aquaculture infrastructure; Renewable energy infrastructure; Climate change [e.g. changes in rainfall, storm frequency])	—	
Actions		
Strategy A: Increase collaboration with relevant research organisations to inform and influence research priorities and to increase the uptake of research findings to inform management and administrative decision-making.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy B: Establish and manage a Commonwealth marine reserve network in the NWMR as part of the national representative system of marine protected areas.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	

Marine bioregional plan	Applicability to environmental management of the petroleum activity	Demonstration of how/where requirements are met in this EP
Strategy C: Provide relevant, accessible and evidence-based information to support decision-making with respect to development proposals that come under the jurisdiction of the EPBC Act.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy D: Increase collaboration with relevant industries to improve understanding of the impacts of anthropogenic disturbance and address the cumulative effects on the region's key ecological features and protected species.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy E: Develop targeted collaborative programs to coordinate species recovery and environmental protection efforts across Australian Government, state and territory agencies and coastal communities with responsibilities for the marine environment.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy F: Improve monitoring, evaluation and reporting on ecosystem health in the marine environment.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	
Strategy G: Participate in international efforts to manage conservation values and pressures of regional priority.		
N/A (Not a relevant action area for an offshore petroleum activity).	—	

appendix d EPBC Act protected matters reports

Protected Matters - Print Map - July 27th 2026

Operational Area

1

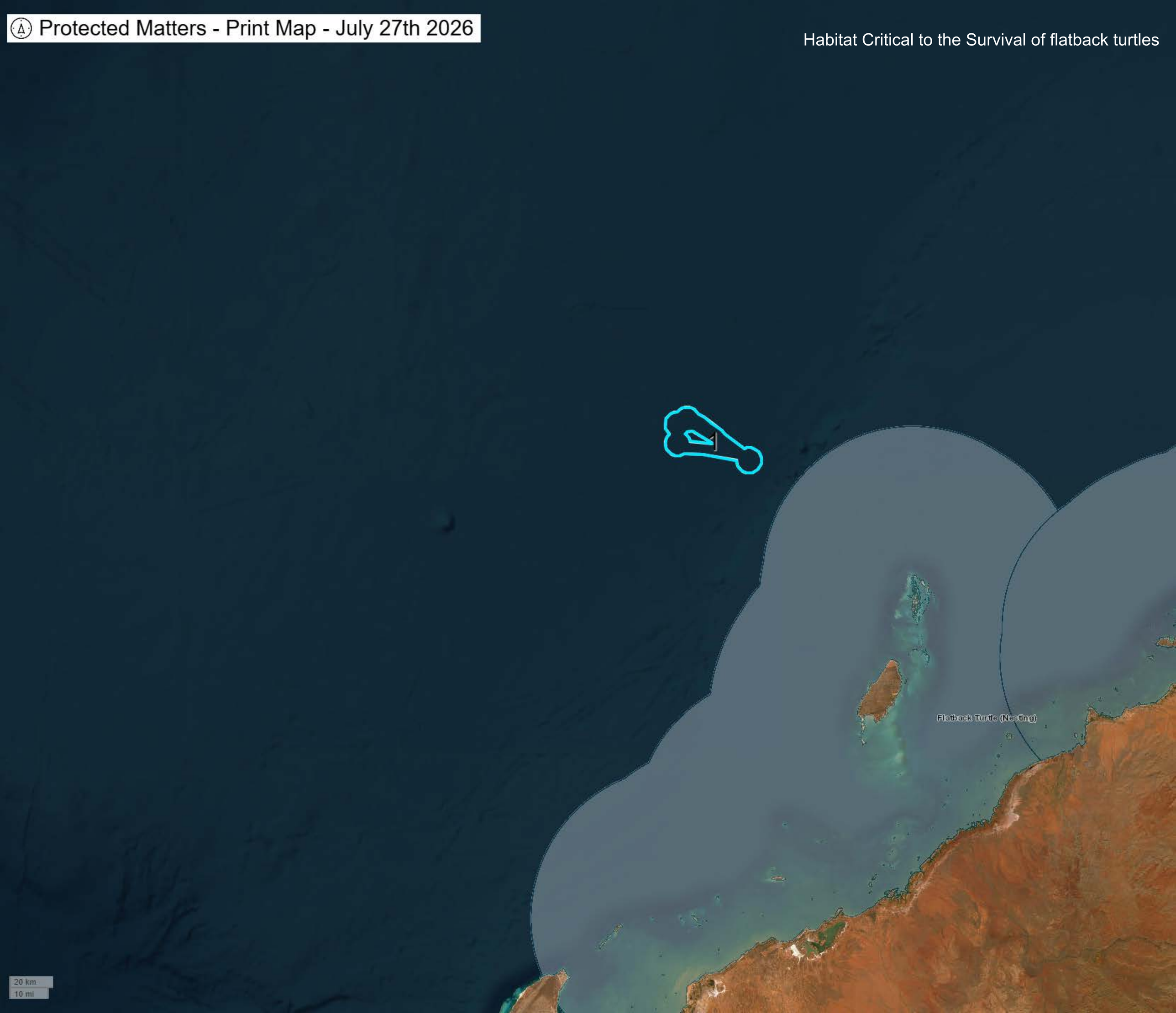
Dampier

Roebourne

20 km
10 mi

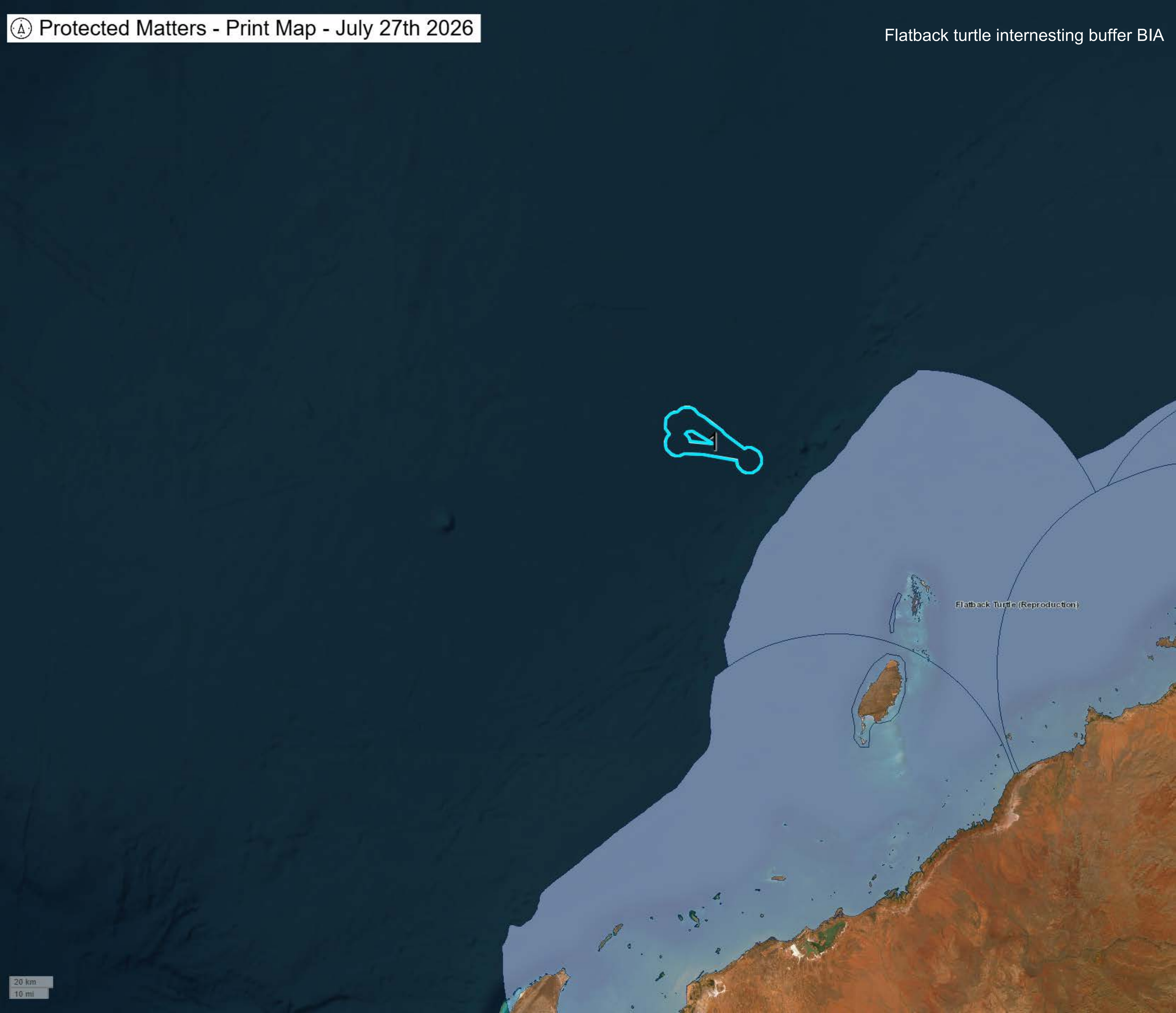
Protected Matters - Print Map - July 27th 2026

Habitat Critical to the Survival of flatback turtles



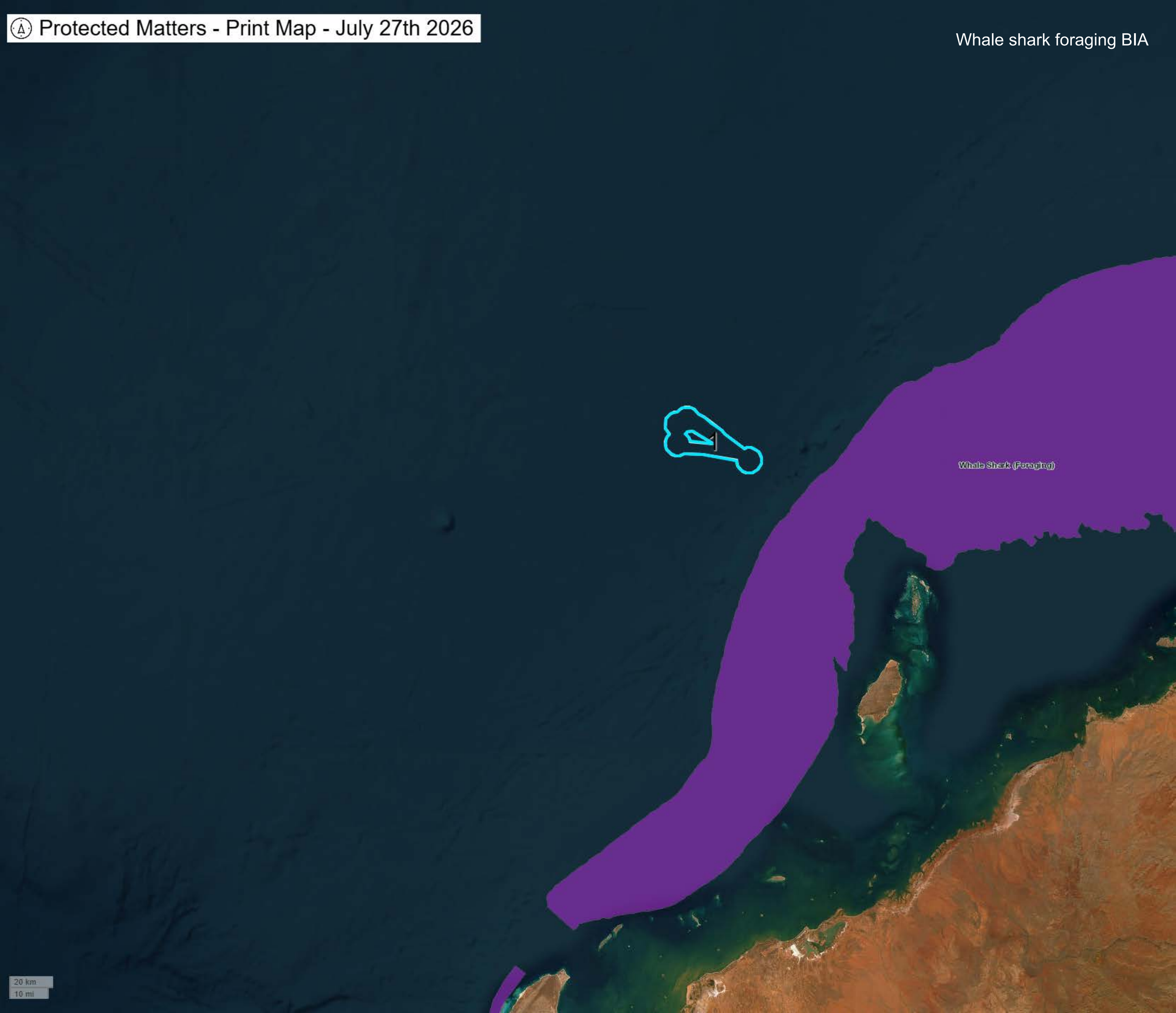
Protected Matters - Print Map - July 27th 2026

Flatback turtle internesting buffer BIA



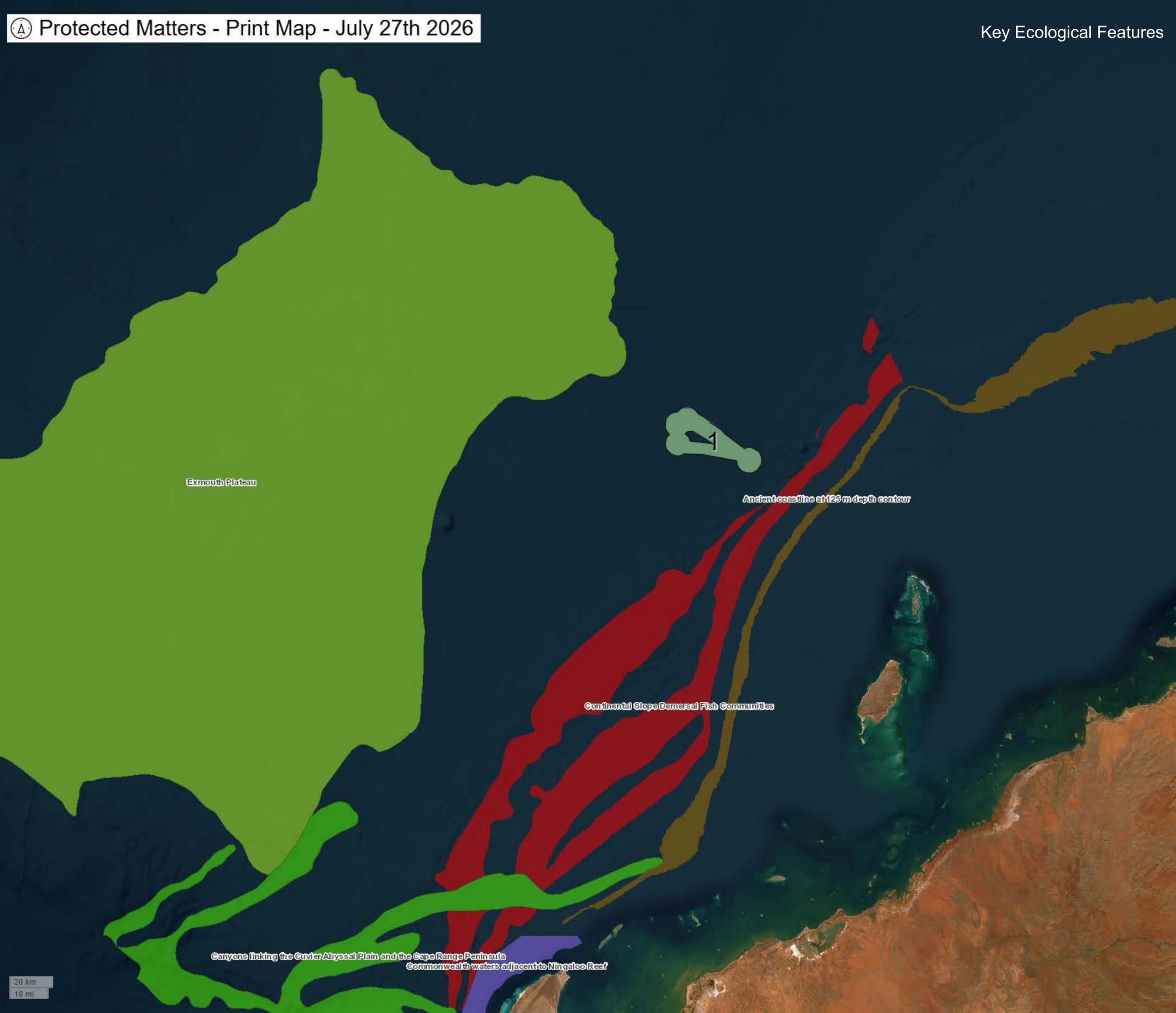
Protected Matters - Print Map - July 27th 2026

Whale shark foraging BIA



Protected Matters - Print Map - July 27th 2026

Key Ecological Features



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: 27-Jul-2026

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

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:	25
Listed Migratory Species:	43

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:	30
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	1

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	25
Key Ecological Features (Marine):	3
Biologically Important Areas:	4
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

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

Feature Name
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat may occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area
Sousa sahulensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
REPTILE		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat may 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 likely to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely 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
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat may occur within area
Calonectris leucomelas		
Streaked Shearwater [1077]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Fregata ariel		
Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area
Macronectes giganteus		
Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Phaethon lepturus		
White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda		
Red-tailed Tropicbird [994]		Species or species habitat may occur within area
Migratory Marine Species		
Anoxypristis cuspidata		
Narrow Sawfish, Knifetooth Sawfish [68448]		Species or species habitat may occur within area
Balaenoptera bonaerensis		
Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera edeni		
Bryde's Whale [35]		Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
Carcharhinus longimanus		
Oceanic Whitetip Shark [84108]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Carcharias taurus Grey Nurse Shark [64469]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Species or species habitat known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	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 likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat likely to occur within area
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		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
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Fish		
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 Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
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 taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		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

Scientific Name	Threatened Category	Presence Text
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
Idiotropiscis larsonae as Acentronura larsonae Helen's Pygmy Pipehorse [74959]		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

Scientific Name	Threatened Category	Presence Text
Trachyrhamphus bicoarctatus Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area
Trachyrhamphus longirostris Straightstick Pipefish, Long-nosed Pipefish, Straight Stick Pipefish [66281]		Species or species habitat may occur within area
Reptile		
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat likely to occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area
Balaenoptera borealis Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[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 omurai](#) Omura's Whale [87136]		Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Delphinus delphis](#) Common 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]		Species or species habitat known to occur within area
Mesoplodon densirostris Blainville's Beaked Whale, Dense-beaked Whale [74]		Species or species habitat may occur within area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	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]	Vulnerable	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

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 may occur within area
Tursiops aduncus (Arafura/Timor Sea populations) Spotted Bottlenose Dolphin (Arafura/Timor Sea populations) [78900]		Species or species habitat may occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area
Ziphius cavirostris Cuvier's Beaked Whale, Goose-beaked Whale [56]		Species or species habitat may occur within area

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Gorgon Gas Development	2003/1294		Post-Approval
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

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Develop Jansz-Io deepwater gas field in Permit Areas WA-18-R, WA-25-R and WA-26-	2005/2184	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Pluto Gas Project	2005/2258	Controlled Action	Completed
Pluto Gas Project Including Site B	2006/2968	Controlled Action	Post-Approval
Not controlled action			
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	Not Controlled Action	Completed
Jansz-2 and 3 Appraisal Wells	2002/754	Not Controlled Action	Completed
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
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
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		(Particular Manner)	
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
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
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 [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Natator depressus		
Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		

Scientific Name	Behaviour	Presence
Ardenna pacifica		
Wedge-tailed Shearwater [84292]	Reproduction	Known to occur
Sharks		
Rhincodon typus		
Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda		
Pygmy Blue Whale [81317]	Migration	Known to occur

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 is 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 on the contents of this report.

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 point locations and environmental data layers.

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 when time permits.

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 breeding sites; and
- 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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Protected Matters - Print Map - July 27th 2026

Hydrocarbon EMBA

1

2

Dampier

20 km
10 mi

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: 27-Jul-2026

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	2
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	37
Listed Migratory Species:	60

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	95
Whales and Other Cetaceans:	31
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	2
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:	118
Key Ecological Features (Marine):	4
Biologically Important Areas:	14
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Commonwealth Marine Area [Resource Information]

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

Feature Name
Commonwealth Marine Areas (EPBC Act)
Commonwealth Marine Areas (EPBC Act)

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text
BIRD		
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Russkoye Bar-tailed Godwit [86432]	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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Papasula abbotti		
Abbott's Booby [59297]	Endangered	Species or species habitat may occur within area
Phaethon lepturus fulvus		
Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda westralis		
Red-tailed Tropicbird (Indian Ocean), Indian Ocean Red-tailed Tropicbird [91824]	Endangered	Species or species habitat likely to occur within area
Pterodroma mollis		
Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Sternula albifrons		
Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis nereis		
Australian Fairy Tern [82950]	Vulnerable	Breeding likely to occur within area
Thalassarche carteri		
Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
MAMMAL		
Balaenoptera borealis		
Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
Balaenoptera musculus		
Blue Whale [36]	Endangered	Migration route known to occur within area
Balaenoptera physalus		
Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Bettongia lesueur Barrow and Boodie Islands subspecies		
Boodie, Burrowing Bettong (Barrow and Boodie Islands) [88021]	Vulnerable	Translocated population known to occur within area
Eubalaena australis		
Southern Right Whale [40]	Endangered	Species or species habitat may occur within area
Isoodon auratus barrowensis		
Golden Bandicoot (Barrow Island) [66666]	Vulnerable	Translocated population known to occur within area
Lagorchestes conspicillatus conspicillatus		
Spectacled Hare-wallaby (Barrow Island) [66661]	Vulnerable	Translocated population known to occur within area
Orcaella heinsohni		
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Sousa sahulensis		
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat likely to occur within area
REPTILE		
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus foliosquama		
Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area
SHARK		
Carcharias taurus (west coast population)		
Grey Nurse Shark (west coast population) [68752]	Vulnerable	Species or species habitat likely to occur within area
Carcharodon carcharias		
White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat may occur within area
Pristis clavata		
Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat likely to occur within area
Pristis pristis		
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron		
Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat likely to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely 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
null		
Balaenoptera omurai		
Omura's Whale [87136]		Species or species habitat likely to occur within area
Migratory Marine Birds		
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may occur within area
Ardenna pacifica Wedge-tailed Shearwater [84292]		Breeding 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
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat may occur within area
Hydroprogne caspia Caspian Tern [808]		Breeding likely 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 likely to occur within area
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area
Sterna dougallii Roseate Tern [817]		Breeding likely to occur within area
Sternula albifrons Little Tern [82849]	Vulnerable	Species or species habitat may 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
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
Carcharias taurus Grey Nurse Shark [64469]		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	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Dugong dugon Dugong [28]		Species or species habitat likely to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area
Eubalaena australis as Balaena glacialis australis Southern Right Whale [40]	Endangered	Species or species habitat may occur within area
Isurus oxyrinchus Shortfin Mako, Mako Shark [79073]		Species or species habitat likely to occur within area
Isurus paucus Longfin Mako [82947]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]		Breeding known to occur within area
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat likely to occur within area
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat likely to occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pristis clavata Dwarf Sawfish, Queensland Sawfish [68447]	Vulnerable	Species or species habitat likely to occur within area
Pristis pristis Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat likely to occur within area
Pristis zijsron Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Species or species habitat likely to occur within area
Rhincodon typus Whale Shark [66680]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Sousa sahulensis as Sousa chinensis Australian Humpback Dolphin [87942]	Vulnerable	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

Scientific Name	Threatened Category	Presence Text
[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]	Vulnerable	Species or species habitat may occur within area
[Calidris canutus](#) Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area
[Charadrius veredus](#) Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
[Glareola maldivarum](#) Oriental Pratincole [840]		Species or species habitat may occur within area
[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 likely to occur within area
[Pandion haliaetus](#) Osprey [952]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Thalasseus bergii		
Greater Crested Tern [83000]		Breeding likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat likely to occur within area
Anous stolidus		
Common Noddy [825]		Species or species habitat likely to occur within area
Ardenna carneipes as Puffinus carneipes		
Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Species or species habitat may occur within area
Ardenna pacifica as Puffinus pacificus		
Wedge-tailed Shearwater [84292]		Breeding likely to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area
Calidris canutus		
Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely 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
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 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
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 likely to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area
Hydroprogne caspia as Sterna caspia Caspian Tern [808]		Breeding likely to occur within 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
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 likely to occur within area
Onychoprion anaethetus as Sterna anaethetus Bridled Tern [82845]		Breeding likely to occur within area
Onychoprion fuscatus as Sterna fuscata Sooty Tern [90682]		Breeding likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may 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 may occur within area
Phaethon lepturus fulvus Christmas Island White-tailed Tropicbird, Golden Bosunbird [26021]	Endangered	Species or species habitat may occur within area
Phaethon rubricauda Red-tailed Tropicbird [994]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	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]		Breeding likely to occur within area
Sternula albifrons as Sterna albifrons Little Tern [82849]	Vulnerable	Species or species habitat may occur within area
Sternula nereis as Sterna nereis Fairy Tern [82949]		Breeding likely to occur within area
Thalassarche carteri Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
Thalasseus bengalensis as Sterna bengalensis Lesser Crested Tern [66546]		Breeding likely to occur within area
Thalasseus bergii as Sterna bergii Greater Crested Tern [83000]		Breeding likely to occur within area
Fish		
Bulbonaricus brauni Braun's Pughead Pipefish, Pug-headed Pipefish [66189]		Species or species habitat may occur within area
Campichthys tricarinatus Three-keel Pipefish [66192]		Species or species habitat may occur within area
Choeroichthys brachysoma Pacific Short-bodied Pipefish, Short-bodied Pipefish [66194]		Species or species habitat may occur within area
Choeroichthys latispinosus Muiron Island Pipefish [66196]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Choeroichthys suillus Pig-snouted Pipefish [66198]		Species or species habitat may occur within area
Corythoichthys flavofasciatus Yellow-banded Pipefish [66200]		Species or species habitat may occur within area
Cosmocampus banneri Roughridge Pipefish [66206]		Species or species habitat may occur within area
Doryrhamphus dactyliophorus Banded Pipefish, Ringed Pipefish [66210]		Species or species habitat may occur within area
Doryrhamphus excisus Bluestripe Pipefish, Indian Blue-stripe Pipefish, Pacific Blue-stripe Pipefish [66211]		Species or species habitat may occur within area
Doryrhamphus janssi Cleaner Pipefish, Janss' Pipefish [66212]		Species or species habitat may occur within area
Doryrhamphus multiannulatus Many-banded Pipefish [66717]		Species or species habitat may occur within area
Doryrhamphus negrosensis Flagtail Pipefish, Masthead Island Pipefish [66213]		Species or species habitat may occur within area
Festucalex scalaris Ladder Pipefish [66216]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Halicampus brocki Brock's Pipefish [66219]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Halicampus grayi Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
Halicampus nitidus Glittering Pipefish [66224]		Species or species habitat may occur within area
Halicampus spinirostris Spiny-snout Pipefish [66225]		Species or species habitat may occur within area
Haliichthys taeniophora as Haliichthys taeniophorus Ribboned Pipehorse, Ribboned Pipefish, Ribboned Seadragon [94706]		Species or species habitat may occur within area
Hippichthys penicillus Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
Hippocampus angustus Western Spiny Seahorse, Narrow-bellied Seahorse [66234]		Species or species habitat may occur within area
Hippocampus histrix Spiny Seahorse, Thorny Seahorse [66236]		Species or species habitat may occur within area
Hippocampus kuda Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
Hippocampus planifrons Flat-face Seahorse [66238]		Species or species habitat may occur within area
Hippocampus spinosissimus Hedgehog Seahorse [66239]		Species or species habitat may occur within area
Hippocampus trimaculatus Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Idiotropiscis larsonae as Acentronura larsonae		
Helen's Pygmy Pipehorse [74959]		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 likely to occur within area
Reptile		
Aipysurus apraefrontalis		
Short-nosed Sea Snake, Short-nosed Seasnake [1115]	Critically Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Aipysurus duboisii Dubois' Sea Snake, Dubois' Seasnake, Reef Shallows Sea Snake [1116]		Species or species habitat may occur within area
Aipysurus foliosquama Leaf-scaled Sea Snake, Leaf-scaled Seasnake [1118]	Critically Endangered	Species or species habitat likely to occur within area
Aipysurus laevis Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
Aipysurus mosaicus as Aipysurus eydouxii Mosaic Sea Snake [87261]		Species or species habitat may occur within area
Aipysurus tenuis Brown-lined Sea Snake, Mjoberg's Sea Snake [1121]		Species or species habitat may occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Breeding likely to occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat may occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Emydocephalus annulatus Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
Ephalophis greyae as Ephalophis greyi Mangrove Sea Snake [93738]		Species or species habitat may occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Breeding likely to occur within area

Scientific Name	Threatened Category	Presence Text
Hydrophis czeblukovi Fine-spined Sea Snake [59233]		Species or species habitat may occur within area
Hydrophis elegans Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
Hydrophis kingii as Disteira kingii Spectacled Sea Snake [93511]		Species or species habitat may occur within area
Hydrophis major as Disteira major Olive-headed Sea Snake [93512]		Species or species habitat may occur within area
Hydrophis ornatus Spotted Sea Snake, Ornate Reef Sea Snake [1111]		Species or species habitat may occur within area
Hydrophis peronii as Acalyptophis peronii Horned Sea Snake [93509]		Species or species habitat may occur within area
Hydrophis platura as Pelamis platurus Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area
Hydrophis stokesii as Astrotia stokesii Stokes' Sea Snake [93510]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Breeding likely to occur within area

Whales and Other Cetaceans		[Resource Information]
Current Scientific Name	Status	Type of Presence
Mammal		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera bonaerensis Antarctic Minke Whale, Dark-shoulder Minke Whale [67812]		Species or species habitat likely to occur within area

Current Scientific Name	Status	Type of Presence
[Balaenoptera borealis](#) Sei Whale [34]	Vulnerable	Species or species habitat likely to occur within area
[Balaenoptera edeni](#) Bryde's Whale [35]		Species or species habitat likely to occur within area
[Balaenoptera musculus](#) Blue Whale [36]	Endangered	Migration route known to occur within area
[Balaenoptera omurai](#) Omura's Whale [87136]		Species or species habitat likely to occur within area
[Balaenoptera physalus](#) Fin Whale [37]	Vulnerable	Species or species habitat likely to occur within area
[Delphinus delphis](#) Common 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 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

Current Scientific Name	Status	Type of Presence
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]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Peponocephala electra Melon-headed Whale [47]		Species or species habitat may occur within area
Physeter macrocephalus Sperm Whale [59]		Species or species habitat may occur within area
Pseudorca crassidens False Killer Whale [48]		Species or species habitat likely to occur within area
Sousa sahulensis Australian Humpback Dolphin [87942]	Vulnerable	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

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

Habitat Critical to the Survival of Marine Turtles		[Resource Information]
Scientific Name	Behaviour	Presence
All year (Jun - Aug)		
Natator depressus Flatback Turtle [59257]	Nesting	Known to occur
Oct - Feb		
Eretmochelys imbricata Hawksbill Turtle [1766]	Nesting	Known to occur

Scientific Name	Behaviour	Presence
Oct - Mar		
Chelonia mydas		
Green Turtle [1765]	Nesting	Known to occur

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Montebello Islands	Conservation Park	WA
Montebello Islands	Conservation Park	WA
Montebello Islands	Marine Park	WA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Babylon 3D Marine Seismic Survey, Commonwealth Waters, nr Exmouth WA	2013/7081		Completed
DAVROS MC 3D marine seismic survey northwaet of Dampier, WA	2013/7092		Completed
Deep Water Northwest Shelf 2D Seismic Survey	2007/3260		Completed
Gorgon Gas Development	2003/1294		Post-Approval
Project Highclere Cable Lay and Operation	2022/09203		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 Coniston/Novara fields within the Exmouth Sub-	2011/5995	Controlled Action	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
basin			
Development of Stybarrow petroleum field incl drilling and facility installation	2004/1469	Controlled Action	Post-Approval
Echo-Yodel Production Wells	2000/11	Controlled Action	Post-Approval
Enfield full field development	2001/257	Controlled Action	Post-Approval
Equus Gas Fields Development Project, Carnarvon Basin	2012/6301	Controlled Action	Completed
Gorgon Gas Development 4th Train Proposal	2011/5942	Controlled Action	Post-Approval
Greater Enfield (Vincent) Development	2005/2110	Controlled Action	Post-Approval
Light Crude Oil Production	2001/365	Controlled Action	Post-Approval
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
The Scarborough Project - FLNG & assoc subsea infrastructure, Carnarvon Basin	2013/6811	Controlled Action	Post-Approval
Vincent Appraisal Well	2000/22	Controlled Action	Post-Approval
Not controlled action			
'Van Gogh' Oil Appraisal Drilling Program, Exploration Permit Area WA-155-P(1)	2006/3148	Not Controlled Action	Completed
Bollinger 2D Seismic Survey 200km North of North West Cape WA	2004/1868	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	2004/1703	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
connecting pipeline to Varanus Island for			
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
Echo A Development WA-23-L, WA-24-L	2005/2042	Not Controlled Action	Completed
Exploration drilling well WA-155-P(1)	2003/971	Not Controlled Action	Completed
Exploration of appraisal wells	2006/3065	Not Controlled Action	Completed
Exploration Well 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
HCA05X Macedon Experimental Survey	2004/1926	Not Controlled Action	Completed
Hess Exploration Drilling Programme	2007/3566	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
Project Highclere Geophysical Survey	2021/9023	Not Controlled Action	Completed
Subsea Gas Pipeline From Stybarrow Field to Griffin Venture Gas Export Pipeline	2005/2033	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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
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
3D marine seismic survey	2008/4281	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 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

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Balnaves Condensate Field Development	2011/6188	Not Controlled Action (Particular Manner)	Post-Approval
Bonaventure 3D seismic survey	2006/2514	Not Controlled Action (Particular Manner)	Post-Approval
Cable Seismic Exploration Permit areas WA-323-P and WA-330-P	2008/4227	Not Controlled Action (Particular Manner)	Post-Approval
CGGVERITAS 2010 2D Seismic Survey	2010/5714	Not Controlled Action (Particular Manner)	Post-Approval
Charon 3D Marine Seismic Survey	2007/3477	Not Controlled Action (Particular Manner)	Post-Approval
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
Deep Water Drilling Program	2010/5532	Not Controlled Action (Particular Manner)	Post-Approval
Demeter 3D Seismic Survey, off Dampier, WA	2002/900	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Draeck 3D Marine Seismic Survey, WA-205-P	2006/3067	Not Controlled Action (Particular Manner)	Post-Approval
Drilling 35-40 offshore exploration wells in deep water	2008/4461	Not Controlled Action (Particular Manner)	Post-Approval
Eendracht Multi-Client 3D Marine Seismic Survey	2009/4749	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M3 & Vincent 4D Marine Seismic Surveys	2008/3981	Not Controlled Action (Particular Manner)	Completed
Enfield M3 4D, Vincent 4D & 4D Line Test Marine Seismic Surveys	2008/4122	Not Controlled Action (Particular Manner)	Post-Approval
Enfield M4 4D Marine Seismic Survey	2008/4558	Not Controlled Action (Particular Manner)	Post-Approval
Enfield oilfield 3D Seismic Survey	2006/3132	Not Controlled Action (Particular Manner)	Post-Approval
Exmouth West 2D Marine Seismic Survey	2008/4132	Not Controlled Action (Particular Manner)	Post-Approval
Exploration drilling of Zeus-1 well	2008/4351	Not Controlled Action (Particular Manner)	Post-Approval
Foxhound 3D Non-Exclusive Marine Seismic Survey	2009/4703	Not Controlled Action (Particular Manner)	Post-Approval
Geco Eagle 3D Marine Seismic Survey	2008/3958	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
Glencoe 3D Marine Seismic Survey WA-390-P	2007/3684	Not Controlled Action (Particular Manner)	Post-Approval
Greater Western Flank Phase 1 gas Development	2011/5980	Not Controlled Action (Particular Manner)	Post-Approval
Harmony 3D Marine Seismic Survey	2012/6699	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
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
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
Lion 2D Marine Seismic Survey	2007/3777	Not Controlled Action (Particular Manner)	Post-Approval
Moosehead 2D seismic survey within permit WA-192-P	2005/2167	Not Controlled Action (Particular	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
		Manner)	
Munmorah 2D seismic survey within permits WA-308/9-P	2003/970	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Program, WA-264-P	2007/3844	Not Controlled Action (Particular Manner)	Post-Approval
Ocean Bottom Cable Seismic Survey	2005/2017	Not Controlled Action (Particular Manner)	Post-Approval
Orcus 3D Marine Seismic Survey in WA-450-P	2010/5723	Not Controlled Action (Particular Manner)	Post-Approval
Osprey and Dionysus Marine Seismic Survey	2011/6215	Not Controlled Action (Particular Manner)	Post-Approval
Pomodoro 3D Marine Seismic Survey in WA-426-P and WA-427-P	2010/5472	Not Controlled Action (Particular Manner)	Post-Approval
Pyrenees-Macedon 3D marine seismic survey	2005/2325	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
Santos Winchester three dimensional seismic survey - WA-323-P & WA-330-P	2011/6107	Not Controlled Action (Particular Manner)	Post-Approval
Sovereign 3D Marine Seismic Survey	2011/5861	Not Controlled Action (Particular Manner)	Post-Approval

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action (particular manner)			
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
Triton 3D Marine Seismic Survey, WA-2-R and WA-3-R	2006/2609	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 Manner)	Post-Approval
Referral decision			
3D Seismic Survey	2008/4219	Referral Decision	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Referral decision			
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

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
Continental Slope Demersal Fish Communities	North-west
Exmouth Plateau	North-west

Biologically Important Areas [Resource Information]

Scientific Name	Behaviour	Presence
Marine Turtles		
Caretta caretta Loggerhead Turtle [1763]	Reproduction	Low density
Chelonia mydas Green Turtle [1765]	Foraging	Known to occur
Chelonia mydas Green Turtle [1765]	Reproduction	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Foraging	Likely to occur
Eretmochelys imbricata Hawksbill Turtle [1766]	Reproduction	Known to occur

Scientific Name	Behaviour	Presence
Natator depressus Flatback Turtle [59257]	Foraging	Known to occur
Natator depressus Flatback Turtle [59257]	Reproduction	Known to occur
Seabirds		
Ardenna pacifica Wedge-tailed Shearwater [84292]	Reproduction	Known to occur
Sterna dougallii Roseate Tern [817]	Reproduction	Known to occur
Sternula nereis Fairy Tern [82949]	Reproduction	Known to occur
Thalasseus bengalensis Lesser Crested Tern [66546]	Reproduction	Known to occur
Sharks		
Rhincodon typus Whale Shark [66680]	Foraging	Known to occur
Whales		
Balaenoptera musculus brevicauda Pygmy Blue Whale [81317]	Migration	Known to occur
Megaptera novaeangliae Humpback Whale [38]	Migration	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 is 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 on the contents of this report.

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 point locations and environmental data layers.

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 when time permits.

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 breeding sites; and
- 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 e Consultation summary

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1.1 Regulation 25(1)(a)—each Commonwealth, State or Northern Territory agency or authority to which the activities to be carried out under the EP, or the revision of the EP, may be relevant

1.1.1 Commonwealth Departments or Agencies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Australian Border Force (ABF)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ABF on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • ABF has not raised any objections or claims relating to the activity. • CAPL has provided ABF with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Australian Communications and Media Authority (ACMA)	06/05/2026	003369	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided ACMA with additional information, including information regarding the presence of submarine cables.	No objection or claim raised		
	07/05/2026	003391	Email	ACMA replied and confirmed no comments in relation to the EP. ACMA recommended consulting with Telstra and Vocus.	ACMA recommended consulting with Telstra and Vocus.	**Claim has merit:** The input raised by ACMA is relevant and appliable to the EP.	No change made to the EP. Telstra and Vocus were engaged with for this EP.
	11/05/2026	003381	Email	CAPL thanked ACMA for their response and confirmed Telstra and Vocus were engaged with.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ACMA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • ACMA has not raised any objections or claims relating to the activity. However, ACMA did raise potential Relevant Persons in the area. The suggested Relevant Persons were already engaged with. • CAPL has provided ACMA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Australian Fisheries Management Authority (AFMA)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	11/05/2026	003418	Email	AFMA replied and confirmed they had no direct comments on the EP. AFMA requested to be included in any future consultation on this EP. AFMA encouraged consulting with Commonwealth fishing operators, including Commonwealth Fisheries Association (CFA), Tuna Australia and Australian Southern Bluefin Tuna Fishery Industry Association (ASBTIA).	AFMA requested inclusion in future consultation for the EP. AFMA encouraged CAPL to engage with CFA, Tuna Australia and ASBTIA.	**Claims have merit**: As a Relevant Person, the request for ongoing engagement is considered fair and reasonable. CAPL acknowledge the potential Relevant Persons AFMA has raised for consideration.	Table 10-5 was updated to include ongoing engagement with AFMA. CAPL engaged with CFA, Tuna Australia and ASBTIA as Relevant Persons for this EP.
	20/05/2026	003553	Email	CAPL thanked AFMA for their review and confirmed contact with the raised operators.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AFMA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • AFMA has not raised any objections or claims relating to the activity. AFMA requested ongoing engagement and raised potential Relevant Persons. Ongoing engagement is captured within the EP, and the raised potential Relevant Persons were engaged with. • CAPL has provided ACMA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Australian Hydrographic Office (AHO)	06/05/2026	003368	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided AHO with additional information, including confirming awareness of the Notices to Mariners requirement.	No objection or claim raised		
	07/05/2026-11/05/2026	003382	Email	AHO provided a response to launch and confirmed no concerns with the proposed activities, and that further updates were only when activity is due to begin. CAPL thanked AHO for their response.	AHO raised commencement notifications.	**Claim has merit:** The input raised by AHO is relevant and appliable to the EP.	No change made to the EP. Commencement notification requirements to AHO are already captured within Table 10-5 of the EP.
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AHO 6 May 2026 via email advising they had been identified			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • AHO has not raised any objections or claims relating to the activity. AHO raised notification requirements, which are captured within the EP. • CAPL has provided AHO with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Australian Maritime Safety Authority (AMSA)	06/05/2026	003370	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided AHO with additional information in regard to fairways, notification requirements and physical presence control measures.	No objection or claim raised		
	20/05/2026	003551	Email	AMSA requested an extension to respond to the EP. CAPL granted the extension.	AMSA requested an extension to respond to the EP.	**Claim has merit:** CAPL acknowledge AMSA's extension request.	No change made to the EP. CAPL provided an extension to the 27 May 2026.
	28/05/2026-03/06/2026	003480	Email	AMSA noted that the activity appeared to overlap an established shipping fairway. AMSA requested further information regarding: • Activity scope and sequencing • Risk mitigation measures regarding navigation safety and vessel traffic. AMSA requested a meeting to discuss these matters.	AMSA requested further information and requested a meeting.	**Claim has merit:** CAPL acknowledge AMSA's request for further	No change made to the EP. CAPL met with AMSA and provided further information on the raised matters (Record ID 003612).

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL thanked AMSA for their response and confirmed availability to meet. CAPL proposed meeting dates and times for consideration.		information and meeting.	
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	15/06/2026-16/06/2026	003612	Virtual meeting and email	CAPL met with AMSA to consult on the EP. CAPL provided a presentation to address AMSA's request for further information and provided clarification regarding: • Activity scope and sequencing • Risk mitigation measures regarding navigation safety and vessel traffic. AMSA requested specific information regarding: • time spent in the Shipping Fairway which intersects with the OA. • the AHO notification/notice to mariners during installation. CAPL responded to all questions raised by AMSA, which was accepted and no changes are required in the EP. AMSA emailed following the meeting to request a copy of the presentation slides. CAPL replied and provided the requested slides and confirmed the notice period to AHO of at least 4 weeks.	AMSA requested clarification and a copy of meeting presentation slides.	**Claim has merit:** CAPL acknowledge AMSA's request for clarification and a copy of meeting presentation slides.	No change made to the EP. CAPL responded to all questions raised by AMSA, and provided confirmation via follow up email. CAPL provided the requested slides.
	25/06/2026-16/07/2026	003654	Email	AMSA thanked CAPL for consultation regarding the EP and provided further response. AMSA noted that the OA intersects with a shipping fairway recommended further measures be incorporated into planning and execution including: • evaluating and implementing adequate control measures, including anti-collision measures • pre-operational notifications to AHO for notice to mariners and AMSA's Joint Rescue Coordination Centre (JRCC). CAPL provided a response and addressed all points raised by AMSA. CAPL provided further information regarding the control measures included within the EP,	AMSA recommended: • evaluating and implementing adequate control measures, including anti-collision measures • pre-operational notifications	**Claims have merit:** The input raised is relevant to the activity.	CAPL provided a response to AMSA and addressed all points raised, including (where relevant) a summary of the equivalent CAPL control measures included within the EP. The physical presence of vessels is risk assessed in Section 8.1 and includes control measures relevant to this aspect. Vessel collision is risk assessed in Section 8.15

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				and confirmed that notification to AHO and AMSA is included within the EP.			and includes control measures relevant to this aspect. Both Section 8.1 and 8.15 were updated to include a cost-benefit ALARP assessment to consider additional control measures raised by AMSA. For both aspects, the 'ALARP decision context justification' (Section 8.1.2.2 and 8.15.4.2 respectively) and 'External context' (within 'Demonstration of acceptability') (Section 8.1.3 and 8.15.5 respectively) has been updated. Commencement notification requirements to AHO and AMSA's JRCC are already captured within Table 10-5 of the EP.
				Summary: • CAPL commenced consultation with AMSA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • AMSA requested further information, which was provided by CAPL. AMSA raised anti-collision control measures and notification requirements, which were considered and addressed by CAPL. • CAPL has provided AMSA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Clean Energy Regulator (CER)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	07/05/2026-11/05/2026	003384	Email	CER thanked CAPL for the provided information and confirmed that CER have no feedback and does not require further conversation on the matter. CER offered the standard advice that CAPL must report facility emission, energy consumption and energy production. CAPL replied and thanked CER for their response.	CER offered the standard advice that CAPL must report facility emission, energy consumption and energy production.	**Claim has merit:** CAPL acknowledge the advice from CER and the relevance of both the NGER and Safeguard Mechanism schemes.	No change made to the EP The requirements relating to GHG emissions reporting are captured in the NGER and Safeguard Mechanism control measure in Section 8.4.
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CER on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • CER has not raised any objections or claims relating to the activity. CER provided input which are addressed within the EP. • CAPL has provided CER with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Department of Agriculture, Fisheries and Forestry (DAFF)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DAFF on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DAFF has not raised any objections or claims relating to the activity. • CAPL has provided DAFF with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Department of Climate Change, Energy, the	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Environment and Water (DCCEEW)				and provided an information sheet and a link to CAPLs consultation webpage.			
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DCCEEW on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DCCEEW has not raised any objections or claims relating to the activity. • CAPL has provided DCCEEW with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Director of National Parks (DNP) (DCCEEW)	06/05/2026	003374	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided DNP with additional information in regard to AMPs, emergency scenarios and notifications.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	21/05/2026	003438	Email	CAPL sent follow up email requesting feedback on the EP information. DNP replied and confirmed receipt of information. CAPL thanked DNP for their response.	No objection or claim raised		
	09/06/2026	003498	Email	DNP replied and requested information regarding activity location in relation to Australian Marine Parks (AMPs). CAPL replied and confirmed that this was provided in the initial email (Record ID: 003374) and outlined the activity location in relation to AMPs again. DNP thanked CAPL for this information.	No objection or claim raised		
	12/06/2026-17/06/2026	003545	Email	DNP provided a response and confirmed no authorisation requirements from the DNP. DNP suggested the consideration of: • NOPSEMA and DNP 'Petroleum activities and Australian Marine Parks' guidance note • Australian marine park values, as identified in North-west Marine Parks Network Management Plan 2018 • Noted activity description should adequately include all planned activities • Emergency response requirements notification requirements. DNP confirmed that no further engagement regarding this activity was required activity changes or for emergency responses. CAPL thanked DNP for their response, noting no further notification unless activity details change or for emergency responses.	DNP raised the following: • Guidance note and management plan for consideration • Inclusion of activity description • notification requirements.	**Claims have merit:** The advice provided by DNP is relevant and applicable to the EP.	No change made to the EP. The raised guidance note and management plan have been considered during EP development. The relevant marine parks and their values are already included and considered as a receptor within the EP. Section 4 of the EP includes a description of the activities within the scope of this EP. The notification requirements in a spill event are included in Section 10.4.2. CAPL provided a response to DNP and thanked them for their advice.
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DNP on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DNP has not raised any objections or claims relating to the activity. DNP raised guidance note and AMP management plan for consideration, noted the requirement for activity description and noted DNP notification requirements. These requirements are addressed within the EP. • CAPL has provided DNP with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Department of Defence (DoD)	06/05/2026	003371	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided DoD with additional information in regard to unexploded ordnance, North West Exercise Area and restricted airspace, Notices to Mariners.	No objection or claim raised		
	21/05/2026	003425	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DoD on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				and provided a link to their website for further information regarding the activity. • DoD has not raised any objections or claims relating to the activity. • CAPL has provided DoD with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Department of Industry, Science and Resources (DISR)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DISR on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DISR has not raised any objections or claims relating to the activity. • CAPL has provided DISR with sufficient information and a reasonable period in accordance			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
National Offshore Petroleum Titles Administrator (NOPTA)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with NOPTA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • NOPTA has not raised any objections or claims relating to the activity. • CAPL has provided NOPTA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

1.1.2 State Departments or Agencies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Department of Biodiversity, Conservation and Attractions (DBCA)	06/05/2026	003372	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided DBCA with additional information in regard to State Marine Parks and Spill Response Preparedness.	No objection or claim raised		
	21/05/2026	003424	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	04/06/2026-09/06/2026	003495	Email	DBCA provided a response to the launch email, noting that the EMBA overlaps with: • conservation significant species and important habitat and nesting area • Montebello Islands Marine Park (M 9) and Montebello Islands Conservation Park (R 42196) DBCA has advised the need for comprehensive baseline information. DBCA raised the appropriate identification and assessment of cumulative impacts to environmental values within the EMBA, DBCA recommends referring to DCCEEW's 'National Light Pollution Guidelines for Wildlife'. In the event of a hydrocarbon release, DBCA request the DBCA Karratha regional office be notified. DBCA raised DoT's web content regarding marine pollution and the Offshore Petroleum Industry Guidance Note of July 2020 'Marine Oil Pollution: Response and Consultation Arrangements' for consideration.	DBCA raised several factors for consideration, including: • Conservation significant species and important habitat and nesting area • Marine parks • Inclusion of baseline information • Cumulative impacts • DCCEEW's 'National Light Pollution Guidelines for Wildlife'	**Claims have merit:** The factors raised for consideration are relevant to the activity.	Listed threatened or migratory species, important habitat and nesting areas area within the EMBA are identified within Section 5.3.3. State Marine Parks are listed within Section 5.5.2. The EMBA occurs offshore and does not have any interface with shoreline, therefore, overlap with Montebello Islands Conservation Park is not expected and has not been included in the EP. Potential cumulative environmental impacts and risks associated with planned activities are described and evaluated

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL thanked DBCA for their feedback and acknowledged the input received.	• spill notification • DOT marine pollution web content and guidance note.		within Section 8 the EP, where applicable. Table 10-5 was updated to include notification to DBCA Karratha regional office in the event of an unplanned release. CAPL acknowledge the information provided by DBCA. The 'National Light Pollution Guidelines for Wildlife' and 'Marine Oil Pollution: Response and Consultation Arrangements' Guidance Note are considered within the EP. CAPL replied to DBCA and acknowledged the advice provided, and confirmed consideration of input within the EP.
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DBCA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DBCA has not raised any objections or claims relating to the activity. DBCA raised multiple factors for consideration, including conservation significant species and areas, marine parks, baseline information, cumulative impacts, spill notification and guidance sources. These requirements are addressed within the EP. • CAPL has provided DBCA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Department of Energy and Economic Diversification (DEED)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DEED on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DEED has not raised any objections or claims relating to the activity. • CAPL has provided DEED with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Department of Planning, Lands and Heritage (DPLH)	07/05/2026	003379	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided DPLH with additional information regarding the OA.	No objection or claim raised		
	21/05/2026	003426	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003486	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DPLH on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DPLH has not raised any objections or claims relating to the activity. • CAPL has provided DPLH with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Department of Primary Industries and Regional Development (DPIRD)	21/05/2026	003422	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided DPIRD with additional information regarding fishing in the region, impacts to fisheries,	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				cumulative impacts, biosecurity measures, consultation and risk mitigation.			
	05/06/2026	003483	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DPIRD on 21 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DPIRD has not raised any objections or claims relating to the activity. • CAPL has provided DPIRD with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Department of Transport and Major Infrastructure (DTMI)	06/05/2026	003373	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided DTMI with additional information in alignment with the DoT Offshore Petroleum Industry 'Guidance Note – Marine Oil Pollution: Response and Consultation Arrangements (July 2020)', including information regarding spill scenarios. Launch email was sent to both DTMI Marine Pollution and Navigational Safety.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	11/05/2026	003419	Email	DTMI replied and confirmed the Navigational Safety team had no comment. DTMI advised that the Marine Pollution team was best placed to comment.	No objection or claim raised		
	20/05/2026	003554	Email	CAPL thanked DTMI for their review and welcomed a response from the Marine Safety team.	No objection or claim raised		
	27/05/2026-03/06/2026	003449	Email	Response received to launch email, confirmed the MEER team at DTMI have no feedback. CAPL thanked DTMI for their response.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DTMI on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DTMI has not raised any objections or claims relating to the activity. • CAPL has provided DTMI with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Department of Water & Environmental Regulation (DWER)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL notes that as requested during previous engagement for other EPs, CAPL will not send follow up emails.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				Summary: • CAPL commenced consultation with DWER on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DWER has not raised any objections or claims relating to the activity. • CAPL has provided DWER with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Environmental Protection Authority (EPA)	06/05/2026	003375	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL notes that as requested during previous engagement for other EPs, CAPL will not send follow up emails.	No objection or claim raised		
	07/05/2026	003549	Email	EPA sent a generic response advising the circumstances that require application to the EPA. EPA noted that outside of events or activities that require an application, EPA services are not able to provide comments.	EPA raised the circumstances that require application to the EPA.	**Claim does not have merit**: CAPL acknowledge the provided information. This activity does not meet the circumstance that require application to the EPA.	

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with EPA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • EPA has not raised any objections or claims relating to the activity. • CAPL has provided EPA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Pilbara Ports	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	25/05/2026-05/06/2026	003481	Email	Pilbara Ports responded and confirmed no comments on this EP. CAPL thanked Pilbara Ports for their response.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Pilbara Ports on 6 May 2026 via email advising they had been identified as a relevant person with functions,			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Pilbara Ports has not raised any objections or claims relating to the activity. • CAPL has provided Pilbara Ports with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

1.2 Regulation 25(1)(b) - Department of the responsible State Minister

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Department of Mines, Petroleum and Exploration (DMPE)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with DMPE on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • DMPE has not raised any objections or claims relating to the activity. • CAPL has provided DMPE with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				will consider any feedback provided in the future (Section 10.3.4.1).			

1.3 Regulation 25(1)(d)— Person or organisation whose functions, interests, or activities may be affected by the petroleum activity

1.3.1 First Nations people and/or representative bodies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Buurabalayji Thalanyji Aboriginal Corporation (BTAC)	25/09/2025	002590	Email	CAPL provided BTAC with the September "Bulletin," outlining CAPL's upcoming Environmental Plan (EP) activities for consultation. This included an overview of this EP. The Bulletin provides a detailed overview of proposed activities, including descriptions, location maps, timing, potential impacts, and the schedule for formal consultation. CAPL encouraged BTAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	05/12/2025	002809	Email	CAPL notified BTAC on the recent GS3 FID decision.	No objection or claim raised		
	12/12/2025	002857	Email	CAPL shared 2025 Highlights and 2026 Look Ahead email with BTAC, which included request to arrange regular meetings with representatives to provide information on upcoming CAPL activities and EPs.	No objection or claim		
	17/12/2025	002817	Email	CAPL provided BTAC with the December Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged BTAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	14/01/2026	002859	Email	CAPL followed up on 2025 Highlights and 2026 Look Ahead email shared with BTAC. CAPL requested feedback on how BTAC would like CAPL to deliver training opportunities, consultation on environment plans and next steps for priority protection area plans. CAPL requested to meet with BTAC to discuss these matters.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	24/03/2026-25/03/2026	003144	Face-to-face and email	CAPL met with the BTAC Energy Working Group (EWG). CAPL provided information on: • Other EPs (outside the scope of this EP) • Priority Protection Area Plans • Capacity Building Opportunities.	No objection or claim raised		
	01/04/2026	003203	Email	CAPL provided BTAC with the March Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged BTAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts. BTAC representative thanked CAPL and confirmed receipt of email.	No objection or claim raised		
	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	07/05/2026	003398	Email	BTAC replied to the launch email and confirmed they would like to consult on the EP with the BTAC Energy Working Group (EWG). CAPL and BTAC discussed organising meeting logistics.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	29/06/2026	003611	Face-to-face	CAPL met with the BTAC Energy Working Group (EWG). CAPL provided a presentation on this EP. BTAC raised multiple clarifying questions about the EP, including activity scope, the EMBA, unplanned releases and cumulative impacts. All questions were responded to in the meeting with no changes required to the EP. BTAC asked what controls mitigate loss of containment if there is a leak from the system. CAPL clarified that hydrocarbon leaks associated with the operation of the system is out of scope for this installation EP. The proposed controls for leaks/loss of containment within	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				the scope of this EP are listed within the provided EP information sheet. CAPL presented on other upcoming scopes (outside the scope of this EP). CAPL committed to consultation on these scopes in more detail during the consultation periods.			
	03/07/2026	003615	Email	CAPL provided BTAC with the June "Bulletin", outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged BTAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
				Summary: • CAPL provided a briefing on the activity ahead of formal consultation period on 6 May 2026 advising that BTAC had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL has also included access to NOPSEMA's consultation guideline, which describes their right to request information not to be published. • CAPL provided BTAC with the Bulletin newsletter on 25 September 2025, 17 December 2025 and 1 April 2026, providing further information on the activity and the opportunity for further briefings. • CAPL has maintained contact through face-to-face meetings and email exchanges. • CAPL has informed BTAC that they may request information provided during consultation not to be published (Regulation 25(4)) during consultation co-design, in opening consultation emails and activity information sheets. CAPL has also previously provided BTAC with a copy of NOPSEMA's consultation guideline, which further describes their right to request information not to be published. • BTAC has not raised any objections or claims relating to the activity. • CAPL executed an engagement plan / funding agreement in April 2024 which confirmed acceptance of cost recovery			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				for BTAC to participate in consultation as well as other activities. • CAPL has provided BTAC the opportunity to provide feedback and CAPL has presented sufficient information in accordance with Section 7.2.4 of the EP on the activity, including the activity description, EMBA, potential impacts and risks and control measures to enable an informed assessment by BTAC. BTAC had a reasonable period to allow BTAC to identify the effect of the proposed activity on their functions, interests or activities, and to provide any objections or claims as set out in Section 7.2.5 of the EP. CAPL will continue to engage BTAC as part of its ongoing consultation for environment plans, including progressing cultural mapping, as outlined in Section 10.3.4.1 of the EP.			
Mardathoonera Cultural Heritage Pty Ltd (MCH)	01/10/2025	002570	Email	CAPL provided MCH with the September "Bulletin," outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. The Bulletin provides a detailed overview of proposed activities, including descriptions, location maps, timing, potential impacts, and the schedule for formal consultation. CAPL encouraged MCH to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	17/12/2025	002823	Email	CAPL provided MCH with the December Bulletin outlining CAPL ongoing EPs. This included an overview of this EP. CAPL encouraged MCH to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	02/04/2026	003212	Email	CAPL provided MCH with the March Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged MCH to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	07/05/2026	003380	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	23/05/2026	003441	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	08/06/2026	003493	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	25/06/2026	003606	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	06/07/2026	003624	Email	CAPL provided MCH with the June "Bulletin", outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged MCH to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
				Summary: • CAPL provided a briefing on the activity ahead of formal consultation period on 7 May 2026 advising that MCH had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL has also included access to NOPSEMA's consultation guideline, which describes their right to request information not to be published. • CAPL provided MCH with the Bulletin newsletter on 1 October 2025, 17 December 2025 and 2 April 2026, providing further information on the activity and the opportunity for further briefings. • MCH has previously communicated cultural values or features to CAPL through consultation. As requested on 4 December 2025 during consultation for another EP, CAPL has captured information confidentially within the Sensitive Information Report.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• MCH has not raised any objections or claims relating to the activity. • CAPL has informed MCH that they may request information provided during consultation not to be published (Regulation 25(4)) in opening consultation emails and activity information sheets. CAPL has also previously provided MCH with a copy of NOPSEMA's consultation guideline, which further describes their right to request information not to be published. • CAPL has provided MCH with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL will continue to engage MCH as part of its ongoing consultation for environment plans, as outlined in Section 10.3.4.1 of the EP.			
Nganhurra Thanardi Garrbu Aboriginal Corporation (NTGAC)	25/09/2025	002569	Email	CAPL provided NTGAC with the September "Bulletin," outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. The Bulletin provides a detailed overview of proposed activities, including descriptions, location maps, timing, potential impacts, and the schedule for formal consultation. CAPL encouraged NTGAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	05/12/2025	002809	Email	CAPL notified NTGAC on the recent GS3 FID decision.	No objection or claim raised		
	12/12/206	002857	Email	CAPL shared 2025 Highlights and 2026 Look Ahead email with NTGAC, which included request to arrange regular meetings with representatives to provide information on upcoming CAPL activities and EPs.	No objection or claim		
	17/12/2025	002818	Email	CAPL provided NTGAC with the December Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL encouraged NTGAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.			
	14/01/2026	002861	Email	CAPL followed up on 2025 Highlights and 2026 Look Ahead email shared with NTGAC. CAPL requested feedback on how NTGAC would like CAPL to deliver training opportunities, consultation on environment plans and next steps for priority protection area plans. CAPL requested to meet with NTGAC to discuss these matters.	No objection or claim raised		
	14/01/2026	003108	Email	NTGAC representative responded to CAPL's email following up on the 2025 Highlights and 2026 Look Ahead and suggested a date and time for a meeting to discuss. CAPL responded to NTGAC representative confirming availability to meet on 20 January 2026.	No objection or claim raised		
	20/01/2026	002940	Face-to-face	CAPL met with NTGAC representative to discuss capacity building opportunities for 2026. CAPL noted that they had provided NTGAC with the Bulletin in December 2025 and encouraged NTGAC to review the document and share any feedback, question or consultation on any of the EPs. No comments or feedback was received on this EP.	No objection or claim raised		
	01/04/2026	003204	Email	CAPL provided NTGAC with the March Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged NTGAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	03/07/2026	003622	Email	CAPL provided NTGAC with the June "Bulletin", outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged NTGAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
				Summary: • CAPL provided a briefing on the activity ahead of formal consultation period on 6 May 2026 advising that NTGAC had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL has also included access to NOPSEMA's consultation guideline, which describes their right to request information not to be published. • CAPL provided NTGAC with the Bulletin newsletter on 25 September 2025, 17 December 2025 and 1 April 2026, providing further information on the activity and the opportunity for further briefings • NTGAC have previously provided information on their Healthy Sea Country Plan that provides guidance on the areas of importance to them for Sea Country. • CAPL have committed to a continued discussion on the identification of Priority Protection Area's that align with the Healthy Sea Country Plan. • CAPL has informed NTGAC that they may request information provided during consultation not to be published (Regulation 25(4)) in opening consultation emails and activity information sheets. CAPL has also provided NTGAC with a copy of NOPSEMA's consultation guideline, which further describes their right to request information not to be published.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• NTGAC has not raised any objections or claims relating to the activity. • CAPL has provided NTGAC with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL will continue to engage NTGAC as part of its ongoing consultation for environment plans, as outlined in Section 10.3.4.1 of the EP.			
Nhuwala Claim Group (NHU)	25/09/2025	002568	Email	CAPL provided Nhuwala Claimant Group with the September "Bulletin," outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. The Bulletin provides a detailed overview of proposed activities, including descriptions, location maps, timing, potential impacts, and the schedule for formal consultation. CAPL encouraged Nhuwala Claimant Group to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.			
	05/12/2025	002809	Email	CAPL notified Nhuwala Claimant Group on the recent GS3 FID decision.	No objection or claim raised		
	12/12/2026	002857	Email	CAPL shared 2025 Highlights and 2026 Look Ahead email with Nhuwala Claimant Group, which included request to arrange regular meetings with representatives to provide information on upcoming CAPL activities and EPs.	No objection or claim		
	17/12/2025	002820	Email	CAPL provided Nhuwala Claimant Group with the December Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged Nhuwala Claimant Group to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	14/01/2026	003148	Email	CAPL followed up on 2025 Highlights and 2026 Look Ahead email shared with the Nhuwala Claimant Group. CAPL requested feedback on how the Nhuwala Claimant Group would like CAPL to deliver training opportunities, consultation on environment plans and next steps for priority protection area plans. CAPL requested to meet with representative to discuss these matters.	No objection or claim raised		
	15/01/2026-20/01/2026	003155	Email	Nhuwala Claimant Group representative responded to CAPL's email following up on the 2025 Highlights and 2026 Look Ahead and advised that they would like to meet with CAPL. CAPL and Nhuwala Claimant Group discussed meeting logistics. Nhuwala Claimant Group representative confirmed that a meeting invite will be sent to CAPL shortly.	No objection or claim raised		
	03/02/2026	002939	Face-to-face	CAPL met with Nhuwala Claimant Group representative to discuss capacity building opportunities for 2026. CAPL noted that they had provided the Nhuwala Claimant Group with the Bulletin in December 2025 and encouraged the Nhuwala Claimant Group to review the document and share any feedback, question or consultation on any of the EPs. No comments or requests for further information was received regarding this EP.	No objection or claim raised		
	01/04/2026	003201	Email	CAPL provided Nhuwala Claimant Group with the March Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged Nhuwala Claimant Group to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	03/07/2026	003620	Email	CAPL provided NHU with the June "Bulletin", outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged NHU to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
				Summary: • CAPL provided a briefing on the activity ahead of formal consultation period on 6 May 2026 advising that Nhuwala Claimant Group had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL has also included access to NOPSEMA's consultation guideline, which describes their right to request information not to be published. • CAPL provided Nhuwala Claimant Group with the Bulletin newsletter on 25 September 2025, 17 December 2025 and 1 April 2026, providing further information on the activity and the opportunity for further briefings. • CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • CAPL notified Nhuwala Claimant Group that they are committed to ongoing consultation communication and welcome meaningful feedback. • Nhuwala Claimant Group has previously asked about the privacy of the information captured through consultation and requested information be stored securely with controlled access.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL has informed Nhuwala Claimant Group that they may request information provided during consultation not to be published (Regulation 25(4)) in opening consultation emails and activity information sheets. CAPL has also provided Nhuwala Claimant Group with a copy of NOPSEMA's consultation guideline, which further describes their right to request information not to be published. • Nhuwala Claimant Group has not raised any objections or claims relating to the activity. • CAPL has provided Nhuwala Claimant Group with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL will continue to engage Nhuwala Claimant Group as part of its ongoing consultation for environment plans, as outlined in Section 10.3.4.1 of the EP.			
Separately represented individuals from Nhuwala (NHU2)	23/05/2026	003443	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	11/06/2026	003520	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • NHU2 are members of the Nhuwala Claim Group and received the information as well as opportunities made available to the Nhuwala Claim Group, with whom engagements started from September 2025 and are described earlier in this table. • NHU2 received notification on this EP via different representation on 23 May 2026.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• NHU2 has not raised any objections or claims relating to the activity • CAPL notified that NHU2 that they are committed to ongoing consultation communication and welcome meaningful feedback. • NHU2 has asked about the privacy of the information captured through consultation during previous EP consultation and requested information be stored securely with controlled access. • CAPL has confirmed with NHU2 that they may request information provided during consultation not to be published (Regulation 25(4)). • CAPL has provided NHU2 with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL will continue to engage NHU2 as part of its ongoing consultation for environment plans, as outlined in Section 10.3.4.1 of the EP.			
Wirrawandi Aboriginal Corporation RNTBC (WAC)	25/09/2025	002568	Email	CAPL provided WAC with the September "Bulletin," outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. The Bulletin provides a detailed overview of proposed activities, including descriptions, location maps, timing, potential impacts, and the schedule for formal consultation. CAPL encouraged WAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	05/12/2025	002809	Email	CAPL notified WAC on the recent GS3 FID decision.	No objection or claim raised		
	12/12/2025	002857	Email	CAPL shared 2025 Highlights and 2026 Look Ahead email with WAC, which included request to arrange regular meetings with representatives to provide information on upcoming CAPL activities and EPs.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	17/12/2025	002819	Email	CAPL provided WAC with the December Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged WAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	15/01/2026	002879	Email	CAPL followed up on 2025 Highlights and 2026 Look Ahead email shared with WAC. CAPL requested feedback on how WAC would like CAPL to deliver training opportunities, consultation on environment plans and next steps for priority protection area plans. CAPL requested to meet with WAC to discuss these matters. WAC responded to CAPL's email following up on the 2025 Highlights and 2026 Look Ahead and suggested a date for a meeting.	No objection or claim raised		
	21/01/2026	002941	Virtual Meeting	CAPL met with WAC representative to discuss capacity building opportunities for 2026. CAPL noted that they had provided WAC with the Bulletin in December 2025 and encouraged WAC to review the document and share any feedback, question or consultation on any of the EPs.	No objection or claim raised		
	01/04/2026	003202	Email	CAPL provided WAC with the March Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged WAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	11/06/2026-17/06/2026	003541	Email	WAC responded and confirmed that consultation was not required for this EP as the OA and EMBA is outside of their area of interest. WAC requested to be notified in the event of an unplanned event that may pose a risk to the environment (such as a spill event). CAPL thanked WAC for their response and confirmed that WAC would be contacted in the event of an unplanned event (such as a spill event).	WAC requested to be notified in the event of an unplanned event (such as spill event).	**Claim has merit:** As a Relevant Person, the request for notification is considered fair and reasonable.	Notification in the event of an unplanned event is captured within Table 10-5.
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	03/07/2026	003621	Email	CAPL provided WAC with the June "Bulletin", outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged WAC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
				Summary: • CAPL provided a briefing on the activity ahead of formal consultation period on 6 May 2026 advising that WAC had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL has also included access to NOPSEMA's consultation guideline, which describes their right to request information not to be published. • CAPL provided WAC with the Bulletin newsletter on 25 September 2025, 17 December 2025 and 1 April 2026, providing further information on the activity and the opportunity for further briefings. • CAPL has met with WAC representatives in a face-to-face meeting and maintained contact through email correspondence			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL has informed WAC that they may request information provided during consultation not to be published (Regulation 25(4)) during consultation co-design, in opening consultation emails and activity information sheets. CAPL has also provided WAC with a copy of NOPSEMA's consultation guideline, which further describes their right to request information not to be published. • WAC did not raise any objections or claims relating to the activity. WAC requested notification in the event of an unplanned event, which is addressed within the EP. • CAPL has provided WAC with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL will continue to engage WAC as part of its ongoing consultation for environment plans, as outlined in Section 10.3.4.1 of the EP.			

1.3.2 Commercial fishery licence holders and/or representative bodies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Aquaculture Council of Western Australia (ACWA)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ACWA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • ACWA has not raised any objections or claims relating to the activity. • CAPL has provided ACWA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Australian Council of Prawn Fisheries Ltd (ACPF)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				Summary: • CAPL commenced consultation with ACPF on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • ACPF has not raised any objections or claims relating to the activity. • CAPL has provided ACPF with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Australian Southern Bluefin Tuna Industry Association (ASBTIA)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/05/2026-03/06/2026	003448	Email	ASBTIA thanked CAPL for the provided information and confirmed no questions or concerns. ASBTIA requested to be informed of any changes. CAPL thanked ASBTIA for their response and confirmed they will share if there are any changes.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				Summary: • CAPL commenced consultation with ASBTIA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • ASBTIA has not raised any objections or claims relating to the activity. • CAPL has provided ASBTIA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Commonwealth Fisheries Association (CFA)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CFA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • CFA has not raised any objections or claims relating to the activity. • CAPL has provided CFA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Tuna Australia (TA)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	27/05/2026	003556	Email	TA advised that without a consultation agreement they could not carry out consultation work, noting the upcoming meeting between CAPL and TA (Record ID 003617) to discuss the collaborative relationship. TA recommended engaging with holders in the Western Tuna and Billfish Fishery (WTBF).	TA raised intent to finalise a consultation agreement. TA recommended engaging with holders in the WTBF.	**Claim has merit:** CAPL acknowledge the input raised by TA.	No change made to the EP. CAPL met with TA to discuss ongoing consultation requirements (Record ID 003617). CAPL agreed to review the agreement and come back to TA with a draft that could be worked through. TA agreed to work towards an agreement moving forward. This consultation with TA is ongoing. CAPL reviewed the data of operation and deemed the OA was outside where the WTBF operate. As such, they were deemed are not relevant. This is in line with Section 5.4.1 of the EP.

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	10/06/2026	003617	Face-to-face	CAPL met with TA CEO to discuss ongoing consultation requirements. TA has provided CAPL with an Industry Position statement and a consulting services agreement that had not been previously executed. CAPL wanted to understand what the consultation agreement required and the impact our activities were having on TA members. TA represent fishers with licence to fish within CAPL OA and EMBA's. The fishing activity is not a fixed location and change depending on the movement of the species and the type of fishing deployed. TA indicated early conversations with CFA to cover all Commonwealth fisheries as TA do on have resources for consultation with all proponents. CAPL mentioned the relationship with WAFIC. WAFIC manage State based fisheries so do not capture Tuna Fisheries. CAPL agreed to review the agreement and come back to TA with a draft that could be worked through. CAPL were conscious that different activities require different levels of consultation and that not all EP's require a full report. TA agreed to work towards an agreement moving forward with other solutions still being considered moving forward.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Tuna Australia on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• Tuna Australia has not raised any objections or claims relating to the activity. TA provided input which was considered, and CAPL will continue to engage with TA regarding a consultation agreement. • CAPL has provided Tuna Australia with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Western Australian Fishing Industry Council (WAFIC)	25/09/2025	002569	Email	CAPL provided WAFIC with the September "Bulletin," outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. The Bulletin provides a detailed overview of proposed activities, including descriptions, location maps, timing, potential impacts, and the schedule for formal consultation. CAPL encouraged WAFIC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	17/12/2025	002821	Email	CAPL provided WAFIC with the December Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged WAFIC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	01/04/2026	003205	Email	CAPL provided WAFIC with the March Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL encouraged WAFIC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.			
	06/05/2026	003377	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided WAFIC with additional information in regard to relevant fisheries, biosecurity measures and spill response preparedness.	No objection or claim raised		
	21/05/2026	003428	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003485	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	18/06/2026-08/07/2026	003618	Email	WAFIC emailed and apologised for the delayed response. WAFIC confirmed that no feedback from the industry was received regarding the EP. WAFIC confirmed their understanding regarding unplanned events, and requested activity notifications. CAPL responded and thanked WAFIC for the provided input. CAPL clarified that as per previous engagement and confirmation by WAFIC, it is expected that through notification of an emergency event WAFIC would facilitate notification to potentially impacted fishers. CAPL confirmed that in the event of an emergency, CAPL with engage with WAFIC as soon as practicable.	WAFIC requested activity notifications	**Claims have merit:** CAPL acknowledge the request for notification.	Notification to WAFIC in the event of an emergency is captured in Section 10.3.4.1 of the EP Table 10-5 was updated to include notification to WAFIC.
	03/07/2026	003623	Email	CAPL provided WAFIC with the June "Bulletin", outlining CAPL's upcoming consultation on EPs. This included an overview of this EP.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL encouraged WAFIC to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.			
				Summary: • CAPL commenced consultation with WAFIC on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • CAPL provided WAFIC with the Bulletin newsletter on 25 September 2025, 17 December 2025 and 1 April 2026, providing further information on the Activity and providing opportunity for further briefings • WAFIC has not raised any objections or claims relating to the activity. WAFIC requested notification, which is addressed within the EP. • CAPL has provided WAFIC with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

1.3.3 Tourism and recreation operators

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Apache Fishing Charters	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Apache on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Apache has not raised any objections or claims relating to the activity. • CAPL has provided Apache with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Aquatic Adventure Exmouth	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				activities and provided an information sheet and a link to CAPLs consultation webpage.			
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Aquatic Adventure Exmouth on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Aquatic Adventure Exmouth has not raised any objections or claims relating to the activity. • CAPL has provided Aquatic Adventure Exmouth with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ashburton Anglers	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ashburton Anglers on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ashburton Anglers has not raised any objections or claims relating to the activity. • CAPL has provided Ashburton Anglers with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Blue Horizon Charters	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Blue Horizon Charters on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Blue Horizon Charters has not raised any objections or claims relating to the activity. • CAPL has provided Blue Horizon Charters with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Blue Juice Charters	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Blue Juice Charters on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Blue Juice Charters has not raised any objections or claims relating to the activity. • CAPL has provided Blue Juice Charters with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Blue Lightning Fishing Charters	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				Summary: • CAPL commenced consultation with Blue Lightning Fishing Charters on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Blue Lightning Fishing Charters has not raised any objections or claims relating to the activity. • CAPL has provided Blue Lightning Fishing Charters with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Exmouth Dive & Whalesharks Ningaloo	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Exmouth Dive & Whalesharks Ningaloo on 6 May 2026 via			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Exmouth Dive & Whalesharks Ningaloo has not raised any objections or claims relating to the activity. • CAPL has provided Exmouth Dive & Whalesharks Ningaloo with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Exmouth Game Fishing Club	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Exmouth Game Fishing Club on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				an overview of the activity and provided a link to their website for further information regarding the activity. • Exmouth Game Fishing Club has not raised any objections or claims relating to the activity. • CAPL has provided Exmouth Game Fishing Club with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Image Dive and Charters	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Image Dive and Charters on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• Image Dive and Charters has not raised any objections or claims relating to the activity. • CAPL has provided Image Dive and Charters with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Innkeeper Sport Fishing Charter	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Innkeeper Sport Fishing Charter on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Innkeeper Sport Fishing Charter has not raised any objections or claims relating to the activity. • CAPL has provided Innkeeper Sport Fishing Charter with sufficient information and a reasonable period in accordance with Section 7.6			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Lethal Adventures	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Lethal Adventures on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Lethal Adventures has not raised any objections or claims relating to the activity. • CAPL has provided Lethal Adventures with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Live Ningaloo	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Live Ningaloo on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Live Ningaloo has not raised any objections or claims relating to the activity. • CAPL has provided Live Ningaloo with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Mackerel Islands and Onslow Beach Resort	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	07/05/2026	003387	Email	Mackerel Islands and Onslow Beach Resort responded and confirmed no response regarding this EP.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Mackerel Islands and Onslow Beach Resort on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Mackerel Islands and Onslow Beach Resort has not raised any objections or claims relating to the activity. • CAPL has provided Mackerel Islands and Onslow Beach Resort with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Marine Tourism WA (MTWA)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with MTWA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • MTWA has not raised any objections or claims relating to the activity. • CAPL has provided MTWA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Montebello Island Safaris	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Montebello Island Safaris on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Montebello Island Safaris has not raised any objections or claims relating to the activity. • CAPL has provided Montebello Island Safaris with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ningaloo Blue Dive	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Blue Dive on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Blue Dive has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Blue Dive with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ningaloo Coral Bay Boats	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				Summary: • CAPL commenced consultation with Ningaloo Coral Bay Boats on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Coral Bay Boats has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Coral Bay Boats with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ningaloo Discovery	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Discovery on 6 May 2026 via email advising they had been identified as a relevant person with			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Discovery has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Discovery with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ningaloo Fly Fishing	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Fly Fishing on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• Ningaloo Fly Fishing has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Fly Fishing with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ningaloo Glass Bottom Boat	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Glass Bottom Boat on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Glass Bottom Boat has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Glass Bottom Boat with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ningaloo Marine Interaction	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Marine Interaction on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Marine Interaction has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Marine Interaction with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ningaloo Reef Dive	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Reef Dive on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Reef Dive has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Reef Dive with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Ningaloo Reef to Range Tours	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Reef to Range Tours on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Reef to Range Tours has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Reef to Range Tours with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ningaloo Sportfishing Charters	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Sportfishing Charters on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Sportfishing Charters has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Sportfishing Charters with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ningaloo Whaleshark n Dive	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Whaleshark n Dive on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Whaleshark n Dive has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Whaleshark n Dive with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ningaloo Whaleshark Swim	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Ningaloo Whaleshark Swim on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ningaloo Whaleshark Swim has not raised any objections or claims relating to the activity. • CAPL has provided Ningaloo Whaleshark Swim with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Ocean Eco Adventures	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				Summary: • CAPL commenced consultation with Ocean Eco Adventures on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Ocean Eco Adventures has not raised any objections or claims relating to the activity. • CAPL has provided Ocean Eco Adventures with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
On Strike Charters	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with On Strike Charters on 6 May 2026 via email advising they had been identified as a relevant person with			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • On Strike Charters has not raised any objections or claims relating to the activity. • CAPL has provided On Strike Charters with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Peak Sportfishing Adventures	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Peak Sportfishing Adventures on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• Peak Sportfishing Adventures has not raised any objections or claims relating to the activity. • CAPL has provided Peak Sportfishing Adventures with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Recfishwest	06/05/2026	003378	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided additional information, including ongoing engagement.	No objection or claim raised		
	21/05/2026	003429	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	29/05/2026-03/06/2026	003451	Email	Recfishwest replied and confirmed receipt of information. Recfishwest noted that recreational fishing is unlikely to be impacted by the activity. CAPL thanked Recfishwest for their response.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Recfishwest on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Recfishwest has not raised any objections or claims relating to the activity.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL has provided Recfishwest with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Sail Ningaloo	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Sail Ningaloo on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Sail Ningaloo has not raised any objections or claims relating to the activity. • CAPL has provided Sail Ningaloo with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions,			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Three Islands Whale Shark Tours	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Three Islands Whale Shark Tours on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Three Islands Whale Shark Tours has not raised any objections or claims relating to the activity. • CAPL has provided Three Islands Whale Shark Tours with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Top Gun Charters	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Top Gun Charters on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Top Gun Charters has not raised any objections or claims relating to the activity. • CAPL has provided Top Gun Charters with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
View Ningaloo	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with View Ningaloo on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • View Ningaloo has not raised any objections or claims relating to the activity. • CAPL has provided View Ningaloo with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Yardi Creek Boat Tours	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Yardi Creek Boat Tours on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Yardi Creek Boat Tours has not raised any objections or claims relating to the activity. • CAPL has provided Yardi Creek Boat Tours with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

1.3.4 Local government departments or agencies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Shire of Ashburton (Pilbara) (SOA)	06/05/2026	003376	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage. CAPL provided SOA with additional information regarding spill response preparedness and consultation.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	21/05/2026-05/06/2026	003484	Email	CAPL sent follow up email requesting feedback on the EP information. CAPL sent a second follow up email requesting feedback on the EP information.	No objection or claim raised		
	08/06/2026	003494	Email	SOA replied and confirmed that they have no comments or objections.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with SOA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • SOA has not raised any objections or claims relating to the activity. • CAPL has provided SOA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Shire of Exmouth (Gascoyne)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				No response was received.			
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with SOC on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • SOC has not raised any objections or claims relating to the activity. • CAPL has provided SOC with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

1.3.5 Other Petroleum Titleholders

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Carnarvon Energy	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026-03/06/2026	003447	Email	CAPL sent follow up email requesting feedback on the EP information. Carnarvon Energy replied and confirmed they have no feedback or comments to provide. CAPL thanked Carnarvon Energy for their response.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Carnarvon Energy on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Carnarvon Energy has not raised any objections or claims relating to the activity. • CAPL has provided Carnarvon Energy with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Eni Australia	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Eni Australia on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• Eni Australia has not raised any objections or claims relating to the activity. • CAPL has provided Eni Australia with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Exxon Mobil	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Exxon Mobil on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Exxon Mobil has not raised any objections or claims relating to the activity. • CAPL has provided Exxon Mobil with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Jadestone Energy	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Jadestone Energy on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Jadestone Energy has not raised any objections or claims relating to the activity. • CAPL has provided Jadestone Energy with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
KATO Energy	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with KATO Energy on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • KATO Energy has not raised any objections or claims relating to the activity. • CAPL has provided KATO Energy with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Kuwait Foreign Petroleum Exploration Company (KUFPEC)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	22/05/2026-03/06/2026	003446	Email	KUFPEC replied and confirmed no objections. CAPL thanked KUFPEC for their response.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				Summary: • CAPL commenced consultation with KUFPEC on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • KUFPEC has not raised any objections or claims relating to the activity. • CAPL has provided KUFPEC with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Pathfinder Energy	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	07/05/2026-11/05/2026	003383	Email	Pathfinder Energy replied and confirmed no objections and opted out of further consultation. CAPL thanked for response to the launch email, noting no further consultation required.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Pathfinder Energy on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Pathfinder Energy has not raised any objections or claims relating to the activity. • CAPL has provided Pathfinder Energy with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
PGS Australia Pty Ltd	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with PGS on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • PGS has not raised any objections or claims relating to the activity. • CAPL has provided PGS with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Santos	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	26/05/2026-05/06/2026	003482	Email	Santos replied and requested clarification regarding overlap with Santos infrastructure and pipeline crossings. CAPL replied and confirmed the activity is not planned to intersect with Santos infrastructure, and provided clarification regarding pipeline crossings.	No objection or claim raised		
	15/06/2026-19/06/2026	003577	Email	Santos replied and confirmed no objections or claims. CAPL thanked Santos for their response.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Santos on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Santos has not raised any objections or claims relating to the activity. Santos requested activity notifications. This is captured in Table 10-5 of the EP. • CAPL has provided Santos with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Shell	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Shell on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Shell has not raised any objections or claims relating to the activity. • CAPL has provided Shell with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Vermilion Oil & Gas	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	27/05/2026-03/06/2026	003450	Email	Vermillion confirmed receipt of information and confirmed they have no requirement for consultation on this project. CAPL thanked Vermillion for their response.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Vermilion Oil & Gas on 6 May 2026 via email advising they had been identified as a relevant			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Vermilion Oil & Gas has not raised any objections or claims relating to the activity. • CAPL has provided Vermilion Oil & Gas with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Woodside	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Woodside on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Woodside has not raised any objections or claims relating to the activity. • CAPL has provided Woodside with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

1.3.6 ENGOs

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Australian Marine Conservation Society (AMCS)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	17/06/2026	003613	Email	AMCS responded and acknowledged receipt of the information. AMCS provided information regarding AMCS and their areas of interest. AMCS raised the reasonable period for consultation, noting comprehensive assessment of activities is laborious, and suggested that there were inadequacies in the relevant person process for this EP. AMCS provided overarching comments on the EP including: • Objection to new fossil fuel developments • Noted that the proposed activities raised multiple impacts and risks • Raised importance of environmental data and noted the challenge of assessing the full environmental impact	AMCS suggested that there were inadequacies in the relevant person process and raised multiple comments on the EP.	**Claims have merit:** As relevant persons, CAPL welcomes input from AMCS.	No change made to the EP. CAPL provided a response and addressed all comments raised (Record ID 003619).

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• Raised cumulative impacts of climate change, industrial development, shipping and fishing on marine life and habitats			
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	08/07/2026	003619	Email	CAPL provided a response to AMCS and thanked them for their input. CAPL does not accept AMCS' claims that there were inadequacies in the relevant person consultation process for this EP nor that relevant persons were not afforded a "reasonable period" for consultation. CAPL provided background for the reasonable period timeframe. CAPL offered to include AMCS in the distribution list for the Bulletin which provides an overview of proposed activities and the expected schedule for consultation. CAPL confirmed that the EP includes evaluation of impacts and risks associated with the activity based on relevant data, information and studies as appropriate. The EP details control measures implemented to reduce the risk to ALARP and to acceptable levels as required by the OPGGS(E)R. CAPL noted that Section 8.4 of the EP discusses GHG air emissions and a review of environmental values and sensitivities in Australia that are vulnerable to climate change related effects. CAPL welcomed further information.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AMCS on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • AMCS raised multiple comments on the EP which were addressed by email response. • CAPL has provided AMCS with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions,			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Cape Conservation Group (CCG)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CCG on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • CCG has not raised any objections or claims relating to the activity. • CAPL has provided CCG with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Protect Ningaloo	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Protect Ningaloo on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Protect Ningaloo has not raised any objections or claims relating to the activity. • CAPL has provided Protect Ningaloo with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

1.3.7 Other

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Australian Energy Producers (AEP)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AEP on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • AEP has not raised any objections or claims relating to the activity. • CAPL has provided AEP with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Australian Institute of Marine Science (AIMS)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with AIMS on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • AIMS has not raised any objections or claims relating to the activity. • CAPL has provided AIMS with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Exmouth Chamber of Commerce and Industry (ECCI)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				No response was received.			
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ECCI on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • ECCI has not raised any objections or claims relating to the activity. • CAPL has provided ECCI with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Karratha & Districts Chamber of Commerce and Industry (KDCCI)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with KDCCI on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • KDCCI has not raised any objections or claims relating to the activity. • CAPL has provided KDCCI with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Oil Spill Response Limited (OSRL)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary:			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL commenced consultation with OSRL on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • OSRL has not raised any objections or claims relating to the activity. • CAPL has provided OSRL with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Onslow Chamber of Commerce and Industry (OCCI)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with OCCI on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				activity and provided a link to their website for further information regarding the activity. • OCCI has not raised any objections or claims relating to the activity. • CAPL has provided OCCI with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Telstra	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Telstra on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Telstra has not raised any objections or claims relating to the activity. • CAPL has provided Telstra with sufficient information and a reasonable period in			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Vocus Group	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	22/06/2026-24/06/2026	003582	Email	Vocus apologised for their delayed response, and noted their subsea cables are outside the area of operations but are within the EMBA. Vocus requested notification if any activity impacts this area. CAPL thanked Vocus for their response and clarified that no planned activities will directed interact with the cable infrastructure. CAPL confirmed that notification will be provided in the event of an unplanned activity within the EMBA that may interact with the cable.	Vocus noted the presence of subsea cable within the EMBA. Vocus requested notification for any activities that may interact with their subsea cable.	**Claims have merit:** The input raised is relevant to the activity.	No submarine cables were identified within the OA. One known submarine cable intersects with the Hydrocarbon EMBA The presence of submarine cables within the OA and EMBA are listed within Section 5.4.7. Notification to Vocus in the event of an unplanned event is captured Table 10-5.
				Summary: • CAPL commenced consultation with Vocus Group on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• Vocus Group has not raised any objections or claims relating to the activity. Vocus noted the presence of subsea cables and requested notifications, which are addressed within the EP. • CAPL has provided Vocus Group with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

1.4 Regulation 25(1)(e) - Any other person or organisation that the titleholder considers relevant

1.4.1 Commercial fishery licence holders and/or representative bodies

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Abalone Council Australia	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Abalone Council Australia on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Abalone Council Australia has not raised any objections or claims relating to the activity. • CAPL has provided Abalone Council Australia with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Pearl Producers Association (PPA)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with PPA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • PPA has not raised any objections or claims relating to the activity. • CAPL has provided PPA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Western Rock Lobster Council (WRLC)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WRLC on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • WRLC has not raised any objections or claims relating to the activity. • CAPL has provided WRLC with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

1.4.2 Tourism and recreation operators

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Tourism Western Australia (TWA)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with TWA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				provided a link to their website for further information regarding the activity. • TWA has not raised any objections or claims relating to the activity. • CAPL has provided TWA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

1.4.3 Other

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Australian Conservation Foundation (ACF)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with ACF on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • ACF has not raised any objections or claims relating to the activity. • CAPL has provided ACF with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Centre for Whale Research Western Australia (CWR)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CWR on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • CWR has not raised any objections or claims relating to the activity. • CAPL has provided CWR with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Conservation Council of WA (CCWA)	25/09/2025	002591	Email	CAPL provided CCWA with the latest "Bulletin," outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. The Bulletin provides a detailed overview of proposed activities, including descriptions, location maps, timing, potential impacts, and the schedule for formal consultation. CAPL encouraged CCWA to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	17/12/2025	002822	Email	CAPL provided CCWA with the December Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged CCWA to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	01/04/2026	003200	Email	CAPL provided CCWA with the March Bulletin outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged CCWA to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
	03/07/2026	003616	Email	CAPL provided CCWA with the June "Bulletin", outlining CAPL's upcoming consultation on EPs. This included an overview of this EP. CAPL encouraged CCWA to review the document and share any feedback or questions. CAPL welcomed the opportunity to provide further information and offered briefings with technical specialists and subject matter experts.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CCWA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • CAPL provided CCWA with the Bulletin newsletter on 25 September 2025, 17 December 2025 and 1 April 2026, providing			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				further information on the activity and the opportunity for further briefings. • CCWA has not raised any objections or claims relating to the activity. • CAPL has provided CCWA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Coral Bay Progress Association (CBPA)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CBPA on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • CBPA has not raised any objections or claims relating to the activity.			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				• CAPL has provided CBPA with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Coral Futures Corporation (CFC)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with CFC on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • CFC has not raised any objections or claims relating to the activity. • CAPL has provided CFC with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Gascoyne Development Commission (GDC)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with GDC on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • GDC has not raised any objections or claims relating to the activity. • CAPL has provided GDC with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
Greenpeace	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Greenpeace on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Greenpeace has not raised any objections or claims relating to the activity. • CAPL has provided Greenpeace with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
International Fund for Animal Welfare (IFAW)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	08/05/2026-21/05/2026	003437	Email	IFAW responded, noting that they did not have the capacity to provide a detailed submission. IFAW noted that they are concerned about seismic testing and its impacts on whales. CAPL thanked IFAW for their response and clarified that there is no seismic testing or survey within the scope of this EP.	IFAW noted that they are concerned about seismic testing and its impacts on whales.	**Claim does not have merit:** There is no seismic testing or survey within the scope of this EP. CAPL replied to IFAW and clarified the activity scope.	
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with IFAW on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • IFAW has not raised any objections or claims relating to the activity. • CAPL has provided IFAW with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Pilbara Development Commission (PDC)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
					or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with PDC on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • PDC has not raised any objections or claims relating to the activity. • CAPL has provided PDC with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Western Australian Coastal and Marine Network (WACMN)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WACMN on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • WACMN has not raised any objections or claims relating to the activity. • CAPL has provided WACMN with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Western Australian Marine Science Institution (WAMSI)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WAMSI on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • WAMSI has not raised any objections or claims relating to the activity. • CAPL has provided WAMSI with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Western Australian Museum (WAM)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				Summary: • CAPL commenced consultation with WAM on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • WAM has not raised any objections or claims relating to the activity. • CAPL has provided WAM with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
Whale and Dolphin Conservation (WDC)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	21/05/2026	003430	Email	CAPL sent follow up email requesting feedback on the EP information.	No objection or claim raised		
	05/06/2026	003457	Email	CAPL sent follow up email requesting feedback on the EP information. No response was received.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with WDC on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the			

Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • WDC has not raised any objections or claims relating to the activity. • CAPL has provided WDC with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			
The Wilderness Society WA Inc (WS)	06/05/2026	003367	Email	Notification of consultation launch sent via email. CAPL provided a written notification of the proposed activities and provided an information sheet and a link to CAPLs consultation webpage.	No objection or claim raised		
	08/05/2026-20/05/2026	003552	Email	WS replied and requested further information regarding decommissioning activities for the infrastructure covered by this EP. CAPL replied and provided clarification regarding the decommissioning of infrastructure covered by this EP. CAPL noted that decommissioning is not within scope for this EP. CAPL welcomed any further queries.	No objection or claim raised		
	18/06/2026	003562	Email	CAPL advised the consultation period for the EP has closed.	No objection or claim raised		
				Summary: • CAPL commenced consultation with Wilderness Society on 6 May 2026 via email advising they had been identified as a relevant person with functions, interests or activities that may be affected by the activity. CAPL provided an overview of the activity and provided a link to their website for further information regarding the activity. • Wilderness Society has not raised any objections or claims relating to the activity. • CAPL has provided Wilderness Society with sufficient information and a reasonable period in accordance with Section 7.6 and 7.7 of			

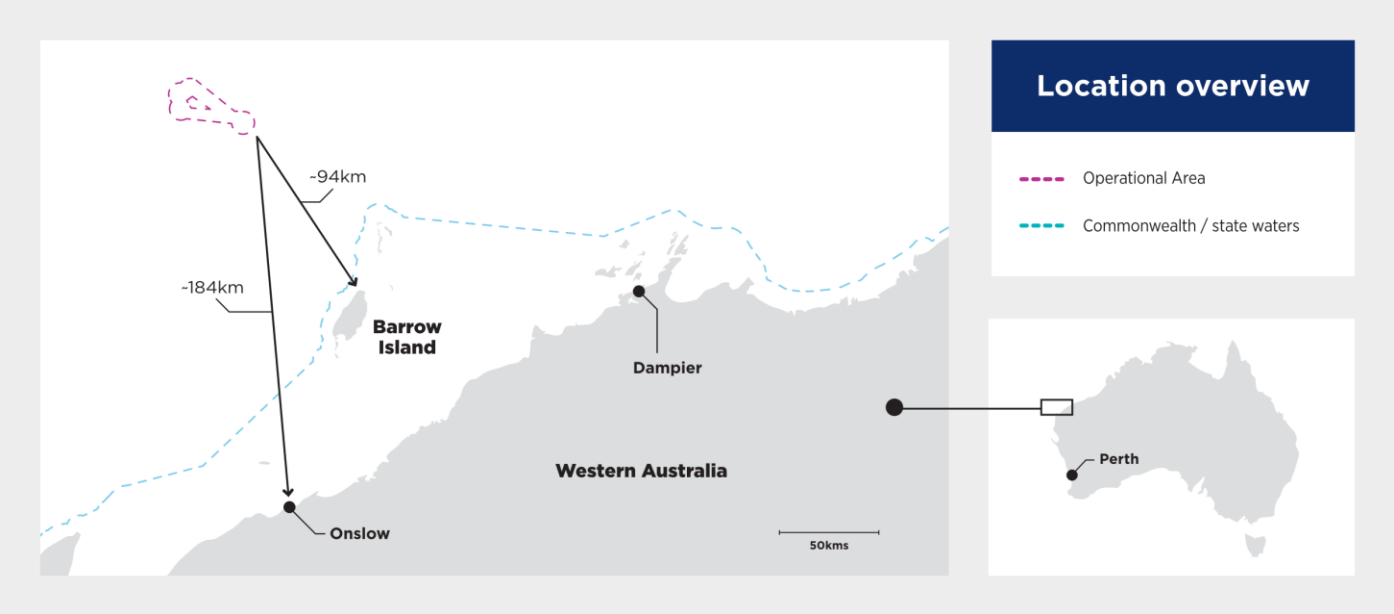
Relevant Person	Interaction Date	Record ID	Method	Summary	Objection or Claim	Assessment of Merit	Changes made to EP in response to consultation
				the EP to make an informed assessment of the possible consequences of the activity on its functions, interests and activities. CAPL has discharged its obligations under regulation 25. CAPL notes that further feedback may be received as part of ongoing consultation. CAPL will consider any feedback provided in the future (Section 10.3.4.1).			

appendix f Consultation material

Information sheet

Gorgon Stage 3

Pipelay, Subsea Installation, and Pre-commissioning



Overview

Chevron Australia, on behalf of the Gorgon Joint Venture, operates the Gorgon Project, located off the northwest coast of Western Australia (WA).

Since 2015, as part of the first phase of the Gorgon Project (the Gorgon Foundation Project), offshore production wells, in-field infrastructure, and production pipelines have gathered hydrocarbons (natural gas and condensate) from the Gorgon and Jansz-Io gas fields and transported it to the Gorgon Gas Treatment Plant (the Gas Plant) on Barrow Island.

Hydrocarbons are processed at the Gas Plant for export as liquefied natural gas (LNG) or piped to the mainland for WA domestic gas users.

The existing Gorgon Project environmental approvals envisaged the development of backfill fields as supply from the Gorgon and Jansz–Io fields depleted over time.

This next phase of the Gorgon Project, the Backfill Fields Development, comprises the production of natural gas from seven backfill fields: Chandon, Chrysaor, Dionysus, Eurytion, Geryon, Semele, and West Tryal Rocks. The seven backfill fields will be developed or co-developed over multiple stages.

These backfill fields will connect to Gorgon Foundation Project infrastructure in order to maintain current rates of production at the Gas Plant on Barrow Island.

The development of the seven backfill fields is described within the Gorgon Backfill Fields Offshore Project Proposal (OPP), which was accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) in October 2025. After an OPP is accepted, further consultation must be undertaken, and an Environment Plan (EP) must also be in place before an offshore petroleum activity can commence.

The first of the backfill fields to be developed are the Geryon and Eurytion (G&E) gas fields, referred to as **Gorgon Stage 3** (GS3).

Chevron Australia is currently developing the Gorgon Stage 3 Pipelay, Subsea Installation, and Pre-commissioning Environment Plan (the GS3 Install EP), which will be submitted to NOPSEMA for assessment and acceptance.

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This information sheet is intended to assist 'relevant persons' to make an informed assessment of the potential environmental impacts and risks of our activities and to provide input and feedback to enhance the development of the GS3 Install EP.

Relevant persons are those whose functions, interests or activities may be affected by our activities. This includes Traditional Owners and Custodians with a spiritual and cultural connection to Country, commercial and recreational fishing, tourism, and individuals or groups in local communities.

Please note: in the context of an EP, each of the following is considered part of the 'environment':

- an ecosystem and its constituent parts, including people and communities
- natural and physical resources
- the qualities and characteristics of locations, places and areas
- the heritage value of places
- the social, economic and cultural features of the above.

Activity overview

The 'petroleum activity' covered by the GS3 Install EP includes:

- installation of G&E infrastructure, tie-in to Jansz-Io infrastructure, and pre-commissioning
- inspection, maintenance, and repair (IMR) activities, if they are required to occur prior to commissioning, start-up and operations[1]
- installation and testing of an infield umbilical for the Jansz-Io subsea system
- general field support operations (e.g. use of vessels, helicopters, remotely operated vehicles (ROVs) or autonomous underwater vehicles (AUVs) to support the above activities).

G&E installation, tie-in, and pre-commissioning

The G&E infrastructure to be installed includes a production flowline, monoethylene glycol (MEG) pipeline, umbilical, and other subsea structures; Table 1 describes the key infrastructure and indicative locations.

Activities will occur across multiple campaigns. A pipelay vessel will be used to install the production flowline and MEG pipeline; and a construction vessel will be used to install the umbilical and other subsea structures. Other vessel types (e.g. heavy transport, multi-purpose, supply, etc.) will also be used to support the primary vessel during the installation campaigns.

Pre-lay works (e.g. installation of support structures) and non-invasive seabed surveys (e.g. pre-lay, as-laid, and post-lay surveys) are also part of both the pipelay and subsea infrastructure campaigns. The new G&E umbilical will cross existing Jansz-Io infrastructure (e.g. Jansz Feed Gas Pipeline), and umbilical crossings will also be constructed to protect both new and existing infrastructure. Any post-lay works (e.g. stabilisation) will be undertaken as required.

To allow for the (future) transport of G&E hydrocarbons through the existing Jansz Feed Gas Pipeline to the Gas Plant on Barrow Island, the G&E infrastructure will be tied into (connected to) Jansz-Io infrastructure:

- the production flowline will be connected to the Jansz-Io Compression (J-IC) subsea compression manifold station (SCMS) via the new backfill fields manifold (BFM)
- the MEG pipeline will be connected to Jansz drill centre 2 (DC-2)
- the umbilical will connect into the J-IC field control station (FCS).

Where applicable, valve barrier tests will be undertaken prior to the tie-ins to the Jansz–Io infrastructure to verify acceptable isolation is in place.

Pre-commissioning comprises a series of checks and tests to verify that the installed infrastructure is functioning correctly and safely. The types of pre-commissioning activities vary based on the infrastructure being tested, but may include pressure testing, flooding, cleaning, gauging and testing, dewatering or conditioning, energisation, valve barrier testing, or valve actuations.

[1] Commissioning, start-up, and operations is not within scope of the GS3 Install EP. A separate information sheet and consultation period with relevant persons will be undertaken for the Commissioning, Start-up, and Operations EP in 2027.

Once infrastructure has been successfully installed and tested, they may remain in a suspended state until commissioning starts[1].

Inspection, maintenance and repair (IMR)

IMR activities are not planned to occur during the in-force period of the GS3 Install EP; however, they are included as a contingency activity should they be required. IMR activities may range from visual inspections to structure repair or replacement.

Jansz infield umbilical

A new infield umbilical is also being installed to support ongoing communications and power reliability for the Jansz-Io subsea system (which is part of the Gorgon Foundation Project).

The infield umbilical will be installed between the FCS and the Jansz Controls Distribution Unit (CDU) [see Table 1 and Figure 1]. Any associated pre-lay, non-invasive seabed surveys, and post-lay works will be undertaken as required. Once the umbilical is installed, testing will be conducted to confirm the systems operability.

General field support operations

The petroleum activity will be undertaken using a variety of vessel types (e.g. pipelay vessels, construction vessels, heavy transport vessels, IMR vessels, supply vessels, etc.). The number and composition of the vessel fleets will vary depending on the activity being undertaken at the time. The vessels will use dynamic positioning (DP), onboard thrusters controlled by a computer system, to maintain location without anchors.

Remotely operated vehicles (ROVs) or autonomous underwater vehicles (AUVs) may also be deployed to support the installation, pre-commissioning, or contingency IMR activities.

Equipment, supplies, and crew transfers for the primary pipelay or construction vessels may be provided via helicopters and/or a resupply vessel.

Simultaneous operations (SIMOPS)

There may be other Chevron Australia petroleum activities (e.g. GS3 drilling, J-IC Project) occurring at the same time as some of the pipelay, subsea installation, and/or pre-commissioning activities. Any SIMOPS will be managed in accordance with Chevron Australia procedures, and any relevant cumulative environmental impacts and risks will be described and evaluated within the GS3 Install EP.

Location and water depths

The petroleum activity will be undertaken within the Operational Area (OA), which is defined as:

- an ~5 km corridor centred over the indicative location of the G&E production flowline, MEG pipeline, and umbilical (i.e. 2.5 km either side)
- an ~5 km radius buffer around the Jansz–Io tie-in locations.

The OA is ~95 km northwest of Barrow Island in water depths of more than 1,100 metres.

Table 1 provides infrastructure details and Figure 1 and Figure 2 show the location.

Schedule and duration

The pipelay, subsea installation, and pre-commissioning is indicatively scheduled to commence from mid-2027 and take ~18–24 months to complete. These activities will occur over multiple campaigns.

These schedules and durations are indicative and subject to change due to vessel and/or equipment availability, regulatory approvals, weather events, or other unforeseen factors. Therefore, the petroleum activity may occur any time over the 5-year in-force period of the GS3 Install EP.

IMR activities may occur on an as-needed basis during the in-force period of the GS3 Install EP.

The petroleum activity can occur 24 hours per day and 7 days per week.

Safe navigation area

Marine notices will be issued prior to the petroleum activity commencing within the OA.

The notices will include a request to other marine users for a 500 m safe navigation area (temporary exclusion) around the installation and construction vessels.

No permanent exclusion zones will be sought for the new subsea infrastructure.

Environment that may be affected (EMBA)

As part of our environmental assessment and consultation process, Chevron Australia creates maps to provide geographical context for relevant persons to determine if their functions, interests or activities may be affected by an offshore petroleum activity during planned activities (e.g. routine or contingency operations) or from an unplanned event (e.g. emergency scenarios).

Most of the environmental impacts or risks arising from planned activities would occur within, or within proximity of, the OA. However, for unplanned events the geographical extent may be much broader.

Figure 2 shows the EMBA, which is based on a worst-case unplanned release of hydrocarbon scenario (an oil spill) resulting from a vessel collision event.

The EMBA has been defined through combining multiple oil spill model simulations for the unplanned release scenario under different weather and ocean conditions. This means that in the highly unlikely event an unplanned release of hydrocarbon does occur, a geographical area much smaller than the EMBA would be affected.

Chevron Australia has systematic control measures to prevent and mitigate emergencies, and to reduce the potential environmental impact and risks of planned activities on the environment (including to ecological, social, and/or cultural sensitivities).

Table 2 summarises the potential impacts and risks and proposed control measures to manage these to levels that are as low as reasonably practicable (ALARP) and acceptable.

Marine fauna and biologically important areas (BIAs)

As with most offshore areas in WA, a range of marine species are likely to be present within or transit through the OA and EMBA. Marine fauna may include various mammals (whales, dolphins), fishes (including sharks and rays), reptiles (turtles, sea snakes), seabirds and shorebirds species. Some of these marine fauna species are also protected (listed as threatened and/or migratory) under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth [Cth]).

BIAs are areas used by protected marine species for carrying out critical life functions (e.g. reproduction, feeding, migration, resting). The OA occurs within the migration BIA for the pygmy blue whale; and part of the OA also intersects the breeding BIA for the wedge-tailed shearwater. The other closest BIAs to the OA include the internesting buffer BIA for flatback turtles, foraging BIA for whale sharks, and the migration BIA for humpback whales, located ~18 km, ~20 km, and ~48 km respectively from the OA.

The closest nesting habitats for turtle, seabird or shorebird species to the OA are Montebello and Barrow Islands, ~75 km and ~95 km respectively from the OA.

The broader EMBA also intersects with BIAs for the following marine species:

- mammals—pygmy blue and humpback whales
- reptiles—flatback, green, hawksbill, and loggerhead turtles
- fishes—whale sharks
- seabird and shorebirds—fairy, lesser crested, and roseate terns, and the wedge-tailed shearwater.

Chevron Australia undertakes environmental and modelling studies and considers scientific advice and government guidance (including recovery plans and conservation management plans) in assessing potential environmental impacts and risks to marine fauna.

Further, the Gorgon Backfill Fields OPP described an Adaptive Management Framework for pygmy blue whales [see Appendix 1] to mitigate and manage potential risks of underwater sound emissions from activities associated with the Backfill Fields Development such that they are not inconsistent with the Conservation Management Plan for the Blue Whale. This adaptive management framework will be applied during the development of the GS3 Install EP.

Cultural values

Chevron Australia acknowledges that Traditional Owners and Custodians in the northwest region of WA have expressed a cultural and spiritual connection to Sea Country. This encompasses an obligation to protect both tangible and intangible cultural values and features including songlines,

dreaming stories, and the flora and fauna connected to them.

Chevron Australia is committed to ongoing engagement and consultation with relevant groups to help protect these cultural values. This process will continue to inform our understanding and help facilitate the co-design of appropriate controls to avoid impacts.

Chevron Australia's Cultural Heritage Management System (CHMS) sets out processes and procedures to manage risks to cultural heritage, and Chevron Australia's obligations under relevant legislation including the *Aboriginal Heritage Act 1972* (WA) and the *Underwater Cultural Heritage Act 2018* (Cth).

The CHMS includes governance of field surveys and monitoring, spatial data, compliance and assurance, heritage assessment, inadvertent discovery procedures, incident management, training and induction materials.

Approvals process

Petroleum activities in Commonwealth waters are regulated by NOPSEMA. Before a petroleum activity can take place, Chevron Australia must develop an EP which will be assessed by NOPSEMA in accordance with the requirements of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (the Environment Regulations).

The Environment Regulations require us to consult with relevant persons whose functions, interests and activities may be affected by the petroleum activity.

Following consultation, Chevron Australia will submit the GS3 Install EP to NOPSEMA, which will:

- describe the petroleum activity
- describe the EMBA by the petroleum activity
- identify and assess potential environmental impacts and risks arising from the petroleum activity
- identify control measures to manage the potential environmental impacts and risks to levels that are ALARP and acceptable
- outline how Chevron Australia has engaged with relevant persons and how their feedback has been considered and addressed.

NOPSEMA will assess whether the EP satisfies the Environment Regulations, including whether the environmental impacts and risks of the petroleum activity can be managed so that they are ALARP and acceptable before accepting the EP.

Your input

Chevron Australia is now seeking your feedback and input if you consider your functions, interests, or activities may be affected based on the information provided, including the summary of the potential environmental impacts and risks identified to date in Table 2.

We encourage you to provide additional details about the environment, aspects, potential impacts and risks of the activity, or key proposed control measures, or to ask for further information or consultation by **17 June 2026.**

You can contact us with any questions, requests for information, or feedback at:

- 1800 225 195
- australia.chevron.com/feedback
- or scan the QR code

To subscribe to Chevron Australia consultation email or text message updates relating to our proposed activities, please visit go.chevron.com/subscriptions

Relevant persons may request that the information they provide be treated as confidential. Chevron Australia will make this known to NOPSEMA and it will be identified as sensitive information and not published in the EP.

What's next

The feedback Chevron Australia receives during consultation will be used to inform and enhance the EP before it is submitted to NOPSEMA for assessment.

Chevron Australia commits 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 australia.chevron.com/privacy

Table 1: Key infrastructure for installation.

Infrastructure	Indicative location and description	Approximate water depth
Gorgon Stage 3		
G&E production flowline and pipeline end terminations (PLETs)	A 24", ~36 km long production flowline will be installed between the G&E and Jansz fields [refer to Figure 1 for the indicative route]. The flowline will have a PLET at each end.	1,220–1,350 m
G&E MEG pipeline and pipeline end manifolds (PLEMs)	A 6", ~31 km long MEG pipeline will be installed between the G&E field and Jansz DC-2 [refer to Figure 1 for the indicative route]. The pipeline will have a PLEM at each end.	1,220–1,350 m
G&E umbilical and umbilical termination assembly (UTA)	An ~31 km long umbilical will be installed between the G&E field and the FCS [refer to Figure 1 for the indicative route]. The umbilical will have a UTA at the G&E field end.	1,220–1,310 m*
Backfill Fields Manifold (BFM)	One BFM will be installed within the Jansz field.	1,350 m
G&E production manifolds	Two manifolds (G&E M1, G&E M2) will be installed within the G&E field.	1,220 m
G&E Controls Distribution Unit (CDU)	One CDU will be installed within the G&E field.	1,220 m
G&E pipeline termination structure (PTS)	One PTS will be installed within the G&E field.	1,220 m
Subsea support structures	Various types of support structures will be installed as needed. For example, mudmat foundations will be installed on the seabed to support other infrastructure (such as the PLETs and manifolds); and mattresses will be used as supports along parts of the G&E production flowline as well as for other infrastructure (such as jumpers and spools).	1,220–1,350 m
Jumpers and spools	Various locations. Jumpers and spools will be installed to connect different structures together. For example, jumpers will be used to connect the G&E PLEMs to the G&E CDU and PTS, and to the Jansz DC-2.	1,220 m or 1,350 m
Flying leads	Various locations. Flying leads will be installed to provide control connections between different structures. For example, electrical flying leads will provide connection between the G&E CDU and PTS.	1,220 m or 1,350 m
Gorgon Foundation Project		
Jansz infield umbilical, UTA, junction box, and flying leads	An ~13 km long umbilical will be installed between the FCS and Jansz CDU. The umbilical will have a UTA and electrical junction box at the Jansz field end. Flying leads will provide control connections between the Jansz UTA and CDU.	1,290–1,350 m*

** These are water depths below the surface; as the umbilical ties into the FCS, that end of the umbilical will be ~25 m above sea level.*

Figure 1: GS3 Install EP—Operational Area (OA) and indicative locations of key infrastructure.

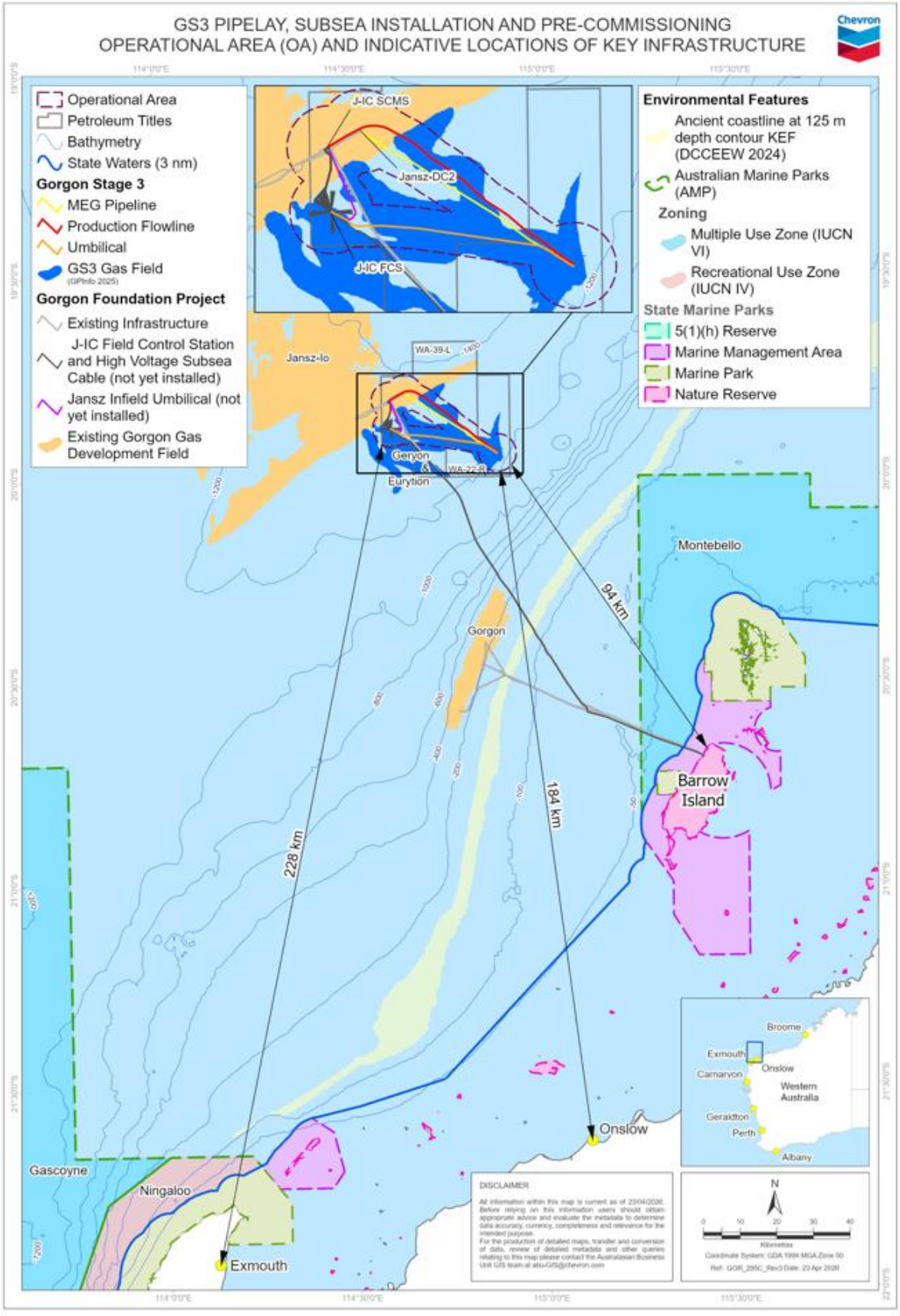


Figure 2: GS3 Install EP—Environment that May Be Affected (EMBA).

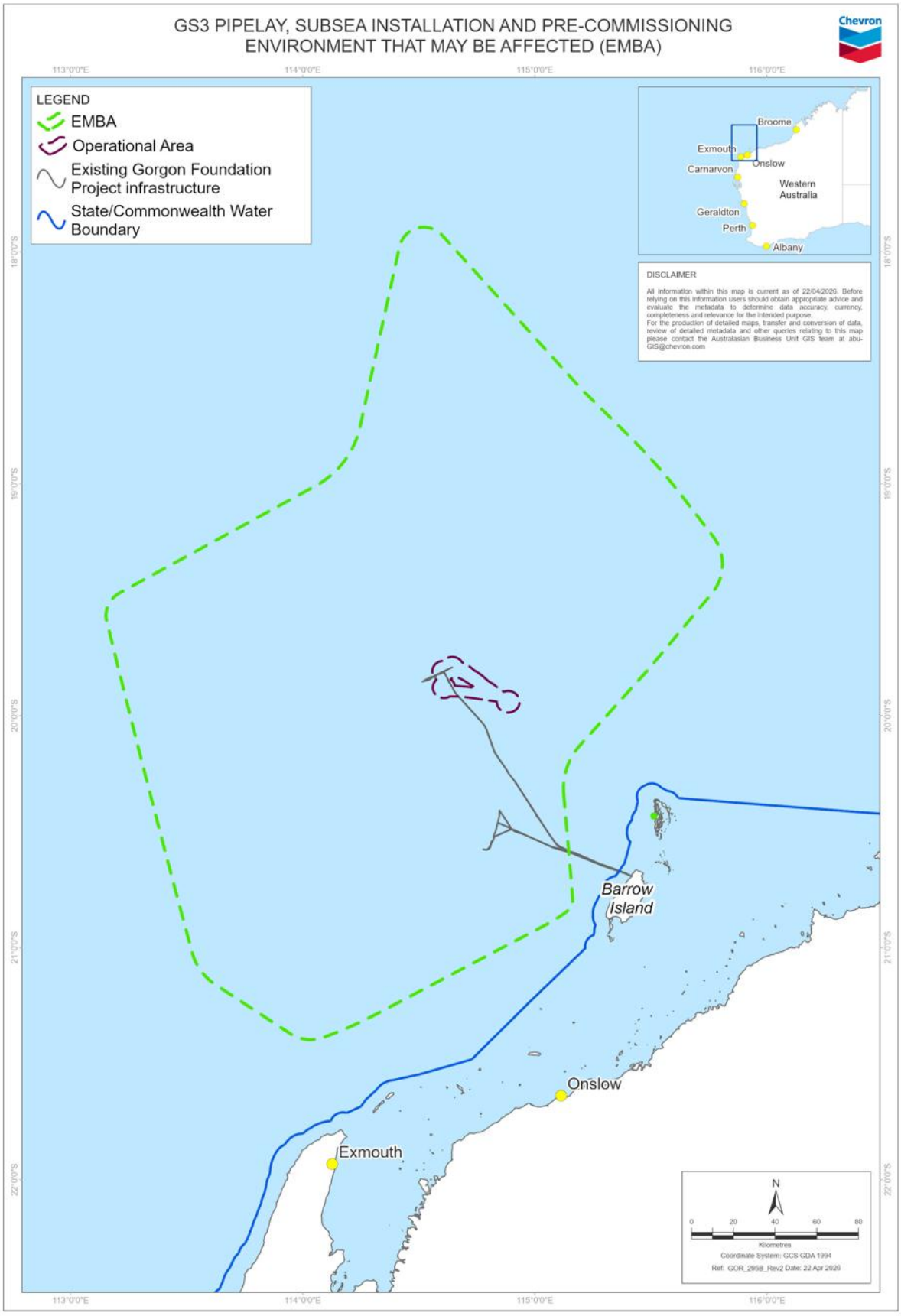


Table 2: Summary of potential environmental impacts and risks, and the proposed control measures.

Aspect[2] (and key sources)	Potential impact or risk	Key proposed control measures[3]
Cultural heritage—Tangible and intangible *Note: Other aspects identified in this table (e.g. seabed disturbance) may have potential impacts or pose potential risks to cultural heritage, with the proposed key control measures listed here also applicable to those other aspects.*	• Potential adverse effects to underwater cultural heritage (UCH) sites and/or artefacts (tangible cultural heritage). • Potential interference with Sea Country values (intangible cultural heritage), including songlines, dreaming stories and culturally important marine fauna.	• Implement Chevron Australia's Inadvertent Underwater Cultural Heritage Discovery Procedure, including processes for notification and response to suspected discoveries. ○ Discovery of suspected UCH is reported to the Minister within 21 days of discovery as per section 40 of the *Underwater Cultural Heritage Act 2018* (Cth). • Ongoing consultation with Traditional Owners and Custodians and/or representative bodies is undertaken as per the respective engagement plan and/or consultation protocols. • Any new information on cultural values or features identified during ongoing consultation will be incorporated into relevant Environment Plans. *Proposed key control measures related to marine fauna and other potential cultural values and features are outlined in aspect sections below.*
Planned activities		
Physical presence—Vessels, infrastructure, and/or equipment • Long-term presence of subsea infrastructure (e.g. production flowline, MEG pipeline, umbilical, other structures). • Temporary presence of vessels and/or ROVs/AUVs within the OA.	• A potential change to the functions, interests, and activities of other marine users.	• Vessels operating within the OA will comply with any Notice to Mariners requirements under the *Navigation Act 2012* (Cth). • Chevron Australia will comply with any Notice to Mariners requirements under the *Navigation Act 2012* (Cth) regarding notifications of installed subsea infrastructure. • Where required, Chevron Australia will develop and implement SIMOPS Plan(s) to manage the pipelay, subsea installation, and pre-commissioning activity and other Chevron Australia petroleum activities that may occur concurrently within the vicinity of the OA.
Physical presence—Seabed disturbance • Installation and long-term presence of production flowline, MEG pipeline, umbilical, other structures. • Short-term disturbance due to temporary presence of equipment (e.g. acoustic positioning equipment, deadman anchors, etc.) or temporary wet parking of equipment (e.g. ROVs, structures).	• A localised and temporary change in water quality. • A localised change to benthic habitats and communities.	• Visual inspections of the seabed will be undertaken prior to installation of subsea infrastructure. • Planned seabed disturbance from the petroleum activity will be within the spatial extents of either the 'long-term disturbance area' or 'short-term disturbance area' as defined in the Gorgon Backfill Field Development OPP.
Planned discharges—Vessel operations	• A localised and temporary change in water quality.	• Vessels operating within the OA will comply with the requirements of Marine Order 91 (MARPOL 73/78 Annex I) in relation to oily bilge water discharges.

[2] An 'environmental aspect' is an element of the petroleum activity that has the potential to interact with the environment (e.g. an emission or discharge).
[3] The proposed control measures are subject to change through consultation with relevant persons and the subsequent NOPSEMA assessment process.

Aspect[2] (and key sources)	Potential impact or risk	Key proposed control measures[3]
• May include a variety of intermittent discharges from general vessel operations; e.g. sewage, greywater, food wastes, cooling water, deck wash-water, bilge water. • Discharges in near-surface water.		• Vessels operating within the OA will comply with the requirements of Marine Order 95 (MARPOL 73/78 Annex V) in relation to food waste discharge. • Vessels operating within the OA will comply with the requirements of Marine Order 96 (MARPOL 73/78 Annex IV) in relation to sewage discharge. • Planned discharges to the marine environment are subject to selection and environmental assessment as per Chevron Australia's Hazardous Materials Management Procedure.
Planned discharges—Subsea operations • May include a variety of intermittent discharges from general installation and pre-commissioning operations; e.g. treated water, control fluids, MEG, acid wash • Discharges are generally near-seabed.	• A localised and temporary change in water quality.	• Planned discharges to the marine environment are subject to selection and environmental assessment as per Chevron Australia's Hazardous Materials Management Procedure.
Planned emissions—Atmospheric • Fuel use from vessels and helicopters within the OA.	• A localised and temporary change in air quality.	• Vessels operating within the OA will comply with requirements of Marine Order 97 (MARPOL 73/78 Annex VI) in relation to air pollution.
Planned emissions—Greenhouse gases • Fuel use from vessels and helicopters within the OA.	• A potential reduction to IPCC's estimated remaining carbon budget to limit global warming to 1.5–2.0°C.	• Chevron Australia will comply with the Australian Government's Safeguard Mechanism scheme in relation to greenhouse gas emissions. • Vessels operating within the OA will comply with requirements of Marine Order 97 (MARPOL 73/78 Annex VI) in relation to air pollution.
Planned emissions—Artificial light • Navigation and operational lighting from vessels within the OA.	• A localised and temporary change in ambient light. • A potential temporary change in the behaviour of marine fauna.	• Vessels working at night will be required to reduce external lighting to the minimum required for safe operations and navigation.
Planned emissions—Underwater sound • Use of MODU, vessels, and helicopters.	• A localised and temporary change in ambient underwater sound. • A potential temporary change in the behaviour of marine fauna. • A potential for auditory impairment or injury in marine fauna.	• Vessels under transit within the OA will implement caution and no approach zones as described in sections 8.05 and 8.06 of Part 8, Division 8.1 (Interacting with cetaceans) of the EPBC Regulations 2025 (Cth). • Helicopters under transit within the OA will operate in alignment with section 8.07 of Part 8, Division 8.1 (Interacting with cetaceans) of the EPBC Regulations 2025 (Cth). • The Adaptive Management Framework for pygmy blue whales [see Appendix 1] will be applied to the petroleum activity.
Unplanned events		
Unplanned disturbance: Fauna interaction • Temporary presence of the vessels and helicopters within the OA.	• Injury or death of an individual marine fauna due to an unplanned interaction (e.g. vessel strike, entrainment or impingement).	• Vessels under transit within the OA will implement caution and no approach zones as described in sections 8.05 and 8.06 of Part 8, Division 8.1 (Interacting with cetaceans) of the EPBC Regulations 2025 (Cth). • Helicopters under transit within the OA will operate in alignment with section 8.07 of Part 8, Division 8.1

Aspect[2] (and key sources)	Potential impact or risk	Key proposed control measures[3]
• Water intake during flowline/pipeline flooding (e.g. during hydrotesting).		(Interacting with cetaceans) of the EPBC Regulations 2025 (Cth). • Inlet screens will be used when winning water from the sea during flowline flooding and pre-commissioning activities.
Unplanned disturbance: Seabed disturbance • Dropped objects (e.g. equipment, infrastructure) within the OA.	• Potential change to benthic habitats and communities.	• Develop and implement a Lift Plan (or equivalent) for the petroleum activity. • Dropped equipment will be retrieved wherever practicable within operational and safety constraints.
Non-indigenous species: Introduction of invasive marine pests • Planned ballast water exchange from vessels within the OA. • Presence and unplanned release of biofouling from vessels, infrastructure, or equipment within the OA.	• A potential introduction and establishment of an invasive marine pest which may subsequently result in effects to benthic habitats and communities.	• Vessels operating within the OA will comply with ballast water management as required under the *Biosecurity Act 2015* (Cth) and best practice guidance within the Australian Ballast Water Management Requirements. • Vessels operating within the OA will comply with biofouling management as required under the *Biosecurity Act 2015* (Cth) and best practice guidance within the Australian Biofouling Management Requirements. • Vessels operating within the OA will comply with requirements within Marine Order 98 in relation to anti-fouling systems.
Unplanned releases: Solid waste • Inappropriately handled or stored solid waste on vessels within the OA.	• Potential adverse effects (e.g. injury, entanglement) to marine fauna.	• Vessels operating within the OA will comply with requirements within Marine Order 95 (MARPOL 73/78 Annex V) in relation to waste management.
Unplanned releases: Leaks and spills • Fuel bunkering between vessels within the OA. • Use, handling, and transfer of hazardous materials onboard vessels within the OA. • Unplanned leaks or minor releases during tie-in or pre-commissioning activities.	• Potential adverse effects (e.g. toxicity) to marine fauna.	• Develop and implement a Bunkering Procedure (or equivalent) for the petroleum activity. • Vessels operating within the OA will comply with the requirements of Marine Order 91 in relation to having an approved Ship Oil Pollution Emergency Plan (SOPEP) in place.
Unplanned release: Loss of containment (vessel collision event) • A vessel collision event may occur due to loss of DP, navigational error, or floundering due to weather, and result in a surface release of marine fuel.	• An unplanned hydrocarbon release may result in effects to marine fauna, smothering of subtidal or intertidal habitats, indirect impacts to fisheries, and/or changes in amenity.	• Vessels operating within the OA will comply with any Notice to Mariners requirements under the *Navigation Act 2012* (Cth). • Vessel crew will hold a current Standards of Training, Certification and Watchkeeping for Seafarers (or equivalent) certificate as appropriate to duties. • Vessels operating within the OA will comply with the requirements of Marine Order 27 in relation to navigation and radio equipment. • Vessels operating within the OA will comply with the requirements of Marine Order 28 in relation to watchkeeping. • Vessels operating within the OA will comply with the requirements of Marine Order 30 in relation to prevention of collisions at sea.

Aspect[2] (and key sources)	Potential impact or risk	Key proposed control measures[3]
		• Vessels operating within the OA will comply with the requirements of Marine Order 91 in relation to having an approved Ship Oil Pollution Emergency Plan (SOPEP) in place. • Oil spill response will be implemented in accordance with the SOPEP and arrangements and strategies described in Chevron Australia's Oil Pollution Emergency Plan (OPEP). • Operational and scientific monitoring will be implemented in accordance with Chevron Australia's Operational and Scientific Monitoring Bridging Implementation Plan (OSM-BIP).
Oil spill response		
Oil spill response—Oiled wildlife response • Response may be implemented in the event of an oil spill which results in oil exposure to marine fauna.	• Implementing oiled wildlife response will require personnel to interact with fauna, which may cause further harm.	• Oil spill response will be implemented in accordance with the arrangements and strategies described in Chevron Australia's OPEP. • Operational and scientific monitoring will be implemented in accordance with Chevron Australia's OSM-BIP.

Appendix 1: Adaptive Management Framework for Pygmy Blue Whales exposed to underwater sound emissions from the Gorgon Backfill Fields Development

Please note: The following description is adapted from the framework as described in Section 10.4 of the Gorgon Gas Development: Backfill Fields Offshore Project Proposal (OPP). The framework also refers to other relevant sections, tables, and documents in the OPP. The full OPP can be accessed here.

Purpose

This adaptive management framework is designed to ensure the control measures developed and implemented during the Gorgon Backfill Field Development's (the Development's) petroleum activities are effective in managing the potential risks of underwater sound emissions on pygmy blue whales such that the residual risk is consistent with the relevant acceptable levels and environmental performance outcomes (EPOs) established for the Development. This framework for pygmy blue whales works in conjunction with the broader **CM-20** and **CM-21** for marine fauna (Table 8-57).

In relation to underwater sound emissions and the potential risks to pygmy blue whales, the relevant acceptable levels (Table 7-6) and EPOs (Table 8-57) that have been developed to manage the Development's petroleum activities such that they are not inconsistent with the Conservation Management Plan for the Blue Whale (Ref. 20) are:

- **AL-12**: Impacts from the Development will not interfere with the recovery of the population of an EPBC Act listed threatened species
- **AL-13**: Impacts from the Development will not be inconsistent with the requirements of threatened species recovery plans made or adopted under the EPBC Act
- **EPO-17**: Sound emissions from planned Development activities will be managed such that EPBC Act listed species continue undertaking biological important behaviours[4]
- **EPO-19**: Any blue whale continues to utilise the biologically important area without injury[5], and is not displaced from a foraging area[6,7]
- **EPO-23**: Implement an adaptive management approach (**CM-20**, **CM-21**) for underwater sound emissions from the Development such that it can be demonstrated that risks have been reduced to as low as reasonably practicable and can be managed to meet acceptable levels. The outcomes of this adaptive management approach will be incorporated into Environment Plans for the petroleum activities associated with this Development.

Key sensitivities and considerations

Based on information available at the time of writing this OPP, key sensitivities and considerations for evaluating potential risk to pygmy blue whales within the vicinity of the DA include:

- the DA overlaps with the migration BIA
  - studies indicate that the migration corridor used during the northern migration is broader than the migration BIA
  - presence within the north-bound migration corridor in the vicinity of the DA is not evenly distributed—with higher presence detected along the inshore edge of the BIA (at the continental shelf edge) and further offshore beyond the BIA, compared to the central area of the BIA

[4] Where biologically important behaviours are defined as behaviour associated with critical life functions (e.g. reproduction, foraging, migration, and resting) (Ref. 719).
[5] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 20) 'injury to blue whales' is considered both permanent threshold shift (PTS) and temporary threshold shift (TTS) and any other form of physical harm arising from anthropogenic sources of underwater sound (Ref. 369).
[6] For the purpose of Action A.2.3 from the Conservation Management Plan for the Blue Whale (Ref. 20) 'displaced from a foraging area' applies in relation to biologically important areas (BIAs) (Ref. 369); and these BIAs correspond to 'Foraging Area', 'Possible Foraging Area', and 'Known Foraging Area' as illustrated in Figure 1 of the Conservation Management Plan for the Blue Whale (Ref. 20; Ref. 369). There are no Foraging Area BIAs within or adjacent to the Development Area (DA).
[7] In accordance with Australian Government guidance, activities outside designated Foraging Areas should adopt adaptive management approaches in the event that indicators (e.g. aggregation in a particular area) of whale foraging are evident to ensure that impacts are not unacceptable (e.g. no injury or biologically significant disturbance) (Ref. 369). EPO-17 incorporates foraging as one of the biologically important behaviours of marine fauna, and EPO-23 applies adaptive management.

  - studies indicate that the southern migration predominantly occurs further offshore than the BIA
- presence of pygmy blue whales in the vicinity of the DA has been observed
  - late-March to mid-September (peak late-May to June) during northern migration
  - early-October to late-January (peak late-November to early-December) during southern migration
  - however, this presence of migratory whales varies temporally and spatially each year
- the DA and surrounding area are not considered to represent a Foraging Area, but may provide opportunistic foraging if the environmental conditions provide for the aggregation of prey at sufficient quantities at the time a pygmy blue migrates through the area
  - if opportunistic foraging does occur, this is likely to occur within surface waters (e.g. photic zone).

The above key sensitivities and considerations are sourced from the description of pygmy blue whales in Section 6.3.3.1.2; refer to this section for further details and scientific studies/literature sources.

Risk-based approach

Consistent with the approach within Chevron Corporation's Environment Risk Management Process (Ref. 492; see also Section 10.3.3.1), this adaptive management framework for pygmy blue whales adopts a risk-based approach to managing environmental risks. That is, safeguards (control measures) are developed commensurate to the nature and scale of the risk (e.g. there may be greater risk reduction and/or different controls required during peak north-bound migration versus south-bound migration, or during concurrent petroleum activities versus an individual petroleum activity, etc.).

Sources of uncertainty

At the time of writing this OPP, detailed information on the staging of field developments is not yet available (Section 4.1.4), but this will become available as the field developments progress through design stages. It was also noted in Section 8.5.3.1.1 that some of the analogue source levels for mobile offshore drilling unit (MODU)/vessels used in the acoustic and animal behaviour modelling to inform the risk evaluation in the OPP are likely over-conservative, which would subsequently overestimate the predicted ensonified areas. This framework is intended to address these and other key areas of uncertainty in managing the risk of underwater sound emissions on pygmy blue whales, including:

- activity-specific schedules for the Development (and any overlap with other Chevron Australia petroleum activities)
- predictions of ensonified areas (e.g. including estimation of the sound source level, effect-criteria, inputs into animal movement modelling, etc.)
- the behavioural response and physiological effects on pygmy blue whales from exposure to underwater sound
- the implications/consequences of these effects to pygmy blue whale individuals or populations
- detection methods for biologically important behaviours (e.g. foraging versus migrating) of pygmy blue whales within vicinity of the DA
- changes to and/or new regulatory requirements in relation to the management of underwater sound and pygmy blue whales.

New information related to these areas of uncertainty is likely to become available over the life of the Development. The implementation of an adaptive management framework allows Chevron Australia to incorporate new information at the time of a specific petroleum activity and to develop safeguards commensurate to the environmental risk.

Framework

The management of environmental risks from the Development's underwater sound emissions to pygmy blue whales follows these key steps:

- prediction of potential worst-case credible consequence
- application of the environmental mitigation hierarchy to guide the selection of safeguards such that the environmental risk can be demonstrated to be
  - reduced to ALARP

  - managed to a level consistent with the EPOs (and therefore equal to or better than the acceptable levels)

- implementation of monitoring and adaptive management commensurate to the nature and scale of the risk.

Given the staged field developments for the backfill fields, the framework can be applied at both the specific petroleum activity and broader Development level. An overview of the adaptive management framework is provided in Figure 10-3.

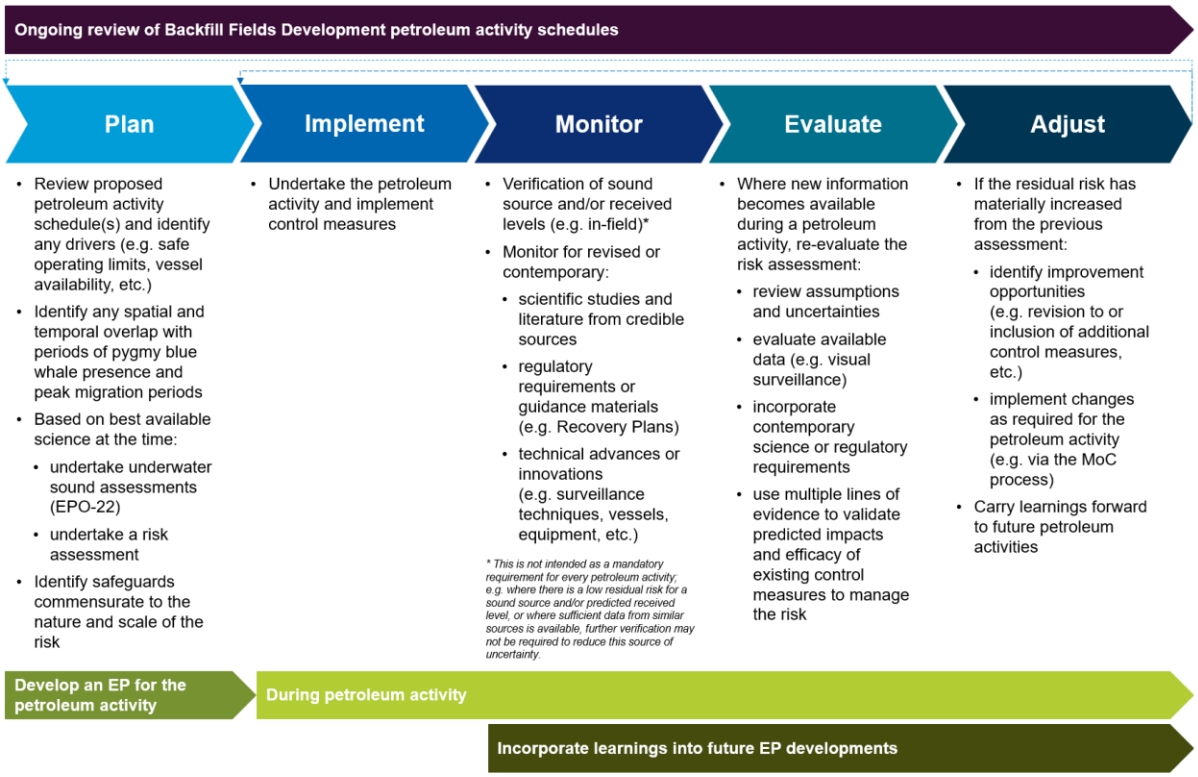


Figure 10-3: Overview of adaptive management framework

The Environment Risk Assessment and Management Procedure (Ref. 493) adopts an environmental mitigation hierarchy based on the International Petroleum Industry Environmental Conservation Association (IPIECA) mitigation hierarchy (Ref. 765). The application of the environmental mitigation hierarchy identifies opportunities to limit potential negative impacts on environmental receptors of concern. The two preventative mitigation steps are:

- **avoid**—measures taken to anticipate and prevent potential negative impacts before actions or decisions are taken that could lead to such impacts
- **reduce**—measures taken to reduce the duration, intensity, significance and/or extent of potential impacts (including direct, indirect, and cumulative impacts, as appropriate) that cannot be completely avoided.

Under the Environment Risk Assessment and Management Procedure, application of the mitigation hierarchy is required for a potential consequence of Minor or above (see Table 7-4 for consequence descriptions from Chevron Corporation's Integrated Risk Prioritization Matrix).

Figure 10-4 provides an extended overview of the 'plan' stage of the framework, including undertaking a risk assessment and applying the environmental mitigation hierarchy to ensure that the residual risk is consistent with the relevant acceptable levels and EPOs established for the Development.

To assist in the application of the environmental mitigation hierarchy a preliminary toolbox of potential safeguards has been collated in Table 10-2. The types of safeguards presented in the toolbox are based on Chevron Australia's operational experience on the North West Shelf and Chevron Australia's involvement in national and international working groups related to the management of underwater sound. It is expected that this toolbox will be revised over time as new information and/or new technologies become available.

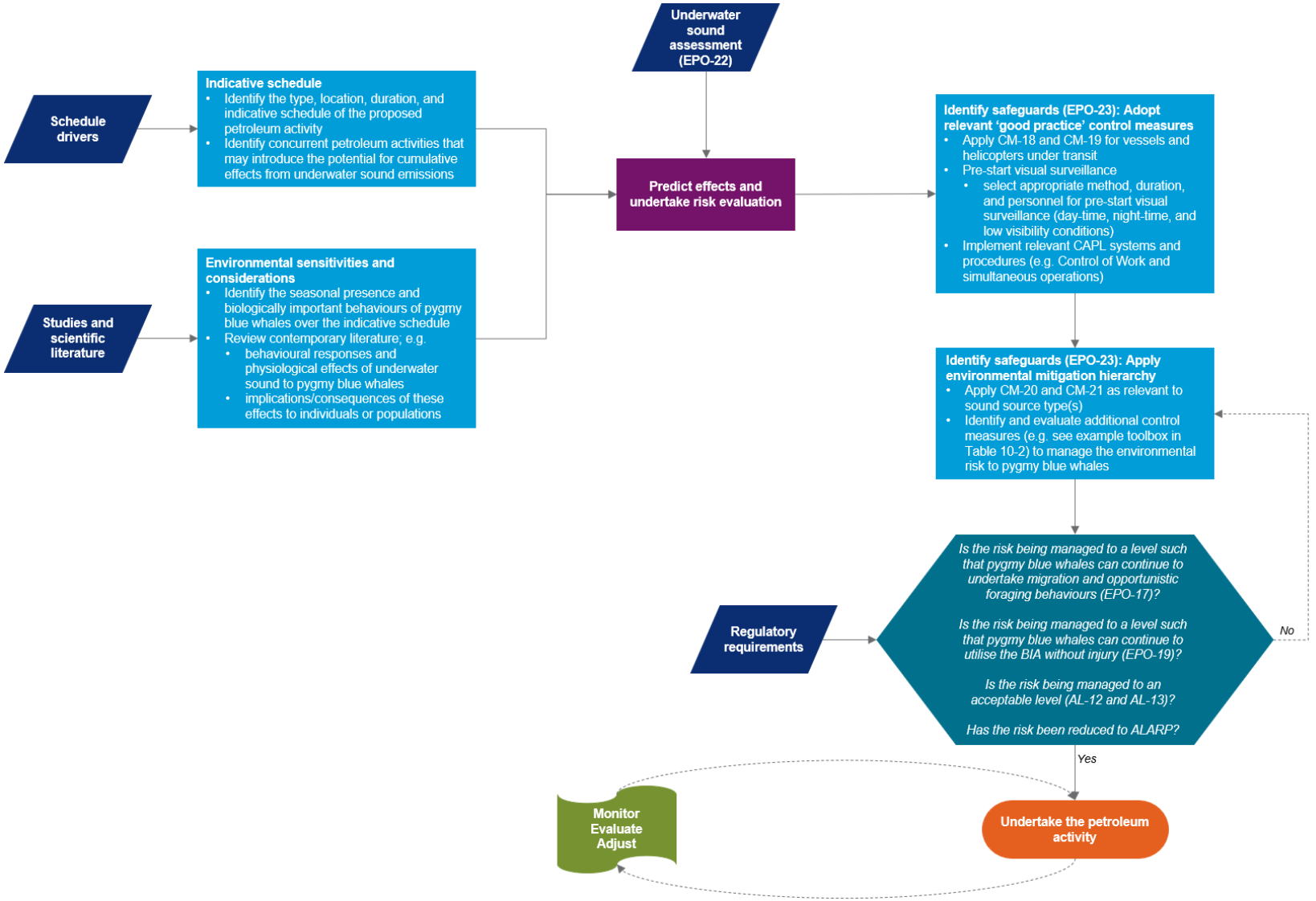


Figure 10-4: Expanded overview of 'plan' with application of the environmental mitigation hierarchy

Table 10-2: Toolbox of example safeguards for managing the environmental risk from underwater sound to pygmy blue whales

Hierarchy	Example types of control measures that may be considered
Avoid	• Temporal avoidance (e.g. avoid activities during predicted peak periods of north-bound migration)
Reduce	• Reduce spatial exposure within migration BIA (e.g. adjust activity schedules[8], if operationally feasible and practicable, to reduce or remove concurrent activities) • Reduce temporal exposure during peak sensitivity periods (e.g. adjust activity schedules [as above] to reduce or remove concurrent activities; reduce activities to day-time operations during predicted peak periods of north-bound migration, etc.) • MODU/vessel selection • Position-holding selection (e.g. anchoring in place of DP) • Equipment (e.g. geophysical) selection • Separation distances (e.g. for vessels or helicopters under transit) • Speed limits (e.g. for vessels under transit) • Use of operating procedures, e.g. – ongoing visual surveillance within an observation zones[9] during the petroleum activity (e.g. by bridge-watch, dedicated Marine Fauna Observers, passive monitoring equipment, etc.) to advise of presence/behaviour of pygmy blue whales – adjust activity[10] (e.g. pause activity, reduce DP, change position, etc.) if pygmy blue whale foraging behaviour[11] is observed within action zone[9] – use of soft-starts and/or shut-down zones for impulsive (e.g. vertical seismic profiling [VSP]) sound sources – activity re-start procedures

Implementation of the framework in environment plans

It is intended that this adaptive management framework for pygmy blue whales is applied to the subsequent suite of Environment Plans (EPs) required for the Development. As each EP is developed, this framework may be refined and revised (e.g. to incorporate new science, technology, regulatory requirements, etc.), and changes will be described in the EPs.

[8] The ability to adjust schedules is dependent on the type of activity and any schedule drivers (e.g. safe operating [metocean] conditions, vessel or equipment availability, integrity management for inspection, maintenance, and repair [IMR], etc.).
[9] The development, spatial extent, and use of any management zones (e.g. observation, action, shut-down) will be commensurate with the sound source and risk being managed.
[10] These in-field decisions to adjust an activity are the responsibility of the Vessel Master (or equivalent), and would only be implemented where it is considered operationally safe and technically feasible.
[11] In-field observations of actual whale feeding are difficult to detect, so indicators of probable foraging (e.g. aggregating in a particular area) may be used as a proxy (Ref. 369). The type of indicator, or ability to detect actual feeding behaviours, may change over the life of the Development with advancement in science and technology.

Relevant persons information

Gorgon Stage 3 Pipelay, Subsea Installation, and Pre-commissioning

Chevron Australia, on behalf of the Gorgon Joint Venture, operates the Gorgon Project, located off the northwest coast of Western Australia (WA).

Since 2015, as part of the first phase of the Gorgon Project (the Gorgon Foundation Project), offshore production wells, in-field infrastructure, and production pipelines have gathered hydrocarbons (natural gas and condensate) from the Gorgon and Jansz-Io gas fields and transported it to the Gorgon Gas Treatment Plant (the Gas Plant) on Barrow Island.

Hydrocarbons are processed at the Gas Plant for export as liquefied natural gas (LNG) or piped to the mainland for WA domestic gas users.

The existing Gorgon Project environmental approvals envisaged the development of backfill fields within the Greater Gorgon Area as supply from the Gorgon and Jansz-Io fields depleted over time.

This next phase of the Gorgon Project, the Backfill Fields Development, comprises the production of natural gas from seven backfill fields within the Greater Gorgon Area: Chandon, Chrysaor, Dionysus, Eurytion, Geryon, Semele, and West Tryal Rocks. The seven backfill fields will be developed or co-developed over multiple stages.

These backfill fields will connect to Gorgon Foundation Project infrastructure in order to maintain current rates of production at the Gas Plant on Barrow Island.

The development of the seven backfill fields is described within the Gorgon Backfill Fields Offshore Project Proposal (OPP), which was accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) in October 2025. After an OPP is accepted, further consultation must be undertaken, and an Environment Plan (EP) must also be in place before an offshore petroleum activity can commence.

The first of the backfill fields to be developed are the Geryon and Eurytion (G&E) gas fields, referred to as **Gorgon Stage 3** (GS3).

Chevron Australia is currently developing the Gorgon Stage 3 Pipelay, Subsea Installation, and Pre-commissioning Environment Plan (the GS3 Install EP), which will be submitted to NOPSEMA for assessment and acceptance.

This information sheet is intended to assist 'relevant persons' to make an informed assessment of the potential environmental impacts and risks of our activities and to provide input and feedback to enhance the development of the GS3 Drilling EP.
Relevant persons are those whose functions, interests or activities may be affected by our activities. This includes Traditional Owners and Custodians with a spiritual and cultural connection to Country, commercial and recreational fishing, tourism, and individuals or groups in local communities.

Please note: in the context of an EP, each of the following is considered part of the 'environment':

- An ecosystem and their constituent parts, including people and communities
- Natural and physical resources
- The qualities and characteristics of locations, places and areas
- The heritage value of places

- The social, economic and cultural features of the above.

Activity summary

The ‘petroleum activity’ covered by the GS3 Install EP includes:

- Installation of G&E infrastructure, tie-in to Jansz-Io infrastructure, and pre-commissioning
- Inspection, maintenance, and repair (IMR) activities, if they are required to occur prior to commissioning, start-up and operations
- Installation and testing of an infield umbilical for the Jansz-Io subsea system
- General field support operations (e.g. use of vessels, helicopters, remotely operated vehicles (ROVs) or autonomous underwater vehicles (AUVs) to support the above activities).

G&E installation, tie-in, and pre-commissioning

The G&E infrastructure to be installed includes a production flowline, monoethylene glycol (MEG) pipeline, umbilical, and other subsea structures; Table 1 describes the key infrastructure and indicative locations.

Activities will occur across multiple campaigns. A pipelay vessel will be used to install the production flowline and MEG pipeline; and a construction vessel will be used to install the umbilical and other subsea structures. Other vessel types (e.g. heavy transport, multi-purpose, supply, etc.) will also be used to support the primary vessel during the installation campaigns.

Pre-lay works (e.g. installation of support structures) and non-invasive seabed surveys (e.g. pre-lay, as-laid, and post-lay surveys) are also part of both the pipelay and subsea infrastructure campaigns. The new G&E umbilical will cross existing Jansz-Io infrastructure (e.g. Jansz Feed Gas Pipeline), and

umbilical crossings will also be constructed to protect both new and existing infrastructure. Any post-lay works (e.g. stabilisation) will be undertaken as required.

To allow for the (future) transport of G&E hydrocarbons through the existing Jansz Feed Gas Pipeline to the Gas Plant on Barrow Island, the G&E infrastructure will be tied into (connected to) Jansz–Io infrastructure:

- The production flowline will be connected to the Jansz-Io Compression (J-IC) subsea compression manifold station (SCMS) via the new backfill fields manifold (BFM)
- The MEG pipeline will be connected to Jansz drill centre 2 (DC-2)
- The umbilical will connect into the J-IC field control station (FCS).

Where applicable, valve barrier tests will be undertaken prior to the tie-ins to the Jansz–Io infrastructure to verify acceptable isolation is in place. Pre-commissioning comprises a series of checks and tests to verify that the installed infrastructure is functioning correctly and safely. The types of pre-commissioning activities vary based on the infrastructure being tested, but may include pressure testing, flooding, cleaning, gauging and testing, dewatering or conditioning, energisation, valve barrier testing, or valve actuations.

Once infrastructure has been successfully installed and tested, they may remain in a suspended state until commissioning starts[1].

Inspection, maintenance and repair (IMR)

IMR activities are not planned to occur during the in-force period of the GS3 Install EP; however, they are included as a contingency activity should they be required. IMR activities may range from visual inspections to structure repair or replacement.

Jansz infield umbilical

A new infield umbilical is also being installed to support ongoing communications and power reliability for the Jansz-Io subsea system (which is part of the Gorgon Foundation Project).

The infield umbilical will be installed between the FCS and the Jansz Controls Distribution Unit (CDU) [see Table 1 and Figure 1]. Any associated pre-lay, non-invasive seabed surveys, and post-lay works will be undertaken as required. Once the umbilical is installed, testing will be conducted to confirm the systems operability.

General field support operations

The petroleum activity will be undertaken using a variety of vessel types (e.g. pipelay vessels, construction vessels, heavy transport vessels, IMR vessels, supply vessels, etc.). The number and composition of the vessel fleets will vary depending on the activity being undertaken at the time. The vessels will use dynamic positioning (DP), onboard thrusters controlled by a computer system, to maintain location without anchors.

Remotely operated vehicles (ROVs) or autonomous underwater vehicles (AUVs) may also be deployed to support the installation, pre-commissioning, or contingency IMR activities.

Equipment, supplies, and crew transfers for the primary pipelay or construction vessels may be provided via helicopters and/or a resupply vessel.

Simultaneous operations (SIMOPS)

There may be other Chevron Australia petroleum activities (e.g. GS3 drilling, J-IC Project) occurring at the same time as some of the pipelay, subsea installation, and/or pre-commissioning activities. Any SIMOPS will be managed in accordance with Chevron Australia procedures, and any relevant cumulative environmental impacts and risks will be described and evaluated within the GS3 Install EP.

[1] Commissioning, start-up, and operations is not within scope of the GS3 Install EP. A separate information sheet and consultation period with relevant persons will be undertaken for the Commissioning, Start-up, and Operations EP in 2027.

Location and water depth



The petroleum activity will be undertaken within the Operational Area (OA), which is defined as:

- An ~5 km corridor centred over the indicative location of the G&ES3 production flowline, MEG pipeline, and umbilical (i.e. 2.5 km either side)
- An ~5 km radius buffer around the Jansz–Io tie-in locations.

The OA is ~95 km northwest of Barrow Island in water depths of more than 1,100 metres.

Table 1 provides infrastructure details and Figure 1 and Figure 2 show the location.

Jump to detailed maps below.

Schedule and duration

The pipelay, subsea installation, and pre-commissioning is indicatively scheduled to commence from mid-2027 and take ~18–24 months to complete. These activities will occur over multiple campaigns.

These schedules and durations are indicative and subject to change due to vessel and/or equipment availability, regulatory approvals, weather events, or other unforeseen factors. Therefore, the petroleum activity may occur any time over the 5-year in-force period of the GS3 Install EP.

IMR activities may occur on an as-needed basis during the in-force period of the GS3 Install EP.

The petroleum activity can occur 24 hours per day and 7 days per week.

Safe navigation area

Marine notices will be issued prior to the petroleum activity commencing within the OA.

The notices will include a request to other marine users for a 500 m safe navigation area (temporary exclusion) around the installation and construction vessels.

No permanent exclusion zones will be sought for the new subsea infrastructure.

Environment that may be affected (EMBA)

As part of our environmental assessment and consultation process, Chevron Australia creates maps to provide geographical context for relevant persons to determine if their functions, interests or activities may be affected by an

offshore petroleum activity during planned activities (e.g. routine or contingency operations) or from an unplanned event (e.g. emergency scenarios).

Most of the environmental impacts or risks arising from planned activities would occur within, or within proximity of, the OA. However, for unplanned events the geographical extent may be much broader.

Figure 2 shows the EMBA, which is based on worst-case unplanned hydrocarbon release scenario (oil spill) resulting from a vessel collision event.

The EMBA has been defined through combining multiple oil spill model simulations for the unplanned release scenario under different weather and ocean conditions. This means that in the highly unlikely event an unplanned release does occur, a geographical area much smaller than the EMBA would be affected.

Chevron Australia has systematic control measures to prevent and mitigate emergencies, and to reduce the impact and risks of planned activities on the environment, including to ecological, social and cultural sensitivities.

Table 2 summarises the potential impacts and risks and proposed control measures to manage these to levels that are as low as reasonably practicable (ALARP) and acceptable.

Marine fauna and biologically important areas (BIAs)

Chevron Australia has undertaken environmental and modelling studies and considered scientific advice and government guidance (including conservation management and recovery plans) in assessing potential impacts and risks to marine fauna.

As with most offshore areas in WA, a range of marine species are likely to be present or transit through the OA and EMBA. Marine fauna may include various mammals (whales, dolphins), fishes (including sharks and rays), reptiles (turtles, sea snakes), seabirds and shorebirds species.

Some of these marine fauna species are also protected (listed as threatened and/or migratory) under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth [Cth]).

BIAs are areas used by protected marine species for carrying out critical life functions (e.g. reproduction, feeding, migration, resting).

The OA occurs within the migration BIA for the pygmy blue whale. An Adaptive Management Framework [Appendix 1]will be implemented to manage potential risks of underwater sound from GS3 and SIMOPS activities, such that they are not inconsistent with the Conservation Management Plan for the Blue Whale.

The OA also intersects the breeding BIA for the wedge-tailed shearwater.

The other closest BIAs include the interesting buffer BIA for flatback turtles, foraging BIA for whale sharks, and the migration BIA for humpback whales, located ~19 km, ~20 km, and ~48 km respectively from the OA.

The closest nesting habitats for turtle, seabird or shorebird species are Montebello Islands and Barrow Island, ~47 km and ~58 km respectively from the OA.

The broader EMBA intersects with the BIAs for:

- Mammals—pygmy blue, humpback, and southern right whales, dugong
- Reptiles—flatback, green, hawksbill, and loggerhead turtles
- Fishes—whale shark
- Seabird and shorebirds—fairy, lesser crested, and roseate terns, and wedge-tailed shearwater.

Cultural values

Chevron Australia acknowledges that Traditional Owners and Custodians in the northwest region of WA have expressed a cultural and spiritual connection to Sea Country. This encompasses an obligation to protect both tangible and intangible cultural values and features including songlines, dreaming stories, and the flora and fauna connected to them.

Chevron Australia is committed to ongoing engagement and consultation with relevant groups to help protect these cultural values. This process will continue to inform our understanding and help facilitate the co-design of appropriate controls to avoid impacts.

Chevron Australia's Cultural Heritage Management System (CHMS) sets out processes and procedures to manage risks to cultural heritage, and Chevron Australia's obligations under relevant legislation including the *Aboriginal Heritage Act 1972* (WA) and the *Underwater Cultural Heritage Act 2018* (Cth).

The CHMS includes governance of field surveys and monitoring, spatial data, compliance and assurance, heritage assessment, inadvertent discovery procedures, incident management, training and induction materials.

Approvals process

Petroleum activities in Commonwealth waters are regulated by NOPSEMA. Before a petroleum activity can take place, Chevron Australia must develop an EP which will be assessed by NOPSEMA in accordance with the requirements of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2023 (the Environment Regulations).

The Environment Regulations require us to consult with relevant persons whose functions, interests and activities may be affected by the petroleum

activity.

Following consultation, Chevron Australia will submit the GS3 Install EP to NOPSEMA, which will:

- Describe the petroleum activity
- Describe the EMBA by the petroleum activity
- Identify and assess potential environmental impacts and risks arising from the petroleum activity
- Identify control measures to manage the potential environmental impacts and risks to levels that are ALARP and acceptable
- Outline how Chevron Australia has engaged with relevant persons and how their feedback has been considered and addressed.

NOPSEMA will assess whether the EP satisfies the Environment Regulations, including whether the environmental impacts and risks of the petroleum activity can be managed so that they are ALARP and acceptable before accepting the EP.

Impacts, risks and proposed controls

A summary of potential impacts and risks and proposed control measures for GS3 Install can be viewed in Table 2.

Your input

Chevron Australia is now seeking your feedback and input if you consider your functions, interests, or activities may be affected based on the information provided, including the summary of the potential environmental impacts and risks identified to date in Table 2.

We encourage you to provide additional details about the environment, aspects, potential impacts and risks of the activity, or key proposed control measures, or to ask for further information or consultation by **17 June 2026.**

You can contact us with any questions, requests for information, or to provide feedback by calling tollfree on **1800 225 195** or online below.

Relevant persons may request that the information they provide be treated as confidential. Chevron Australia will make this known to NOPSEMA and it will be identified as sensitive information and not published in the EP.

Submit feedback here

What's next

The feedback we receive during consultation will be used to inform and enhance the EP before it is submitted to NOPSEMA for assessment.

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

Privacy notice

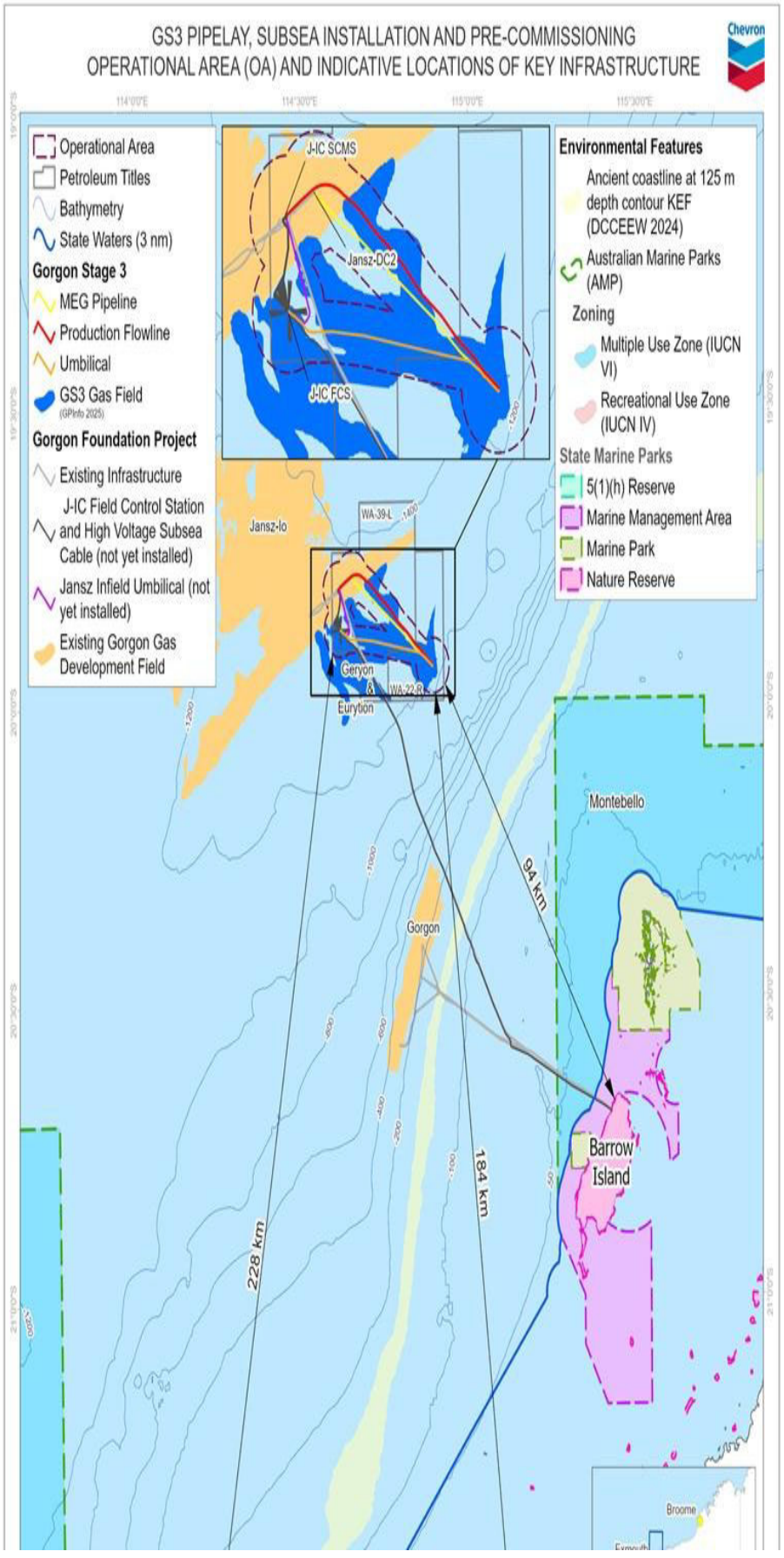
If you choose to provide feedback on this proposal, Chevron Australia will collect your name and contact details, in addition to your comments, for the purposes of maintaining contact with you and inclusion of your feedback in our submission to NOPSEMA. Provision of this information is purely voluntary, 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: GS3 Install EP—Operational Area (OA) and indicative locations of key infrastructure.


GS3 PIPELAY, SUBSEA INSTALLATION AND PRE-COMMISSIONING
OPERATIONAL AREA (OA) AND INDICATIVE LOCATIONS OF KEY INFRASTRUCTURE
Chevron
Operational Area
Petroleum Titles
Bathymetry
State Waters (3 nm)
Gorgon Stage 3
MEG Pipeline
Production Flowline
Umbilical
GS3 Gas Field
(GPInfo 2025)
Gorgon Foundation Project
Existing Infrastructure
J-IC Field Control Station and High Voltage Subsea Cable (not yet installed)
Jansz Infield Umbilical (not yet installed)
Existing Gorgon Gas Development Field
J-IC SCMS
Jansz-DC2
J-IC FCS
Jansz-Io
WA-39-L
Geryon
&
Eurybia
WA-22-R
Environmental Features
Ancient coastline at 125 m depth contour KEF (DCCEEW 2024)
Australian Marine Parks (AMP)
Zoning
Multiple Use Zone (IUCN VI)
Recreational Use Zone (IUCN IV)
State Marine Parks
5(1)(h) Reserve
Marine Management Area
Marine Park
Nature Reserve
Montebello
Gorgon
94 km
184 km
228 km
Barrow Island
Broome
114°00'E
114°30'E
115°00'E
115°30'E
19°00'S
19°30'S
20°00'S
20°30'S
21°00'S

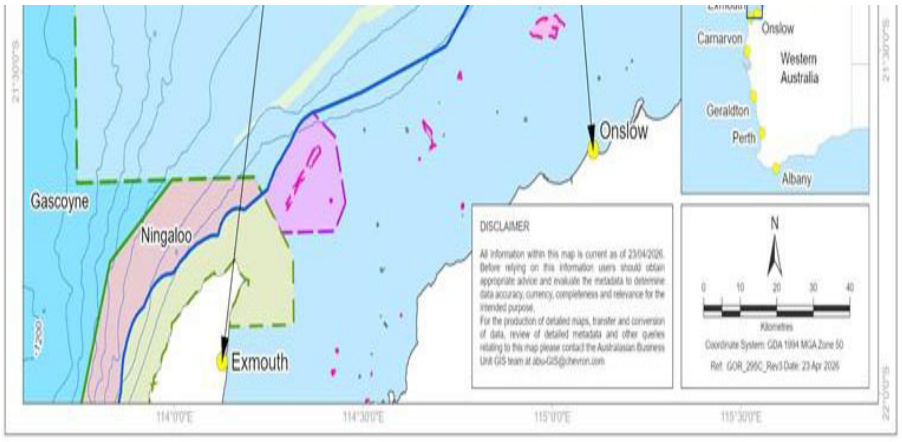
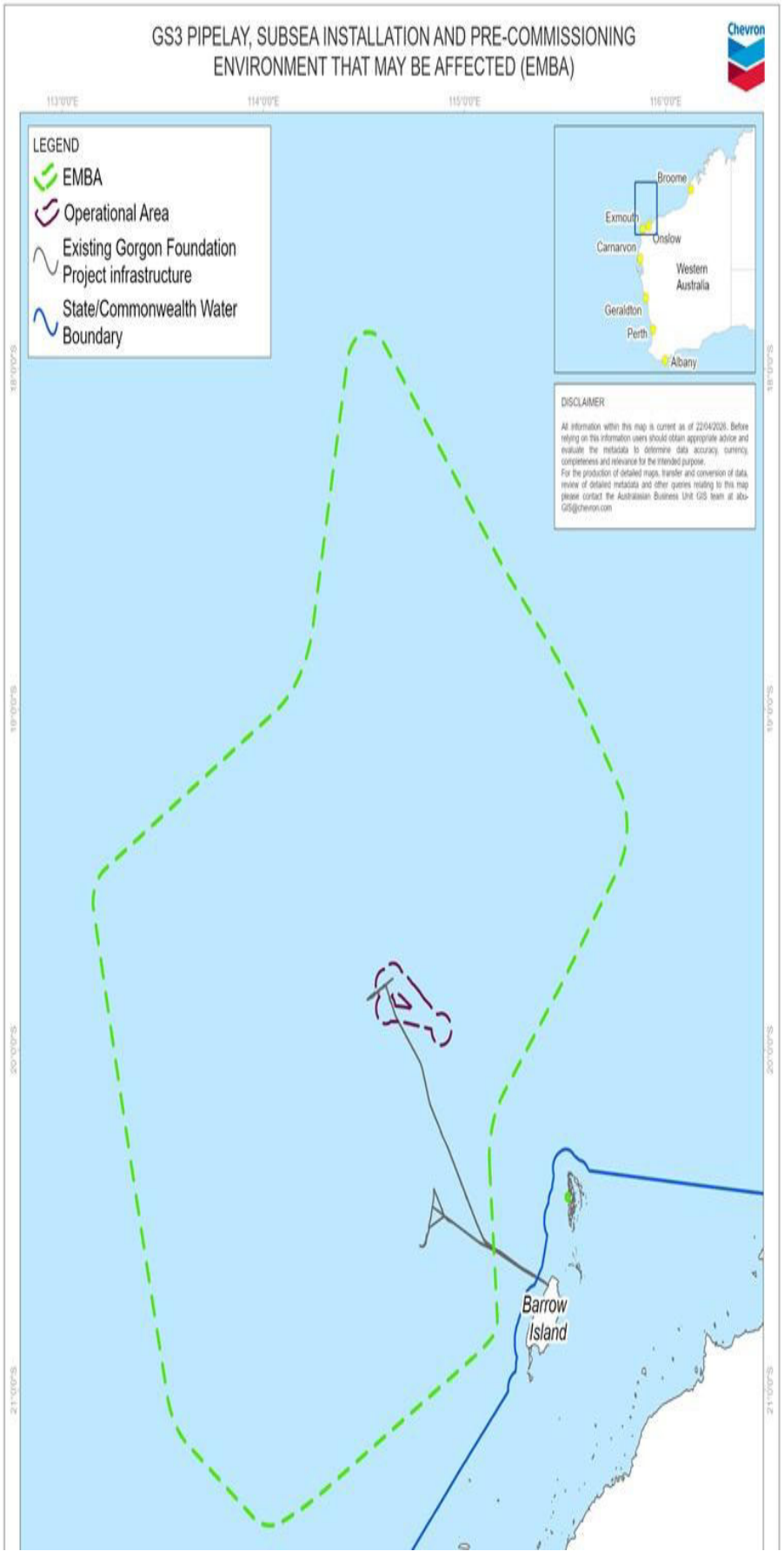


Figure 2: GS3 Install EP—Environment that May Be Affected (EMBA).


GS3 PIPELAY, SUBSEA INSTALLATION AND PRE-COMMISSIONING
ENVIRONMENT THAT MAY BE AFFECTED (EMBA)
Chevron
113°0'0"E
114°0'0"E
115°0'0"E
116°0'0"E
18°0'0"S
19°0'0"S
20°0'0"S
21°0'0"S
LEGEND
EMBA
Operational Area
Existing Gorgon Foundation Project infrastructure
State/Commonwealth Water Boundary
Broome
Exmouth
Onslow
Carnarvon
Western Australia
Geraldton
Perth
Albany
DISCLAIMER
All information within this map is current as of 22/04/2026. Before relying on this information users should obtain appropriate advice and evaluate the metadata to determine data accuracy, currency, completeness and relevance for the intended purpose.
For the production of detailed maps, transfer and conversion of data, review of detailed metadata and other queries relating to this map please contact the Australasian Business Unit GIS team at abu-GIS@chevron.com
Barrow Island

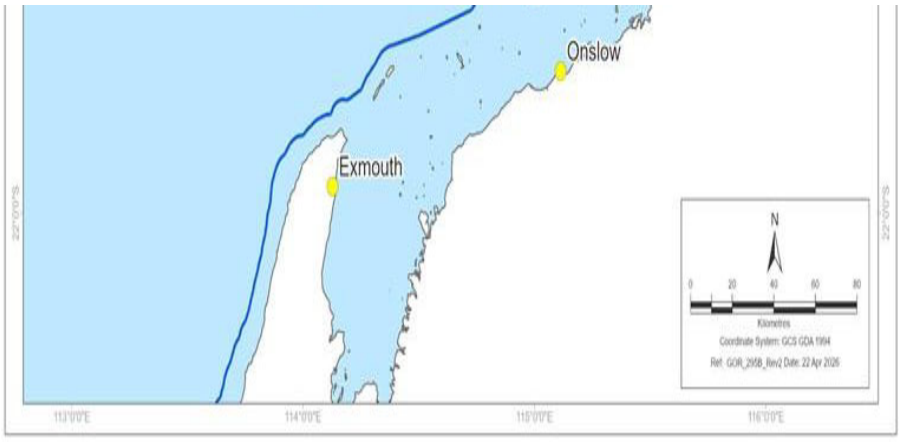


Table 1: Key infrastructure for installation – view here

Table 2: Summary of potential environmental impacts and risks, and the proposed control measures – view here

Appendix 1: Adaptive Management Framework for Pygmy Blue Whales exposed to underwater sound emissions from the Gorgon Backfill Fields Development – view here

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Resources

Consultation on Offshore Petroleum Environment Plans – NOPSEMA

Environment plan content requirements – NOPSEMA

Environmental requirements – NOPSEMA

NOPSEMA Assessment Process Environment Plans

Offshore Petroleum Greenhouse Gas Storage (Environment) Regulations

Chevron Operational Excellence Management System (OEMS)

Consultation in the course of preparing an environment plan – NOPSEMA

GS3 pipelay, subsea install and pre-commissioning - information sheet

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Chevron Australia
51,577 followers
9mo •

To maintain production at the Gorgon Gas Plant on Barrow Island, Chevron Australia is planning to develop the Geryon and Eurytion gas fields, referred to as Gorgon Stage 3 (GS3).

We are now consulting with Traditional Owners and Custodians, community organisations, governments, businesses and other relevant persons on the GS3 Drilling Environment Plan — which outlines the drilling and completion of six new subsea production wells ~180 kilometres off the northwest coast of WA in water depth of ~1,200 metres.

More information that can help you identify if you are a relevant person can be found here: https://lnkd.in/g6MgGbfC



Environment plan

Seeking relevant persons' input

Chevron has been operating in Australia for more than 70 years – creating enduring benefits and delivering reliable, affordable energy. We welcome feedback to enhance our environmental management measures as we progress offshore activities to support the ongoing supply of natural gas to Western Australia and the Asia Pacific region.

Our activities

Chevron Australia is planning to undertake pipelay, subsea installation and pre-commissioning activities in the Geryon and Eurytion gas fields, as part of Gorgon Stage 3 (GS3).

The offshore activities will take place in Commonwealth waters, approximately 95 kilometres (km) off the northwest coast of WA at water depths of more than 1,000 metres. The activities are indicatively scheduled to commence from mid-2027 and will take approximately 18–24 months to complete.

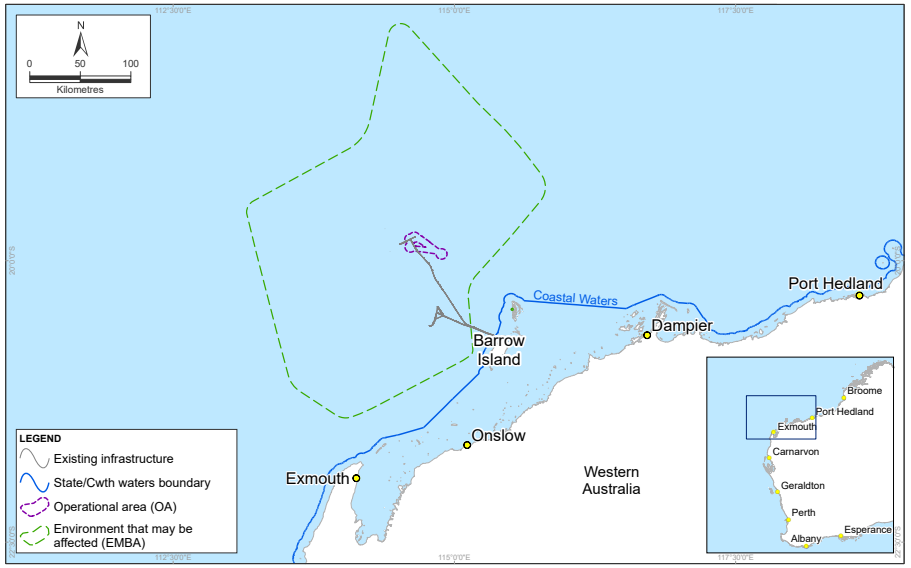
The feedback we receive during consultation will inform and enhance the GS3 Pipelay, Subsea Installation, and Pre-commissioning Environment Plan, which must be accepted by the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) before activities may commence.

Environment that may be affected (EMBA)

As part of our environmental assessment and consultation process, we create maps to provide geographical context for relevant persons to determine if their functions, interests or activities may be affected by an offshore petroleum activity during planned activities (e.g. routine or contingency operations) or from an unplanned event (e.g. emergency scenarios).

The map shows the operational area (OA), which is a 5 km radius buffer around the indicative location of the infrastructure, and the EMBA, which is based on a worst-case unplanned release of hydrocarbon scenario (an oil spill) resulting from a vessel collision event.

The EMBA has been defined through combining multiple oil spill model simulations for the unplanned release scenario under different weather and ocean conditions. This means that in the highly unlikely event an unplanned release does occur, a geographical area much smaller than the EMBA would be affected.



Most of the impacts and risks directly arising from planned activities would occur within, or within proximity of, the OA.

Chevron Australia has systematic control measures to prevent and mitigate emergencies and to reduce the impact of planned activities on the environment, including ecological, social and cultural sensitivities.

We want to hear from you

We are now seeking feedback and input if you consider your functions, interests, or activities may be affected. This may include Traditional Owners and Custodians with a spiritual and cultural connection to land and sea Country, local community members, and those involved in commercial or recreational fishing and tourism.

Please contact us by **17 June 2026** to be included in consultations. Visit **australia.chevron.com/feedback**, call tollfree on **1800 225 195** or scan the **QR code** for more information.

appendix g Operational and scientific monitoring assessment

Appendix G: Operational and Scientific Monitoring Assessment

Relevance of OMPs and SMPs to the petroleum activity

Table G-1 lists the Joint Industry OMPs and SMPs that are relevant to CAPL's GS3 Pipelay, Subsea Installation, and Pre-commissioning activities. CAPL confirms that it has reviewed the aims and objectives of these relevant OMPs and SMPs and determined that they are appropriate to meet the monitoring requirements of this activity, addressing potential impacts, risks and response activities.

Table G-1: Joint Industry OSM Plans relevant to GS3 Pipelay, Subsea Installation and Pre-commissioning activities

Operational monitoring	Relevant for GS3 Pipelay, Subsea installation, and Pre-commissioning	Scientific monitoring	Relevant for GS3 Pipelay, Subsea installation, and Pre-commissioning
OM1: Hydrocarbon Characterisation	✓	SM1: Water Quality Impact Assessment	✓
OM2: Hydrocarbon in water assessment	✓	SM2: Sediment Quality Impact Assessment	✓
OM3: Hydrocarbon in sediment assessment	✓	SM3: Intertidal and Coastal Habitat Assessment	✗
OM4a: Surface dispersant effectiveness monitoring	✗	SM4: Seabirds and Shorebirds Assessment	✓
OM4b: Subsea dispersant injection effectiveness monitoring	✗	SM5: Marine Mega-fauna Assessment	✓
OM5: Rapid Marine Fauna Surveillance	✓	SM6: Benthic Habitat Assessment	✓
OM6: Shoreline Clean-up Assessment	✗	SM7: Marine fish and elasmobranch assemblages assessment	✓
OM7: Air Quality Modelling	✓	SM8: Fisheries Impact Assessment	✓
-	-	SM9: Heritage Features Assessment	✓
-	-	SM10: Social Impact Assessment	✓

Activity OSM Assessment

The CAPL OSM Bridging Implementation Plan (OSM-BIP) (Ref. 1) defines the 3-step process for ensuring that OSM priorities and capabilities of each activity are adequately covered by the existing information described within the CAPL OSM-BIP (Section 1.1 and Appendix B of the OSM-BIP).

Step 1: Determine if the activity specific OSM Exposure Area fits within the CAPL OSM-BIP Combined OSM Planning Area

The Combined OSM Planning Area is determined by the predicted spatial extent of hydrocarbon exposure at the low thresholds for surface, shoreline accumulation, entrained, and dissolved components. The Combined OSM Planning Area is described as the 'offshore area' in which CAPL's activities may interact with the environment and is applicable to all EPs.

For each activity, an activity specific OSM Exposure Area is developed to predict the spatial extent of hydrocarbon exposure at the low thresholds for surface, in-water and shoreline components.

Comparison of the activity-specific OSM Exposure Area for the GS3 Pipelay, Subsea Installation, and Pre-commissioning activities (Figure G-1) with the OSM-BIP Combined OSM Planning Area shows that it fits within the OSM-BIP Combined OSM Planning Area (Figure 2-1 in the OSM-BIP). This step ensures that the activity-specific OSM Exposure Area is included in the current description of the environment.

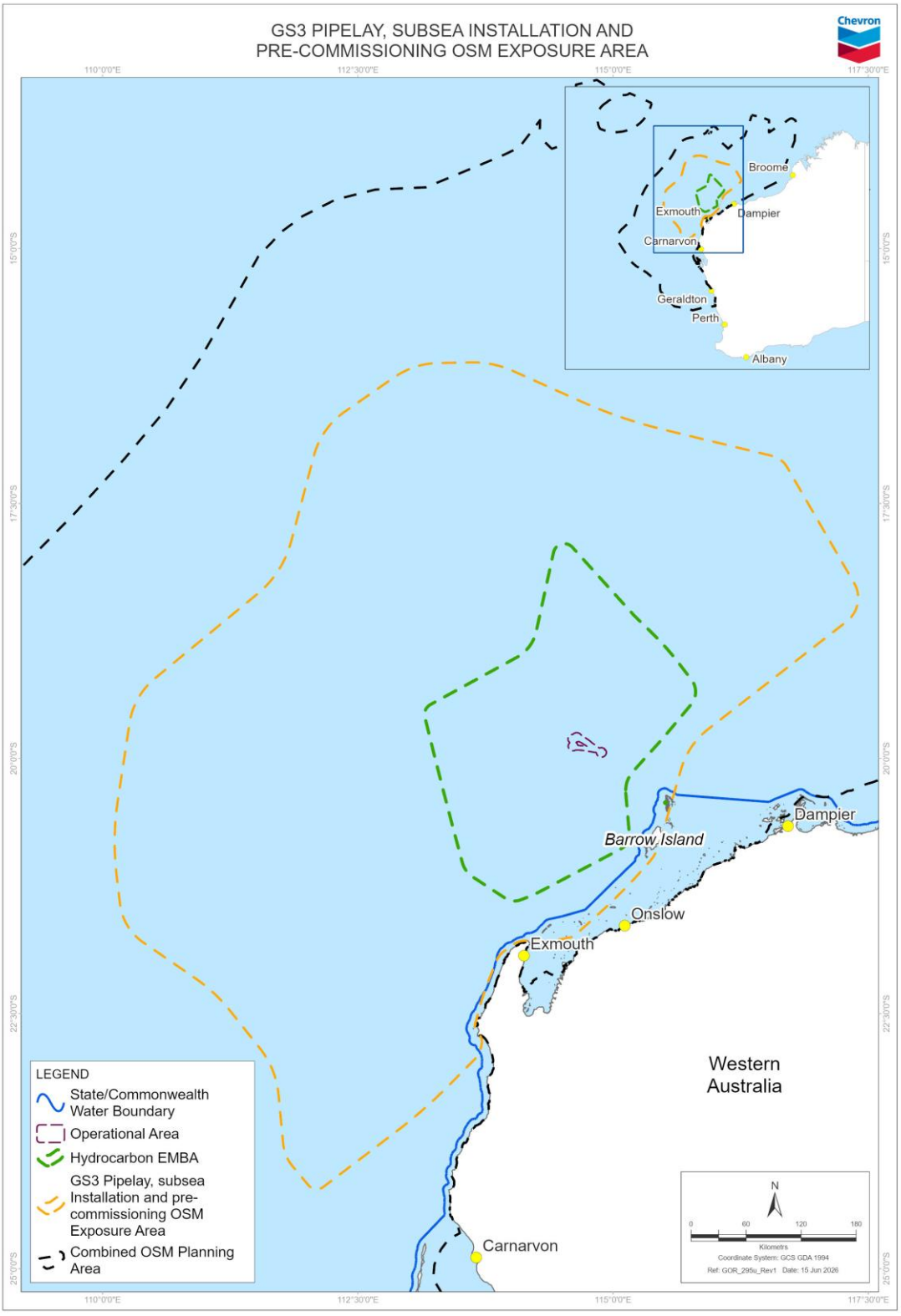


Figure G-1: OSM Exposure Area for the GS3 Pipelay Subsea Installation and Pre-commissioning activities

Step 2: Determine activity-specific monitoring priorities and tier rankings for the first 14 days of the spill scenario, in accordance with the tiered prioritisation hierarchy described in Section 2.2 of the CAPL OSM-BIP.

The monitoring priorities for the GS3 Pipelay, Subsea Installation and Pre-commissioning activities have been identified through application of the tiered prioritisation hierarchy described in Section 2.2 of the CAPL OSM-BIP to the stochastic modelling results (Table G-2) for the worst-case credible spill scenario: 850m^3 surface release of Marine Diesel Oil (MDO) from a vessel collision event in the G & E field.

Table G-2 presents stochastic modelling results for each receptor at all three exposure values (low, moderate and high) for each phase (floating, shoreline, entrained, dissolved), filtered by 10% probability and ≤14 days contact. A summary of stochastic modelling results is provided in Section 8.15.3 of the EP.

As per Section 2.2 of the OSM-BIP (Ref. 1), additional monitoring prioritisation criteria are also applied in the assessment of monitoring priorities, including baseline data adequacy. The results of the baseline data assessment for the GS3 Pipelay, Subsea Installation and Pre-commissioning monitoring priorities are provided in Table G-3, which is an excerpt from Table 4-3 of the CAPL OSM-BIP (but only includes monitoring priorities for the GS3 Pipelay, Subsea Installation and Pre-commissioning activities).

CAPL confirms that the receptors identified as monitoring priorities are all included in Table 2-1 of the CAPL OSM-BIP and have therefore been assessed for baseline data adequacy, background information for key sensitivities and are appropriately represented in the CAPL OSM-BIP.

Initial monitoring priorities (within the first 14 days of a spill)

CAPL has reviewed the scenario (850m^3 surface release of MDO from a vessel collision event in the G & E field) stochastic modelling results (Table G-2) and identified that no discrete named receptor (Australian Marine Parks [AMP], Marine Parks [MP], Marine Management Areas [MMA], shoreline cell or reef/shoal/bank) is predicted to be contacted at the moderate or high Base Tier exposure values within the 14-day window for the scenario. Application of the additional monitoring prioritisation criteria in Section 2.2.3 of the CAPL OSM-BIP has not resulted in the promotion of any receptor above its Base Tier 3 assignment, given that all receptors are contacted only at the low entrained exposure value (≥10 ppb), at which the toxic fraction of whole-oil droplets is small and largely non-bioavailable (Ref. 3). Base Tier 1 and Base Tier 2 are therefore identified as empty within the initial prioritisation window. Tier rankings for the MDO scenario are presented in Table G-4.

The MDO scenario stochastic modelling predicts 1 receptor; Gascoyne AMP is contacted at the low Base Tier entrained exposure value (≥10 ppb) which is assigned Base Tier 3. No discrete receptor meets the medium Base Tier 2 or high Base Tier 1 exposure values for the MDO scenario within the 14 day window. Tier rankings for the vessel collision scenario are presented in Table G-4.

Figure G-2 presents the tier envelope maps for the GS3 Pipelay, Subsea Installation and Pre-commissioning vessel collision scenario, showing the spatial extent of the receptor tier assignments in Table G-4. The map shows the envelopes as separate contours, with each envelope representing the union of the four hydrocarbon phases (entrained, dissolved, floating, shoreline) combined across all three modelled seasons (summer, transitional, winter) at the 14-day truncated stochastic outputs. The envelopes are derived from the stochastic outputs across the full modelled probability of contact distribution (i.e. not restricted ≥10% probability). The envelopes are derived and interpreted using the tiered prioritisation hierarchy in Section 2.2 of the CAPL OSM-BIP.

Broadscale ecological features (Biologically Important Areas [BIAs], Key Ecological Features [KEFs]) are predicted to be exposed at Base Tier 1 and Base Tier 2 exposure values within the release site area, and these exposures are visible in the Tier 1 and Tier 2 spatial envelopes shown in Figure G-1. The inclusion of entrained hydrocarbons at concentrations >10 ppb is used to denote exposure to hydrocarbons, but does not necessarily imply toxicity. For entrained whole-oil droplets, the toxic fraction is small, as many hydrocarbon constituents remain sequestered and not bioavailable (Ref. 3). Where a receptor is contacted only by the lowest concentration of entrained hydrocarbons and not by any other hydrocarbon phase, it has been assigned to Tier 3, with the rationale recorded in the 'Additional monitoring prioritisation criteria' column of Table G-4.

Tier 1 or Tier 2 monitoring would be initiated if situational awareness data and/or surveillance during an actual spill identifies exposure at a receptor, including broadscale features such as KEFs and BIAs, as per the dynamic re-evaluation process in Section 13 and 18 of the CAPL OSM-BIP. CAPL and its OSM Services Provider(s) will still activate and mobilise monitoring resources to Tier 3 receptors in the absence of any higher ranked receptors.

Consideration of KEFs, BIAs and broad-scale receptors

Broad-scale ecological features within the OSM Exposure Area for this activity have been considered in tier ranking and OSM capability planning. KEFs, BIAs and AMPs intersecting the OSM Exposure Area are described in the Appendix G of the OSM-BIP. Where these features intersect the named-receptor footprint, they are embedded in the receptor's CAPL PPP ranking (ABU180500232) and tier ranking. Where their spatial extent extends beyond the named-receptor footprint, they are addressed through the corresponding monitoring provisions in the CAPL OSM-BIP (Section 2.2.3).

Stochastic modelling predicted exposure of entrained oil, meeting the tier assessment criteria, above the low threshold (≥10 ppb) for four KEFs across all seasons. These were the Ancient coastline at 125m depth contour (maximum probability 20% in 2 days 16 hrs in summer), Canyons linking the Cuvier Abyssal Plain and the Cape Range Peninsula (maximum probability 30% in 6 days, 7 hrs in transitional), Continental Slope Demersal Fish Communities (maximum probability 76% in 13 hours in winter) and Exmouth Plateau (maximum probability 48% in 2 days and 15 hour in winter). Exposure above the moderate entrained threshold (≥100 ppb) meeting the tier 2 assessment criteria, was predicted for Continental Slope Demersal Fish Communities in all seasons (maximum probability 52% in 1 day and 1 hour in winter).

As these KEFs surround the release locations and represent broad-scale near seabed features, monitoring is provided for through the spill site monitoring team for water column and benthic monitoring as per OM2 and SM1 (water quality) and SM6 (benthic habitat) resourcing in Table 10-1 of the CAPL OSM-BIP

Table G-2: **Stochastic modelling results for GS3 Pipelay, Subsea Installation and Pre-commissioning activities: Receptors with a probability of contact ≥10% and <14 days**

Receptor	Floating						Shore						Entrained						Dissolved					
	Low prob (%)	Mod prob (%)	High prob (%)	Low time (d)	Mod time (d)	High time (d)	Low prob (%)	Mod prob (%)	High prob (%)	Low time (d)	Mod time (d)	High time (d)	Low prob (%)	Mod prob (%)	High prob (%)	Low time (d)	Mod time (d)	High time (d)	Low prob (%)	Mod prob (%)	High prob (%)	Low time (d)	Mod time (d)	High time (d)
Surface release of 850 m^3 of MDO over 12 hours following a loss of containment (vessel collision) at the G & E field																								
Gascoyne AMP*	NC	NC	NC	NC	NC	NC	NA	NA	NA	NA	NA	NA	40% (T)	NC	NC	6 days (T)	NC	NC	NC	NC	NC	NC	NC	NC

**Submerged receptor that has no features above the sea surface. Modelling indicates 'contact' with these receptors when the hydrocarbons pass over the receptor on the sea surface*

NA = Not applicable (e.g. shoreline exposure not applicable to submerged receptor). NC = No contact predicted at that exposure value.

Values are probability of contact (%) and minimum arrival time (days).

Season codes: S = Summer (Sep–Mar); T = Transitional (Apr/Aug); W = Winter (May–Jul). Season codes indicate the season yielding the worst-case value (highest probability / shortest arrival time).

Exposure values: Floating oil Low/Moderate/High = ≥1 / ≥10 / ≥ppb Shoreline Low/Moderate/High = ≥10 / ≥100 / ≥1,000 ppb Dissolved Low/Moderate/High = ≥10 / ≥50 / ≥ 300 ppb; Entrained Low/Moderate/High = ≥10 / ≥100 / ≥1,000 ppb

Table G-3: Baseline data assessment for GS3 Pipelay, Subsea Installation and Pre-commissioning activities: Monitoring priorities versus SMPs

Receptor	SM1: Water quality impact	SM2: Sediment quality impact	SM3: Intertidal and coastal habitat	SM4: Seabirds and shorebirds	SM5: Marine mega-fauna assessment – reptiles	SM5: Marine mega-fauna assessment – whale sharks, dugong and cetaceans	SM6: Benthic habitat	SM7: Marine fish and elasmobranch assemblages	SM8: Fisheries impact+	SM9 & 10: Heritage and social impact^
Gascoyne AMP*			N/A			Pygmy blue whales				
						Other species				

Key	
	Comprehensive baseline data or ongoing monitoring collected within the last 5 years. Data align with Joint Industry SMP parameters and methods, cover required species/communities and span the necessary spatial extent.
	Historical data (>5 years old) that remain of value, or some current but not extensive baseline data[1]. Caveat: Additional relevant data may exist but be unknown and therefore not included in the assessment.
	No baseline data available, or existing data are inadequate in quality, scope, or relevance. Caveat: Additional relevant data may exist but be unknown and therefore not included in the assessment.
	N/A: Not applicable

** Submerged receptor*

+ Locations to be determined in consultation with key stakeholders to reflect current fishing zones/effort

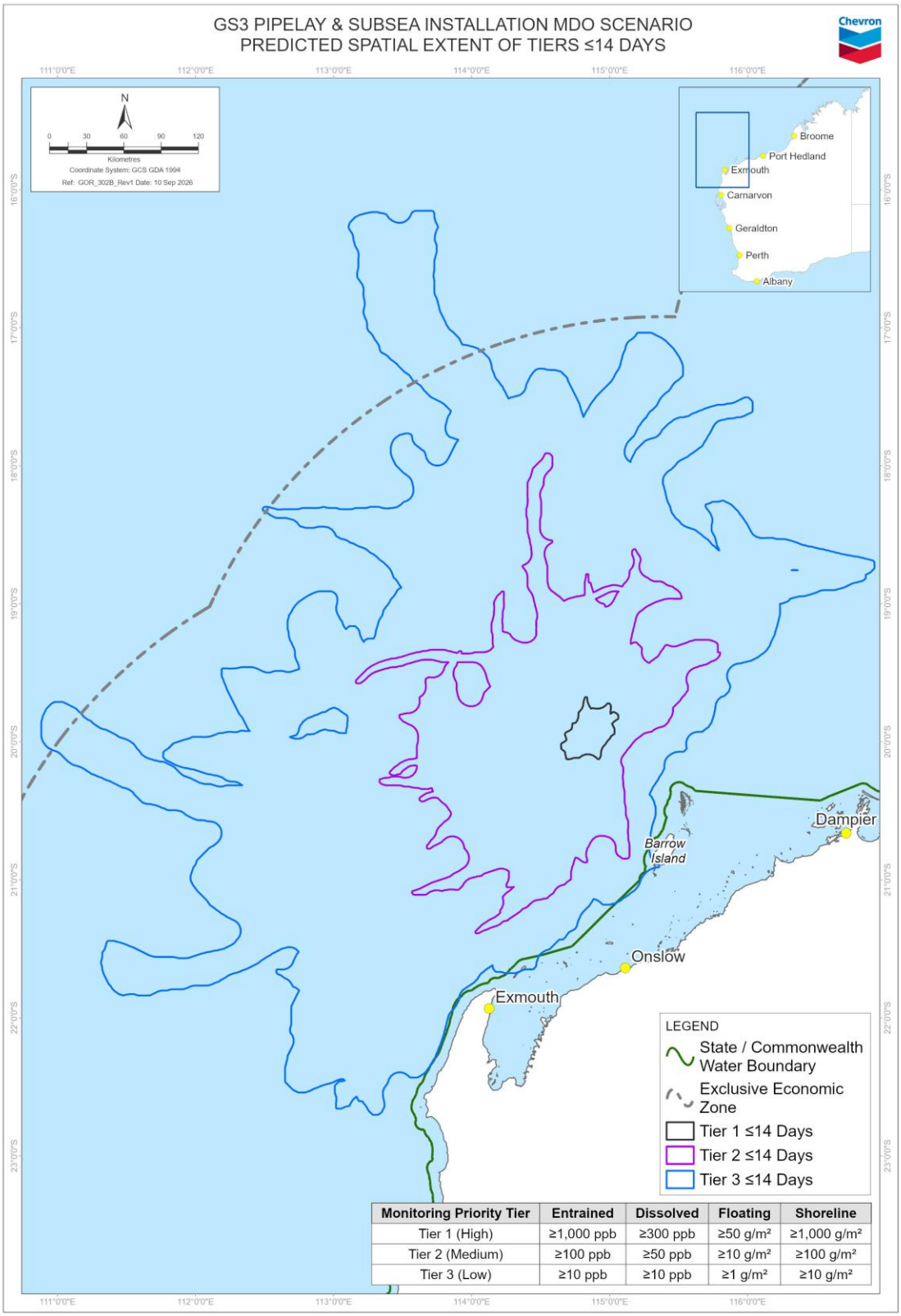
^ Locations to be determined in consultation with key stakeholders

[1] Baseline data are considered not extensive where they are limited in spatial and/or temporal coverage, sample size, or representativeness of species and / or the marine environment (e.g. life stages, habitats, seasonality). Such data may not capture natural variability or interannual trends, may be seasonally, taxonomically, or methodologically biased, or may rely on opportunistic or inconsistent datasets with variable data quality.

Table G-4: Scenario 1- 850 m^3 of MDO G & E vessel collision - Monitoring priority tier assessment (stochastic modelling results, ≥10% probability, ≤14 days; source: Ref. 5)

Receptor	Receptor type	CAPL PPP ranking (Floating / Dissolved)	Base tier - floating contact (%, time)	Base tier - shoreline contact (%, time)	Base tier - entrained contact (%, time)	Base tier - dissolved contact (%, time)	Resultant base tier	Additional monitoring prioritisation criteria	Initial monitoring prioritisation tier
Gascoyne AMP*	Australian Marine Park (Commonwealth) IUCN II, IV, VI	3 / 3	NC	NA	Low ≥10 ppb (40% (T), 6 days (T))	NC	Base Tier 3	Entrained-only exposure at ≥10 ppb (peak 115.7 ppb Transitional)	Tier 3

Legend	
*	Submerged receptor
NA	Not applicable
NC	No contact



Monitoring Priority Tier	Entrained	Dissolved	Floating	Shoreline
Tier 1 (High)	≥1,000 ppb	≥300 ppb	≥50 g/m²	≥1,000 g/m²
Tier 2 (Medium)	≥100 ppb	≥50 ppb	≥10 g/m²	≥100 g/m²
Tier 3 (Low)	≥10 ppb	≥10 ppb	≥1 g/m²	≥10 g/m²

Figure G-2: Geographical extent of the Tier 1, Tier 2 and Tier 3 stochastic exposure areas – G & E Pipelay, Subsea Installation and Pre-commissioning vessel collision scenario within the 14-day initial prioritisation window

Step 3: Determine whether the capability requirements and monitoring arrangements of the activity exceed or are met by the capability requirements outlined in Section 8 and capability arrangements described in Sections 9 and 10 of the CAPL OSM-BIP.

As per Step 3, Appendix B of the OSM-BIP (Ref. 1), CAPL has reviewed the following worst-case OSM capability assessment criteria for GS3 Pipelay, Subsea Installation, and Pre-commissioning activities:

- **Review stochastic modelling results to determine if more than 7 floating or 5 shoreline or 27 dissolved locations are contacted within 14 days:** Table G-2 shows that no floating, shoreline or dissolved receptors are contacted by the modelling scenario within 14 days at a probability >10%.
- **Is the hydrocarbon type adequately represented in the existing suite of hydrocarbons analysed in Section 8 of the OSM-BIP:** Section 8 of the OSM-BIP (Ref. 1) (Resourcing Requirements) includes light, non-persistent hydrocarbons (Group 1 and 2), similar to MDO.

  The GS3 Pipelay, Subsea Installation and Pre-commissioning activities are located a considerable distance offshore in a remote location (~75 km offshore of Montebello Islands; ~180 km from the mainland coast). Although it is remote, it is located near AMPs and KEFs. As described in Section 2.2.3 of the OSM-BIP (Ref. 1), the monitoring requirements for these receptors are expected to focus on water quality, sediment quality, benthic habitats and fish.

  Given the above results, CAPL confirms the OSM capability requirements for the GS3 Pipelay, Subsea Installation and Pre-commissioning activities are met by the worst-case capability requirements presented in Sections 8 to 10 of the OSM-BIP (Ref. 1). Consequently, additional deterministic modelling for GS3 Pipelay, Subsea Installation and Pre-commissioning activities is not required to inform initial OSM capabilities.

  The GS3 Pipelay, Subsea Installation and Pre-commissioning activities are included in the consideration of worst-case spill scenario in the OSM-BIP (Ref. 1) in Section 2.2 (Table 2-1) and therefore the capabilities described in the OSM-BIP also cover these activities.

  The results of the baseline assessment are provided within CAPL's Oil Spill Response Dashboard so that this information is accessible to guide the CAPL IMT Planning Section and Environment Unit Lead and OSM Services Provider roles in the event of activating oil spill scientific monitoring.

Table G-5: References

Ref. No.	Description	Document ID
1.	CAPL.2026. Operational and Scientific Monitoring Bridging Implementation Plan. Rev. 0. Chevron Australia, Perth, Western Australia.	ABU250200169
2.	CAPL. 2020. Oil Spill Protection Prioritisation Process – Northwest Shelf. Rev 2.0 Chevron Australia, Perth, Western Australia.	ABU180500232
3.	French-McCay D. 2024. Considerations for Development of Entrained Oil Thresholds for Oil Spill Risk Assessments. RPS Ocean Science. Australian Energy Producers.	
4.	BlueSands. 2026. Marine Environment Baseline Database Report #2, 24 June 2026.	
5.	RPS. 2026. Chevron GS3 Pipelay & Subsea Installation Activities. Oil Spill modelling. Rev 2. 28 January 2026.	